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PREFACE

On behalf of the Institute for Population and Social Research as the host, please allow me to extend our warm welcome to all the participants of the International Conference on Applied Science and Health (ICASH) to Mahidol University Salaya, the Wisdom of the Land. Our institute has been established for almost 45 years, since we were known as the Center of Population and Social Research under the Faculty of Public Health, Mahidol University, Phayatai Campus and changed to be “**Institute for Population and Social Research**” in 14 November 1971.

To date, we have been adhering to our aim to lead Institute with Quality and Morality, we remain the ambitious of our goal to foster our Institute to be a prominent and renowned research Institute. The achievement of the outstanding of research qualities, teaching, training and the expertise of our staff in the fields of Population and Social Sciences have been recognized at National and International levels, this allowing us to become one of the leading research Institutes in Asia. Our work is adherent to the common interest of the people as a whole and continuingly fond engaging with IPSR symbolic beloved cultures.

We are honor to host the International Conference on Applied Science and Health (ICASH) as a joint conference between the Institute for Population and Social Research Mahidol University Thailand and Doctoral Program in Public Health Science, Diponegoro University Indonesia and Universitas ‘Aisyiyah Yogyakarta, Indonesia. The conference aims to exchange the knowledge and experiences among experts, practitioners, professionals and students from three parties, and also to extend the networks between two countries. It is expected, the output of the conference will enrich the body of knowledge in applied science and health-related field, and also to provide evidence-based studies to direct the government and policy makers in designing strategic planning for the future growth and development of the regions.

We would like to extend our appreciation to Indonesian Scholar’s Alliance as the organizing committee of the conference, who have been working with our Institute’s staff to make today’s event possible. More importantly, to all speakers and participants who willing to share their knowledge and expertise for our better society.

Lastly, I wish you a joyful conference, and have a pleasant stay in Thailand!

Associate Prof. Rossarin Gray, PhD

Conference Chair and Director of the Institute for Population and Social Research
Mahidol University Thailand

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ICASH-A01

ANALYSIS OF HEAT EXPOSURE PREVENTION ON STREET VENDORS WORKERS AROUND DIPONEGORO UNIVERSITY CAMPUS SEMARANG

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ABSTRACT

Background: Climate change impacts on the increase in ambient temperature. This condition affects human health and environmental conditions. Street vendors have the risk of heat stress because of suffered direct sunlight. Efforts to prevent the effects of heat exposure in developing countries are not optimal. Semarang is residential with the hot climate. The aim of this study was to describe how street vendor prevent them from heat stress

Method: The research was a descriptive with a qualitative approach. Data obtained from an in-depth interview with 35 street vendors who work around Diponegoro University Campus. The in-depth questioner consists of how about their process of work, clothe, meal, beverage, and symptom of dehydration. The checklist was used to observed their clothe and shading. Data was analyzed with content analysis

Results: Street vendors work under the tree. They suffered heat stress from direct sunlight. They wear loose and clear color of clothing. They have a meal with boullion and much water. They use the tree for shading from direct sunlight. The symptom dehydration that appears was dry throat and feel fatigue. But their urine color was still clear. It's showed that dehydration has not suffered the street vendors

Conclusion: Street vendors have good behavior to prevent heat stress so they are not suffered dehydration

Keywords: Street vendor, Prevention, Heat Stress

INTRODUCTION

Climate changes impact on the increase of ambient temperature. This condition affects human health and environmental conditions. Workers who work in a hot environment, climate change adds a burden to the workers at work. Heat stress increases the temperature of the environment increases, physical activity, physical differences in individual and no heat exposure prevention. Heat stress prevention technologies are not developed in developing countries [1]. Health problems caused by exposure to heat can be a mild form of the syndrome of muscle cramps, fainting, and exhaustion to heat stroke which can be life-threatening workers. Heat exhaustion due to the health disorders that often occur. Heat exhaustion is characterized by the reduction in body fluids and electrolytes due to sweating and not enough on replacing fluids[2]. Dehydration on workers started if the weight was down 1.5% at work [3]. Weight loss of 2% resulted in the emergence of a decrease in aerobic capacity, orthostatic tolerance and cognitive abilities [4]. Prevention of heat exposure can be done by applying heat exposure control hierarchy ranging from elimination, substitution, Engineering, Administration and Use of Personal Protective Equipment.

The preventive action to reduce effects of heat exposure through common techniques and special techniques. Common techniques include training to get adaptation to the environment and Heat stress Hygiene Practice (fluids and setting work hours). Special techniques include the hot prevention engineering controls, a decrease in workload, decrease in environmental temperature and humidity environment, the setting of clothes, a decrease in heat radiation, wind speed improvements and the use of ventilation [5]. Heat stress prevention have not been implemented properly in developing countries such as Indonesia [1]. The workers were not using PPE [6] Long exposure to heat and fatigue affect workers who working in the heat [7]. Carbohydrate electrolyte solution intake and short pauses prevent the dehydration and fatigue [8]. The impact of global warming also affects the temperature around UNDIP. The ambient temperature UNDIP Campus ranges from 31 to 32 degrees Celsius WBGT. This condition is a risk of thermal stress on workers. Street vendors are working with the potential hazards of heat exposure which can cause health problems. Health problems can be prevented by various means. The aim of this study described how street vendors prevent them from heat exposure.

METHODS

This study was a descriptive study using qualitative analysis., is a research method that puts the words as units of analysis, because the data it produces the form of words, phrases, and the narrative put forward by the study subjects. Conducted with the main objective to investigate, locate, describe, and explain a situation objectively. One issue that deserves to be studied with a descriptive method is to compare between one thing with another[9]. This study begins with observational studies, surveys followed by a qualitative study to gain a deeper understanding of the work performed street vendor.

In-depth interviews were conducted to 35 street vendors. Sampling technique used Saturated Sampling. The interviews included questions about cooking process, heat stress prevention: meal and beverage consumption, clothes and the shading street vendors wear and symptom of dehydration. The observation was done for equipment to reduce heat stress (kind and color of clothing, shading) with a checklist.

RESULTS

The condition of the work environment

The street vendors work around Diponegoro University Campus Semarang. They trade their food along Prof Soedarto street. The trees grow tall along that street. The ambient temperature was 30 degrees Celsius WBGT. This condition was higher than TEL/ NAB for work with the workload being for 8 hours. Characteristics of respondents mostly male sex. Body Mass Index of 60% of normal. All street vendors have been working in the environment longer than 2 weeks. Almost half of the street vendors work with the cooking process. They use the stove to cook the meal.

Heat stress prevention

Tabel 1. Observation of Shading to prevent from heat stress

No	Type of Shading	Yes f	%	No f	%
1	Under the tree	35	100	0	0
2	Umbrella	7	25	28	75
3	Hat	15	43	20	57

Street vendors use tree as shading. Only a few use umbrella and hat as Shaoxing

Tabel 2. Clothing characteristic to prevent from heat stress which street vendors wear

No	Clothing characteristic	Key answer
1	Type of Clothing	Jacket Clothing
2	Nature of clothe	Synthetic Cotton
3	Clothing color	Black Clear
4	Size	Fitt Loose

Street vendors wear clothes. Majority the wear cotton clothing. The color of the clothing were clear. They wear loose clothing.

Tabel 2. Consumption Meal and beverage

No	Meal consumption	Key answer
1	Type of beverage	Plain water Tea or coffee Electrolyte
2	Type of bouillon	Bouillon(Soup, Noodle) Without bouillon
3	Water intake	More than or eight cup (≥ 1600 cc) Less than eight cups(<1600 cc)

Majority of street vendors drink plain water. They consumed bouillon. They drink enough water

Tabel 4. Street Vendors Symptom of dehydration

No	Heat Stress Effect	Key answer
1	Lips	normal dry
2	Throat	dry normal
3	skin	normal dry
4	Thirsty	Thirsty NotThirsty
5	Feel of Fatigue	Fatigue Not fatigue
6	Urine color	Clear Concentrate

Almost all street vendor feel thirsty. Majority said they felt dry throat and feel fatigue. But according to their urine color, majority still clear color.

DISCUSSION

Street Vendors work under direct sunlight. Workers who work under direct sunlight are subjected to thermal stress, particularly during summer when the workplace conditions are hot and humid. The conditions are bad during summer because of thermal stress[10]. Street vendors are at the risk of heat stress. One of the important reasons of the increased heat load in the workplace is direct sunlight. Another reason would be the location of the activity as the majority of waste site activity

workers worked in urban parks and green spaces in warm hours[11]. Many street vendors cook the meal with a stove. The furnace will increase the hot climate[12].

According table 2, Majority of the street vendors wear loose and cotton clothing. Loose clothing will increase the passage of water vapor and thus increases body heat loss by evaporative cooling. It's called Chimney effect. Loosely hanging clothing ventilates the trapped air layers from the body. Cotton will absorb the sweat and increase water evaporation[13]. The usual clothing for people who work on hot climate was cotton trousers and long sleeved shirts. The thermal characteristics of these clothes have been previously measured and were entered into the air cooling power calculations[14]. The 'clo' unit is an index clothing thermal resistance. One clo represents the clothing necessary to allow a resting individual to be in a comfortable state when the ambient temperature is 21°C[13]. The majority of the street vendors did not wear the jacket. Jacket blocked the body heat release. The jacket will increase temperature, and adds heat load for street vendors. Proper clothing can help to minimize the effects of poor environmental conditions. Light-color, loose-fitting, open-weave clothes allow maximum heat deflection and optimal evaporation[15]. Wearing lighter and more breathable clothing can help reduce the impacts of extreme heat because it allows the body's natural cooling systems to function better[16]

According table 3, Majority of street vendors drink plain water. They drink water more than 1600 ml/day . Some references say water intake can prevent dehydration[17]. The kinds of fluids consumed are also relevant. They consumed bouillon from noodle and soup. Mineral drinks (including bouillon) are recommended. Few street vendors drink tea or coffee. Excessive consumption of coffee should be avoided, especially during periods of dehydration as these drinks actually dehydrate rather than hydrate. Water and mineral drinks (including clear soup) should also be made available and easily accessible[18]. Liquid containing electrolyte and carbohydrate would more quickly restore fluids lost due to heat exposure[17].

According table 1, All of the respondents worked under the tree. They said that tree would protect them from sunlight. Tree protect from heat by reducing energy radiation and absorb the reflective radiation from the environment around the workplace. The impact of green space in cities is adjusting temperature, increasing the relative humidity, air freshness and absorbing the dust[11]. A quarter of them used the umbrella to protect them from solar radiation. Almost half of them wear the hat to protect their head from solar radiation. Shading is one of the first steps that should be taken to moderate the stressful effects of a hot climate. It is to protect the street vendors from direct and indirect solar radiation. It was estimated that total heat load could be reduced from 30 to 50% with a well-designed shade, and shading is one of the more easily implemented and economical methods to minimize heat from solar radiation[19]. The vegetation of urban areas decreases hot climate because of the shade increase the absorptive surface to the suns. It also increases the potential for evaporative cooling heating[20].

All of the prevention by the street vendors reduce dehydration. The majority of respondents have clear color urine. It showed that they were not suffered dehydration. Although majority only feel thirsty and have the dry throat, exposure to heat can be risky to health and safety street vendors[21]. Heat stress causes health risks, a decrease in worker productivity, increased irritability, increased risk of accidental injury in workplaces, and when severe heat stroke and death, negatively impacting family income and the community economy[11].

The limitation of this study was there is no measurement in the sign of dehydration(Body weight and urine density). Reduces in body weight and urine density showed the dehydration process.

CONCLUSION

Street Vendors have good behavior in prevent from heat stress. They wear loose and clear color of clothe. They have meal with boullion and much water. They trade under the tree. So they were not suffer dehydration.

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ICASH-A02

**RELATIONSHIP BETWEEN JOB STRESS AND FRAUD RISK ON
EMPLOYEES AT THE NATIONAL EYE CENTER HOSPITAL X**

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ABSTRACT

Background: Fraud is any unlawful acts committed by individuals within an organization or institution to gain an illegal advantage of others through manipulation, falsifying truth and good behavior. On employees, pressure may cause fraud in part by problems stemming job stress from the work environment. The purpose of this study was to determine the relationship of job stress with the risk of fraud on employees.

Methods: The study design used cross sectional. Samples were employees in the Administration, Finance, Purchasing, Human Resources, Information and Technology, and Procurement at the National Eye Center Hospital X as many as 37 people. The sampling technique used in this study was proportional random sampling. Data was collected by questionnaire. Analysis of data was done through two stages, namely univariate to see the frequency distribution and bivariate to see the relationship (chi square).

Results: The result showed that H_0 was rejected (p -value = 0.0001) meant that there was a relationship between job stress with the risk of fraud.

Conclusion: The relationship between job stress with the risk of fraud suggests the hospital to do the job stress measurement and risk of fraud continuous and reduce employees stress levels through strategies such as redesigning organizational approaches and participatory decision-making.

Keywords: Work stress, the risk of fraud, cross-sectional

INTRODUCTION

Fraud can be caused by three things according to ACFE, namely pressure, opportunity, and rationalization. Rationalization is hard to identify, the opportunity is the most fundamental cause of fraud, and pressure is a cause of fraud that most often occurs. Pressure can come from a variety of aspects such as economic demands or even lifestyle. On employees, pressures which causes fraud may be caused in part by stemming problems stemming from the work environment, which is called job stress [1-3].

Job stress is a process that causes people to feel sick, uncomfortable or tense because of work, work place or certain work situations[4]. Job stress can result in positive (eustress) that is needed to produce high achievement, but in general, job stress more self-harm workers and companies[5]. The negative impact caused by job stress may be symptoms of physiological, psychological, and behavioral[6].

In addition to the impact of the symptoms of physiological, psychological and behavioral, occupational stress can also have a negative impact on the organization or company[7]. Organizational impact is often caused by workplace stress is the decline in the quality of performance, high employee turnover, absenteeism at the workplace and reduced levels of job satisfaction. Organizational impact from the very first job stress felt by employees is job dissatisfaction, where job dissatisfaction is caused due to dissatisfaction of employees against the income or the salary they receive[5].

The survey results a foundation based in the city of Amsterdam, namely Wage Indicator Foundation, to workers in Indonesia in 2010 obtained the data that 50% (5,200) of workers are not satisfied with the income or the salary they receive, 19% (1,976) of workers were satisfied with the income or salaries they receive, and 31% (3,224) of workers no matter whether they are satisfied or not with their income. From the results of the survey states that most of the employees were dissatisfied with income or salary they get, this is because the income or salaries of employees feel they get are not in accordance with the pressure and burden on the working environment. While on the other hand employees are also faced with an unstable economic burden and always increasing. Situations like this may pose a risk of fraud in the labor force[8].

Hospital X is an institution belonging to the central government with the status of Public Service Agency (PSA) which is engaged in health services. In conducting business activities and organization, Hospital X involves many medical and non-medical employees to provide complete services to all the people of Indonesia. Based on data obtained from patients who visit the center of the Information and Technology at Hospital X, in 2014 the number of patient visits as many as 25 304 patients, which means that the average patient who should be served by employees is 2,108 patients per month.

Problems of organization or management are other consequences that must be faced by employees and in line with the stressors that arise and complexity of work faced by employees, it could potentially cause job stress and the risk of fraud on employees in the Hospital X, besides the lack of synchronization regulation between units - units of government involved in the management of the hospital as the Public Service Agency (PSA) such as regulations on the management of non-tax revenues (State Income Tax). Management of non-tax revenues in the PSA is not in line with Law No. 20 of 1997 on non-tax revenues, due to non-tax revenues of the PSA can be directly used to finance expenditure PSA either partially or completely. According to article 69 of Law 1 of 2004 on State Treasury emphatically stated that the PSA revenues in connection with services provided along with grants and donations obtained can be used directly to finance spending PSA is concerned, as well as in Article 16, paragraph 1 PP 23, 2005[9].

As stipulated by the Law non-tax revenues and Treasury Law, all non-tax revenues must be paid directly to the state treasury as soon as possible so as to imply that the government is not allowed to perform non-receipt or collection of funds budgeter. If the concept of cash receipts done by simultaneous PSA seen from these two laws then this will cause confusion. This can be an opportunity (opportunities) of the cause of fraud.

METHODS

Design of this research is analytic survey with the type of research design used is cross sectional study (cross-sectional). The reason researchers use the design of this study is to examine the relationship between the independent variables (job stress) with the dependent variable (the risk of fraud) without any treatment or intervention, as well as the measurement of independent and dependent variables is done only once and at the same time. The population in this study are all non-

medical employees in Hospital X Bandung, as many as 110 people. Samples are part of the population that is expected to represent or representative of the population, by using purposive sampling technique, the sample size is as much as 37 people with the following inclusion criteria:

- Samples are employees in Administration, Finance, Purchasing, Human Resources, Information and Technology, and Procurement.
- Sample are employees who have worked for at least 5 years in Administration, Finance, Purchasing, Human Resources, Information and Technology, and Procurement.

This analysis was conducted to determine the relationship between job stress with the risk of fraud on employees at Hospital X. The statistical Chi Square test in this research.

RESULTS

Job stress and the risk of fraud in the respondents

Table 1. Distribution of the frequency of job stress and the risk of fraud at Hospital X in 2015.

Variables	Frequencies	Percentage (%)
Job Stress		
Mild	11	29,7
Moderate	26	70,3
Total	37	100
Fraud Risk		
Low	19	51,4
Moderate	18	48,6
Total	37	100

Based on the analysis results in Table 1 shows that out of 37 employees, the vast majority of employees (70.3%) had moderate job stress and the majority of employees (48.6%) had a moderate risk of fraud.

Relationship between job stress and risk of fraud on employees at Hospital X in 2015

Table 2 Relationship between job stress & fraud risk on employees at Hospital X in 2015.

Job Stress	Fraud Risk				Total	P Value	PR 95% CI	
	Low		Moderate					
	N	%	N	%	N	%		
Mild	9	81,8	2	18,2	11	100	0,040	2,127 (1,215 –
Moderate	10	38,5	16	61,5	26	100		3,725)
Total	19	51,4	18	48,6	37	100		

Based on the analysis of job stress relationship with the risk of fraud in Table 2, it shows that of the 11 employees who experience mild job stress at moderate risk of fraud were 2 employees (18.2%) while the 26 employees who experience moderate job stress at moderate fraud risk were 16 employees (61.5%). Statistical test results obtained p value = 0.040 ($p \leq 0.05$), it can be concluded that there is a significant relationship between job stress with the risk of fraud. Then, from the analysis results obtained PR = 2,127 means that employees who experience moderate job stress have 2 times more likely to have a risk of fraud as compared to employees who experience mild job stress.

DISCUSSION

Work stress experience

Job stress is a condition that causes employees to feel pressured and uncomfortable to change that occur in the workplace because of the knowledge and capabilities of the employees are not in accordance with the stressors that must be addressed so that employees are not able to cope with these conditions, and based on research results showed that out of 37 employees at Hospital X mostly experiencing work stress were as many as 26 employees (70.3%).

Work stress experienced by each employee are different from each other, this is caused by several factors such as expressed by Robbins, among other organizational factors (including the demands of work and a heavy workload, work that requires responsibility high demands of the role, the demand among individuals, as well as the organizational structure), environmental factors (including social, political, and technological), and individual factors (including family issues and economic issues) [6].

Based on the results of the research, employees who experience moderate job stress (75.7%) was largely fueled by the conflict in the workplace such as a dispute with a fellow coworkers working unit or with other work units, disagreements between co-workers, the gap in the workplace, the debate between teamwork, coordination of information between teams working in inadequate and lack of unity among the working team that eventually became stressor occurrence of work stress on employees at Hospital X.

Work placement determines stress level

The results showed that from six units at Hospital X, Finance section is the first rank with employees who are experiencing moderate job stress was the highest 12 out of 21 employees (57.14%) and parts of procurement section is a first rank with employees who are experiencing mild job stress, include 5 of 16 employees (31.25%).

In theory, there is no theory reveal which parts have high levels of job stress highest and lowest, but based journal research entitled Individual Differences and Occupational Stress Perceived: A Croatian Survey, shows that employees in one company in the country Croatia, who works in finance ranked eighth experiencing job stress among 9 other work units (parts Cooperation Operations, Procurement, Production, Sales, Accounts, Marketing, Human Resource, and other work unit), it appears that the difference in ratings between research and journal [10]. This is possible because the stressor earned by each employees are different in each work unit and in every workplace is different [6].

According to the Chief of Mobilization Fund reveal the reason for the first rank of Finance because employees in Finance section have responsibility and different moral burden borne from other work units. Every month, employees at the Finance shall prepare a monthly report on the mobilization of funds in and out to be checked and approved by the head of which would then be examined by an independent team of Internal Control Unit (ICU) and the Corruption Eradication Commission (CEC), as well as the Supervisory Board (SB) every 1 years. But for the head section, every week on Monday get an inspection by the Corruption Eradication Commission (CEC). In addition, financial officers often have to work overtime to complete the billing claims of health insurance.

Moreover, according to the Head of Procurement reveal that reason Procurement Section be ranked first by the number of employees who experience mild job stress the most, due to the work done requires high concentration and accuracy in checking the item number and specifications of the

procurement of goods and services, in addition to the regulations made by government regarding the procurement of goods and services often change so that employees decreased ability to concentrate while working for a lot of things into the mind of an employee who subsequently cause job stress on employees.

Risk of fraud on employees

Based on the results of the research showed that the majority of the 37 employees at Hospital X has a low risk of fraud as many as 19 employees (51.4%). Fraud is any unlawful acts committed by individuals within an organization or institution to gain an illegal advantage of others through manipulation, falsifying truth and good behavior is more deliberate.

Until now there is no theory that definitively reveals the risk of fraud on employees, one of which may be due to the risk of fraud which is owned by each employee is different and the differences between the employees in a unit with other work units, this is a cause of fraud risk in each work unit not always same.

There are three causes of fraud on employees, namely pressure, opportunity and rationalization, hereinafter known as the Fraud Triangle. Rationalization is the cause of fraud the most difficult to identify, the opportunity is the most fundamental cause of fraud, and pressure is a cause of fraud most often occurs[6].

Risk of fraud in different work unit

The results showed that of the six units at the Hospital X, part of Finance section is the first rank with employees who have the highest risk of fraud was 8 of 18 employees (44.44%) and a unit with a rating first with employees who have a low risk of fraud, include 6 of 19 employees (31.57%).

Finance section was the first rank with low and moderate fraud risk, according to the Internal Control Unit (SPI) due to the separation of duties between the officer and the officer authorizing the payment of the purchase as well as the lack of adequate physical security in money and file storage an important file.

In theory no one has revealed the work unit where the risk of fraud the highest and lowest on the employees, but those mentioned above may be a possibility of fraud such as probability theory expressed that the opportunities are factors that most underlying fraud and can appear at any time that is needed oversight and internal controls [5].

The relationship between job stress and risk of fraud on employees

Results of the analysis of relationship between job stress and risk of fraud was found that of 11 employees who experience mild job stress at moderate risk of fraud was that 2 employees (18.2%) while the 26 employees who experience moderate job stress at moderate risk of fraud was that 16 employees (61.5%).

Statistical test results obtained p value = 0.040 ($p \leq 0.05$), it can be concluded that there is a significant relationship between job stress and the risk of fraud. In Table 2 shows that employees who experience mild job stress has a lower risk of fraud than that experienced moderate job stress, this shows job stress is directly proportional to the risk of fraud, so that, higher the stress level of employee the risk of fraud would be even higher and the lower the level of work stress, the lower the risk of fraud which is owned by employees.

Work stress is the response of workers that might arise if the job demands and stressors received does not match with the knowledge and capabilities of workers, so that workers are not able to cope with the situation(11). There are a lot of stressors or causes of job stress on employees, that

organizational factors, environmental factors and individual factors are factors that causes job stress. Meanwhile, reveals that causes job stress that the conditions of work, role conflict, career development and organizational structure[6]. Meanwhile, based on the results of research, the causes of work stress on employees at Hospital X is a conflict at work, problems at work, workloads and responsibilities, activities other than work, lack of social support, lack of ability to concentrate, environment work, and state of health, where the conflict in the workplace is a factor contributing to high job stress in 28 (75.7%) of employees at Hospital X and general health of employees is a factor causing low of job stress 2 (5,4%) employees.

Revealed that the stress of work will have an impact on employee behavior as the behavior of sabotage at work, increased aggressiveness, vandalism, crime, etc., while referring to the results of research showing that a significant relationship between work stress with the risk of fraud[12]. So, it is proved that one act of criminality which is the impact of job stress is fraud or risk of fraud prior to the occurrence of fraud, because fraud itself in Indonesia is one of the criminal act, as stated in Article 378 of the Penal Code and article 55 of the Criminal Code, where any fraud perpetrators will be prosecuted criminal penalties are imprisonment of at least 4 years and a minimum fine of 1 billion rupiah. But criminal penalties and fines may change depending on the demands of the Public Prosecutor and the Judge, in addition to the analysis results obtained $PR = 2,127$ means that employees who experience moderate job stress were 2 times more likely to have a risk of fraud as compared to employees who are experiencing mild job stress.

Therefore, to reduce the risk of fraud it should also reduce the causes of job stress, because of factors that cause or trigger the onset of job stress would be a trigger anyway to the risk of fraud prior to the occurrence of fraud.

However, based on research results obtained in Table 4.2 also result, employees who experience mild job stress turned out to have a moderate risk of fraud. These results are inversely if associated with the relationship between job stress and the risk of fraud, if employees experiencing job stress was low, the risk of fraud would be low and vice versa.

This may be related to individual personality which is easily stressed when faced some pressure and some are able to cope with such pressure so that the lower stress level then likely if the level of job stress on employees are different though to faced same stressors.

Likewise, the risk of fraud may be happened before researchers conducted the study, the risk of fraud on the employee directly proportional to the level of stress but when the researchers conducted a study on the results of these employees become inversely. This can be due to causes or triggers other fraud as stated is the pressure (economic demands; lifestyle; etc.), opportunity and rationalization. So if are associated with job stress relationship with the risk of fraud, it remains proportional.

CONCLUSION AND RECOMMENDATION

Most of the 37 employees of which 26 employees (70.3%) had moderate work stress, and 11 employees (29.7%) had mild work stress. Based on the work unit, category of job stress being experienced by employees is most numerous in the Finance and minor categories of job stress experienced by employees are most numerous in the procurement. Most of the 37 employees of which 18 employees (48.6%) had a moderate risk of fraud, and 19 employees (51.4%) had a lower risk of fraud and based on the work unit, employees who have a low risk of fraud and were most numerous in the Finance section. There is a relationship between job stress and fraud risk ($p\text{-value} = 0.040$).

The hospital is expected to perform measurement job stress and the risk of fraud in the continuum and evaluate the results of this study as prevention of fraud at the Hospital X. In addition, the hospital is expected to reduce the stress levels of employees with activities that are positive and strengthen solidarity between employees such as outbound, brisk walking, recreation with family among employees and gathering, as well as the hospital can do stress management work through multiple strategies approach organizations such as the selection and redeployment, job redesign, participatory decision-making, organizational communication and welfare programs.

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ICASH-A03

**UNMET NEED FOR FAMILY PLANNING PROGRAM; A
SITUATIONAL ANALYSIS OF BIRTH SPACING AND LIMITING
AMONG REPRODUCTIVE AGE WOMEN IN PANGKALPINANG
CITY, BANGKA BELITUNG PROVINCE INDONESIA**

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ABSTRACT

Background: Population growth, become one of priority problems, should be solved in almost all of developing countries, including Indonesia. In 2007, unmet need was 8.6%, inclined to 11.4% in 2015, which is consisted of 4.5% for spacing children and 8.6% for limiting children. Social demography, economic, access to health services, family support and perception revealed have the contribution to unmet need.

Aims: This study aimed to explore unmet need family planning due to birth spacing and limiting situation among reproductive age women in Pangkal Pinang City, Bangka Belitung Province.

Methods: It was survey research used cross-sectional design. The population was women of childbearing age who experienced unmet need of family planning in Pangkal Pinang, 2016. A total of 98 women was taken by proportional random sampling to participate in this study. Data was analyzed using descriptive statistics and used to report the results in the form of frequency distribution and percentage (%) of each item.

Results: Research showed that the most of the unmet need for family planning was among 25-29 years old women. About two third (66.3%) of unmet need women occurred due to the willingness to space the childbirth and 33.7% willing to limit the childbirth. Birth spacing tended to be favored by young mothers, early marriage (1-5 years old), had low parity and had low education attainment. Whilst, limiting childbirth tended to be preferred by women with length of marriage experience (>15 years old), had high parity, older mothers, and secondary education level (senior high school) attainment. Both of spacing and limiting have no difference according to the economic situation. All of them mostly were the household wife from low-income family. Husband support to not use contraception was found in both birth spacing and birth limiting.

Conclusion: The study suggests to provincial health office and national family planning coordination board that family planning program should not just involve the wife, but husband as well due to their high influence in family planning decision.

Keywords: Unmet need, family planning, birth spacing, limiting

INTRODUCTION

World population data sheet 2013, reported Indonesia as the fifth populated nation in the world, consist of 249 million people and the largest among ASEAN countries. Total fertility rate (TFR) showed above average line of ASEAN countries [2.4]. Based on Statistic Indonesia (BPS), 2014, among the number of population in Indonesia (252.164,8 thousand people), about 51% are

female. With the rate of growth of 1.4% per year (2010-2014), it is predicted will reach 337 million people in 20150 [1].

Population growth in Indonesia started to raise again since 2000, while it had declined in several previous decades before. Backward, start in 1969, Indonesia have been implementing family planning program to reduce the population growth. It recorded as one of the successful history worldwide on population program. Family planning program can push down the number of people [2]. However, it changes, now it becomes one of the biggest challenge in Indonesia [1]. Rapid population growth effects many sectors of development in Indonesia. Ministry of Health and National Family Planning Coordination Board (BKKBN) tried hard to evaluate and examine family planning related problems [3].

Family planning program is an effort to limited the number of children spouse should have and how to make space for delivery. It includes contraception methods and family planning strategy. The basic principle of contraception method is to prevent fertilization, how to make sperm can not reach the egg, or how to make fertilized egg can not develop further in the uterus [4].

Succesful history of family planning program in Indonesia was influenced by many factors included family planning related knowledge, perception, adherence to used contraception method, religion support, cultures support, family support and sexual activity [5].

Government has been doing massive socialization related to family planning program, however recently there is still a huge number of unmet need. Unmet need is the condition when specific people, including childbearing age spouses, need the contraception but did not use the contraception [2]. Based on Indonesia demographic and health survey (DHS), the group of people included in this category is all fertile women who were married or living together, which included sexual partners active, who do not want more children or wanting to delay the next child in at least two years but did not use any of the types of contraceptives [6].

The number of unmet need in Indonesia reached 11.4% which is consisted of 4.5% for spacing children and 6.9% limiting children. This number increased compared to previous number 8.7% in 2007. Contraception used prevalence increased from 50% to 62% in 1991 to 2012, however, in last decade it just increased 1%. The percentage of married women who need family planning services in Indonesia is currently around 73%, however, it just about 85% of them has been fulfilled. The reason for the high unmet need mostly related to the socio-demographic and economic factor, access to the services, quality of supply and service planning, lack of information, conflicts in the family and society, lack of information, low support from husband, families and communities, also perception of the risk of pregnancy [8].

Unmet need number varies between provinces, in 2007 the lowest unmet need was 3.2% in Bangka Belitung and the highest 22.4% in Maluku. In 2012 Indonesia Demographic and Health Survey lowest position was Central Kalimantan 7.6% and the highest was Papua 23.8% (8). On the contrary, Bangka Belitung became one of high unmet need province in 2015. The number of spouses in childbearing age was 251,304 people. Of those, 205,072 people were acceptors active, and 28,093 people (11.1%) did not participate in family planning due to the willingness to delay having children and willingness to stop having children (7). Unmet need for family planning in Bangka Belitung spread in six districts, particularly in the urban area. One of the high numbers is Pangkal Pinang district. This study aimed to explore unmet need family planning due to birth spacing and limiting situation among reproductive age women in Pangkal Pinang City, Bangka Belitung Province.

METHODS

This type of research was survey with cross-sectional study to 98 reproductive aged women who stated as the unmet need for family planning at Pangkalpinang, Indonesia, in 2016 report. A sample of 98 respondents used the criteria that reproductive age women between 15-49 years, women who need to space their birth (birth spacing) and unwanted children anymore (birth limiting). This study was to explore unmet need family planning due to birth spacing and limiting situation. Data were analyzed using descriptive analytic to report the results in the form of frequency distribution and percentage (%) of each item. The ethical clearance for the study was approved by the Health Polytechnic of Semarang, Ministry of Health, Republic of Indonesia.

RESULTS

Characteristics of respondents

Table 1. Distribution of Respondent based on characteristics of respondents toward Unmet Need in the Pangkalpinang City 2016

Characteristic	F(n)	Percentage
Age		
Adolescent	9	9,1
Adult	89	90,8
Length of Married		
1-5 years	30	30,6
6-10 years	27	27,6
11-15 years	15	15,3
>15 years	26	26,5
Education		
No Education	1	1
Unpassed primary school	6	6,1
Primary School	19	19,4
Junior High School	14	14,3
Unpassed Senior High School	3	3,1
Senior High School	50	51
Bachelor	5	5,1
Job		
Civil servant	3	3,1
Private employee	5	5,1
Labor	1	1
Trader	24	24,5
Housewife	64	65,3
others	1	1
Income		
<1 million	17	17,3
1-2 million	54	55,1
2-4 million	24	24,5
>4 million	3	3,1
Parity		
0	10	10,2
1-2	66	67,3
3-4	20	20,4
>4	2	2

From Table 1 it can be noted that the highest percentage of unmet need women in Pangkal Pinang is on range of age 25-29 years (33,7%). The length of married is not much varied, respondents

with length married 5 to 10 years have a high percentage of unmet need. (30,6%). Last education of respondents with *unmet need* was senior high school (51%), their work as housewife (65,3%) and income per month around 1 to 2 million (55,1%). Most of the women with unmet need have marital status is married (98%) with parity 1 to 2 children (67,3%).

Table 2. Bivariate Analysis Results Summary

Characteristic	Unmet Need for Family Planning				Total	
	Spacing		Limiting		f	%
	f	%	f	%		
Age						
Adolescent	8	88,9	1	11,1	9	100
Adult	57	64	32	36	89	100
Education						
Under Senior High School	28	65,1	15	34,9	43	100
Senior High School/upper	37	67,3	18	32,7	55	100
Job						
Work	19	55,9	15	44,1	34	100
No Work	46	71,9	18	28,2	64	100
Length of married						
1-5 years	27	90	3	10	30	100
5-10 years	20	74,1	7	25,9	27	100
11-15 years	11	73,7	4	26,7	15	100
>15 years	7	26,9	19	73,1	26	100
Parity						
1-2	59	77,6	17	22,4	76	100
>2	6	27,3	16	72,7	22	100
Income						
<1 million	12	70,6	5	29,4	17	100
1 -2 juta	38	70,4	16	29,6	54	100
>2 juta	15	55,6	12	44,4	27	100
Husband's Role						
Yes	64	66,7	32	33,3	96	100
No	1	50	1	50	2	100
Husband's Attitude						
Agree	59	67	29	33	88	100
Disagree	6	60	4	40	10	100
Discussion about Contraceptive						
Yes	59	69,4	26	30,6	85	100
No	6	46,2	7	53,8	13	100

DISCUSSION

In Indonesia the number of unmet need reached 11% of women in reproductive age, of those 4% were due to spacing, and 7% for limiting childbirth. This figure increased compared to the previous survey resulted 8.6 percent of women in reproductive age. In fact, the prevalence of contraceptive use increased from 50% in 1991 to 62% in 2012, but within the last 10 years of modern contraceptive use increased by only 1% only. The percentage of married women who need family planning services in Indonesia is currently around 73% of which 85% of them have been fulfilled. If all requirements of planning services are met then contraceptive prevalence can be improved from

62% to 73%. From the report IDHS 2012, this data has not changed. As many as 88% of married women have unmet need for family planning services are almost the same as a state in 2007 (87%), meaning that the percentage of new acceptors has not risen significantly only 1% only.

National family planning coordination board try to reduce this number of unmet need, because it revealed as one of leading causes in maternal mortality (75%). This phenomena occurred globally as well. Indonesia's maternal mortality is estimated to increase to 359 / 100,000 live births and if unmet need is not immediately addressed, then this figure will be higher. Women of reproductive age who do not use birth control have high risk to get pregnant and has a great opportunity to experience complications during pregnancy, childbirth and postpartum. This can be caused abortion due to unwanted pregnancy, pregnant spacing, and gave birth too frequent, complications during pregnancy, childbirth and postpartum.

Characteristic of respondents

The highest percentage is women who unmet need in this study were at the age range 25-29 years (33.7%). Unmet need in this age range are targeted delay the child pregnancy. The length of marriage is not vary in this study, respondents with a long marriage between 5 to 10 years old have a high percentage of unmet need (30.6% and 27.6%). Education attainment of respondents mostly are high school (51%), they are housewife (65.3%) with the range of income were between 1 to 2 million rupiah (55.1%). Almost all of the respondents are married (98%) and the rest of them have been divorced. The number of living children they have are about 1 to 2 children (67.3%). According to respondents perception, the ideal number of children are 2 children. Related to health services, they stated that health care are easy to access.

There is a decreasing pattern of the need for birth spacing after reaching the age of 30 years, and for the purpose of limiting childbirth reach the peaked at age 35-44. This is in accordance with the framework analysis of relationship of age with unmet need for family planning that status of unmet will be high in younger women and tend to decrease as the age getting older, it is looks like inverted U-shaped. [9]

Situational analysis of unmet need to space childbirth in Pangkal Pinang

This study found that about two third (66.3%) of unmet need women in Pangkal Pinang occurred due to willingness to space the childbirth. Birth spacing tended to be favoured by young mothers. Previous study, Withers found that younger women were more likely to desire to add children. They still tend to have a willingness to have children, however they want to space the birth [10]. The study conducted in Kenya established that older women tend to have unmet need for child spacing whereas a woman with a bigger family size would necessarily seek for family planning to limit child bearing, and that there is no favourable association between unmet need for family planning and level of education [11]. As age increases, a woman especially from rural area's propensity of having unmet need for family planning to space child bearing decreases. This trend is so consistent that younger women are bound to experience higher risk of unmet need for contraception to space births. As Wangila points out, as women grow older by age, they tend to achieve their desired family sizes [12]. Moreover, older women tend to have a reduced coital frequency, and therefore may not need contraception to space their births [13].

Unmet need for space childbirth in women in Pangkal Pinang revealed mostly from early marriage (1-5 years old) women, had low parity and had low education attainment. It is similar with other research, found that total unmet need is higher among women with larger number of living children and among those who have primary level of education [14]. Woman's level of education can predict her level of unmet need for contraception to space. This is because the lower the level of

education, the greater the chances that such a woman would have unmet need for spacing. Benard reports that women with primary education are most likely to have unmet need for spacing. However, the level of unmet need reduces with rise in educational level, such that individuals with post-secondary education are least likely to experience unmet need to space childbirths [15]. It is arguable that education imparts knowledge on the importance of using contraception to space childbirths. Moreover, education presents a woman with opportunity to interact with other women from diverse cultural and geographical bounds, from which they are able to acquire new information and skills including use of family planning to space births.

Situational analysis of unmet need to limit childbirth in Pangkal Pinang

This study reported that unmet need to limit childbirth tended to be preferred by women with leght marriage experience (>15 years old), had high parity, older mothers and middle education level (senior high school) attainment. This research also found both of spacing and limiting have no difference according to economic situation, all of them mostly were household wife from low income family. Husband support to do not use contraception were found in both birth spacing and birth limiting. Ojaka reports that working women are more likely to report method related reasons for not using family planning methods and are less likely to report opposition to family planning than women who do not work. It is clear that women who are currently employed are less likely to experience unmet need to space compared to women who are not employed [14]. Casterline *et al.* (1997) argue that women who are employed have the capacity to make decision and to purchase contraceptives to space their births [16]. Moreover, it is arguable that currently employed women would need adequate time to concentrate more on their employment-related activities than family matters, as such would opt to space their births [17]. Coupled with the difficulty a woman faces in acquiring maternity leave, many women would not want to frequently seek for maternity leaves from their employers, thus would want to have wider spaces between their births.

CONCLUSION

The percentage of married women ages 15-49 who unmet need is higher in women aged 25-29 years, who have children 1-2, has been married five (5) years or more, secondary education (high school), income of 1-2 million , does not play a role in household decision-making. Most women of childbearing age who never discussed the unmet needs of family planning with their husbands (86.7%) and the attitude of their husbands agree to family planning (89.8%).

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ICASH-A04

**FACTORS AFFECTING EMPLOYEE PERFORMANCE: CASE STUDY
AT PERMATA HATI HOSPITAL RIAU, INDONESIA**

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ABSTRACT

Background: Employees are important factors in the organization to achieve the goal. The employee's performance will affect the quality of service. As we know that patient expectations are getting the best service. From the preliminary survey, we discovered some patient complaints; attitudes, communication and undisciplined by employees. Since last 3 years, the hospital quality service indicator has decreased, BOR (Bed Occupancy Rate) <60-80% (Ministries of health Standard).

Aims: To determine the factors affect the employees' performance in Permata Hati Hospital Riau Indonesia

Methods: This research used the analytical quantitative study design with cross sectional study. The study was carried out in Mei-June 2014 in Permata Hati Hospital. We used questionnaires for collecting data, The sample of the research are employees in the provision of services to patients directly, totally 154 respondents. Consists of: health workers (nurses, midwives, laboratory, pharmacy, radiology, doctor) and administrative and finance personnel. The dependent variable is employees' performance and the independent variables are: leadership, salary, supervision, and training. Processing data using statistical calculation: univariate, bivariate and multivariate with multiple logistic regression test.

Results: There was a significantly strong correlation between independent variables toward the performance of employees (pvalue <0.05). Leadership exerted a significant effect on performance (exp (B) 2.025), salary significant effect on performance (exp (B) 2.029), supervision significant effect on performance exp (B) 1.525) and training significant effect on performance (exp (B) 2.991).

Conclusion: Training is the dominant factor affecting the performance of employees in Permata Hati Hospital. It is a necessary to build a roadmap of continuous training in enhancing the competence and quality of service, monitoring and evaluation of performance and performancebased finance system.

Keywords: employee performance, leadership, supervision, salary, training

INTRODUCTION

Human Resources are the most strategic resource of an organization, so it needs an effort to manage the Human Resources [1]. Deliverables Human Resources is known as performance. The ability of employees to do a specific expertise, individually, or in groups is a must to improve the quality of the organization. Employee performance should be planned on an ongoing basis for improving employee performance is not an instantaneous event but require planning and implementation for a certain period [2].

There are many factors that affect employee performance in the Hospital. They are: education, regulation, financial system, knowledge, personal motivation [3]. Another factors are working environment, salary, service facilities, emotional, work experience, leadership, training, discipline, and organizational culture [4-8].

When the employee performance factors considered, it is expected that organizational goals will be achieved. The indicator can be seen from the level of patient satisfaction increased, decreased employee turnover rate, competence and knowledge increases [9,10]. Effective leadership, can give guidance to the efforts of every employee in achieving organizational goals, and in arranging his subordinates, a leader must be able to know the situation, so as to give problems solving. Good leadership required to develop employees, build loyalty, and increase productivity [11,12]. The size of salary can affects performance, motivation and job satisfaction of employees. If the payments were made correctly and properly, employees will be satisfied and motivated to achieve organizational goals [13]. Employee performance should be measured and directed. So, the supervision activities are necessary to control it [14]. Training is also necessary to increase employee competency [2].

Permata Hati Hospital, established in 1993, class C with 87 beds, is nationally accredited in 2012. Preliminary data obtained through evaluation of the work program of Human Resource Management, there are 20% of patients who complained of the attitude, 15% communication and 10% undisciplined by employees. From the preliminary survey results of 165 employees implementing performance assessment, conducted in November 2013, there were 45 (27.3%) scored less (Hospital Performance Standard).

Indicators of service quality at this hospital, since the last 3 years (2011, 2012 and 2013) has decreased, BOR (Bed Occupancy Rate) (59.5%, 59.3%, 53.2%, (the Ministry of Health indicators = 60-80%) and BTO (Bed Turn over) (73, 65, 76) and (40-50 times = the Ministry of Health Indicators). Based on the background of this study, researchers want to determine factors affect the employees' performance in Permata Hati Hospital.

METHODS

This research used analytical quantitative study design with cross sectional study. The study was carried out in May – June 2014 in Permata Hati Hospital. The sample of the research are employees in the provision of services to patients directly, totally 154 respondents. Consists of: health workers (nurses, midwives, laboratory, pharmacy, radiology, doctor) and administrative and finance personnel. The dependent variable is employees' performance and the independent variables are: leadership, salary, supervision, and training.

The primary data was obtained from questionnaire, whereas the secondary data was obtained from the hospital medical records, textbooks, and other references. Questionnaire is subjective and individual, maybe a questionnaire is the most appropriate measure. Nevertheless, we need to realize that there are certain limitations to this approach in getting the data. Therefore, before the questionnaire given to respondents, we had tested the validity and reliability of the questionnaire, using the histogram graph for data normality.

Respondents were given 14 items questions with a range scale of 1-10. Ranging from 1-6 = disagree, 7-10 = totally agree. Measuring results for the variable of leadership is good (> median 62), salary categorized according to >Rp 1.665 million (City of Standard Minimum Salary), considered good supervision (\geq median 35), training considered adequate when > 2 times training). In this study, processing data using statistical calculation: univariate, bivariate and multivariate with multiple logistic regression test.

RESULTS

From the univariate analysis we discovered that the majority of leadership was good 77.6%, sufficient salary was 50%, supervision was good 62.3% and training > 2 times were 72.7%. From the bivariate analysis, we discovered that there was a strong correlation between the independent variable toward the dependent variable (p value < 0.05). Leadership (p value = 0.017), salary (p value = 0,006), supervision (p value = 0,008) dan training (p value = 0,000) (Tabel 1).

From the multiple linear logistic regression analysis, we discovered that there was a positive and significant correlation between independent variable toward the dependent variable. Leadership exerted a significant effect on performance (exp (B) 2.025), salary significant effect on performance (exp (B) 2.029), supervision significant effect on performance exp (B) 1.525) and training significant effect on performance (exp (B) 2.991). (Tabel 2)

Tabel 1. Result of Bivariate Analysis

Variable	Employee Performance		Description
	P value	POR(95%CI)	
Leadership	0,017	2,289 CI (1,152- 4,551)	Correlation*
Salary	0,006	2,454 CI (1,284- 4,691)	Correlation*
Supervision	0,008	2,467 CI (1,260- 4,829)	Correlation*
Training	0,000	4,043 CI (1,846- 8,857)	Correlation*

* P value < 0.05

Tabel 2 Result of Multivariate Analysis

Variable	P value	POR (95% CI)		
		Exp (B)	Lower	Upper
Leadership	0,100	2,025	0,873	4,700
Salary	0,054	2,029	0,988	4,165
Supervision	0,311	1,525	0,674	3,449
Training	0,010	2,991	1,293	6,921

DISCUSSION

Leadership

In this study, leadership factors affecting employee performance. The process of directing, decision-making, policy and leadership contributions followed by a persuasive approach, teamwork and open communication should be improved. Thus, the quality of service at this hospital can be better.

Leadership is the ability to influence others. There is significant relationship between the leadership and performance of nurses [15,16]. Leadership is important component in managing patients on optimal clinical outcomes. In recent years, there has been improvement in leadership performance appraisal. An accurate assessment of the performance leadership is an important role in the development and improvement of leadership in healthcare organizations [17]

This is according to the theory, pattern or style of leadership that is accompanied by a manager's leadership style will greatly influence the effectiveness of a leader. When employees have the skills on the job, the employee will be easier to achieve the expected performance [18]. The ability and leadership skills in nursing service will make it effective and efficient. The leader is the driving force in a good organization for the resources and tools through taking the decisions, policies and influence others to achieve organizational goals [19]

Leadership competencies defined as leadership skills and behaviors that contribute to superior performance. By using a competency-based approach to leadership, organizations can identify and develop the next generation of leaders [20]. The ability to inspire not only dependent on the charisma of the leader, but also communication skills and the implementation [21]

Salary

In this study, salary factor affects on employee performance. Keep in performance-based reward system so that it can accommodate the basic principles of management reward of justice, solidarity, openness, and commitment in the performance assessment. Salary is everything that is received by employees as remuneration for their work and dedication. The size of salary can affect to performance, motivation and job satisfaction of employees. If the payments were made correctly and properly, employees will be satisfied and motivated to achieve organizational goals. The amount of salary is affected by the position of the work and education of employees. The higher the salary received will motivate employees to have good performance [22]. Salary for employee is complex and interrelated. Need implementation of performance-based financing system, Moreover, bonuses also have features of which health workers can take advantage within their income utilization strategies [23].

Supervision

In this study, supervision factor affects on employee performance. Supervision is control efforts undertaken by the leadership in monitoring, directing, evaluating and rewarding the employees based on the results (outcomes). In the meantime, supervision is not only on the outcome, but also on the behavior/ activity. In supervision that is based on employee behavior (behavior-based control), the main thing is to motivate employees to perform work program implementation strategy appropriately [14].

In general, supervision is direct and periodically observation by the "manager" on the work that is performed "staff" to later if problems were found, immediately he/she would give assistance. Supervision can also be defined as a process which stimulates the members of work units to contribute actively and positively in order to achieve organizational goals [24]. Supervision requires active participation in the service, as partners who have ideas, opinions and experiences that need to be heard, appreciated, and included in process improvement and documentation of nursing care administration [25]

Training

In this study, training is the dominant factor affecting employee performance. When employees are competent in performing work, it is expected that the service provided is better and indicators of quality of care at the hospital will be increased. Training and development are two terms that are interconnected. They are intended to plan a design to facilitate improving skill, knowledge, attitude and behavior of members of the organization, with the goal. Training is used to improve the performance of employees that lead to improved results. Training can be seen as one of several possible solutions to improve the performance [2]. Need strategies in the delivery of training and development support facilities in order to enhance the capabilities and knowledge [26]. Need formal training to improve skills and knowledge [27, 28]

CONCLUSION

In this study, there is significant relationship between independent variables (leadership, salary, supervision and training) toward the performance of employees in Permata Hati Hospital, Riau, Indonesia, and training is the dominant factor. Need roadmap of continuous training, preparing

the supporting facilities, availability of information and technology in improving the competence and quality of service, monitoring and evaluation of the performance of routine periodic and system performance-based finance system, so as can accommodate the basic principles of management reward of justice, solidarity, openness, commitment in performance assessment

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ICASH-A05

KNOWLEDGE AND MOTIVATION OF WOMAN IN REPRODUCTIVE AGE GIVEN HEALTH EDUCATION ABOUT EARLY DETECTION OF CERVICAL CANCER

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ABSTRACT

Background: Cancer is a serious threat to public health because the incidence and its death rates is inarpasing to increase every year. Cancer of the cervix is one of the malignancies or neoplasms that occur in the cervix, which is the lowest part of the uterus that protrudes into the peak hole intercourse (vaginal). In to control cervical cancer, the government is targeting at least 80% of women aged 30-50 years old do early detection every 5 years. Early detection by using IVA (visual inspection with acetate acid) is not much known by the public One of the methods to expand the information about it is to provide health education wich can increase knowledge and motivation of woman in reproductive age to do for the early detection of cervical cancer. This study aimed to analyze the differences of knowledge and motivation woman in reproductive age before and after health education about cervical cancer early detection.

Method: The study design used pre-experimentalpre-post test one group design with the intervention of health education. The population was all woman in reproductive in Sidomukti Village District of Semarang District Bandungan as many as 875 people. The Samples were 27 respondents using proportional random sampling technique. Measuring instrument used questionnaires. The data analysis used Wilcoxon test.

Results: The results showed thatthere caresignificantdifferences of knowledge and motivation of woman in reproductive age given before and after health education about early detection of cervical cancer in rural Sidomukti Bandungan district of Semarang district. which Wilcoxon test result showed $p_{value} = 0,000 < \alpha (0,05)$.

Conclusion: It is hoped than is more health education or disseminate information about early detection of cervical cancer with IVA (visual inspection with acetate acid) method. This can be done through the provision of information, such as counseling or providing information directly to the mother while visiting health facilities so that the incidence of cervical cancer can be lowered.

Keywords: Health education, Knowledge, Motivation, Cervical Cancer

INTRODUCTION

Cancer is a serious threat to public health because of the incidence and death rates continue to increase from year to year. Because it is a major problem throughout the world where 12.5% of deaths caused by cancer, surpassing deaths from HIV/AIDS, Tuberculosis, and Malaria are merged into one [1]. Deaths due to cancer ranks second after death due to infection, cancer most commonly sufferers in the world, including Indonesia is a cancer of the cervix, breast, colon, nasopharynx, and lung. These cancers commonly known as the big five [2].

Cancer of the cervix is one of the malignancies or neoplasms that occur in the cervix, which is the lowest part of the uterus that protrudes into the vaginal intercourse (vaginal). Currently around the world is estimated at more than 1 million women suffer from cervical cancer and 3-7 million women have a high degree of precancerous lesions/high grade dysplasia [3]. How early detection of the simplest is IVA (visual inspection with acetate acid). By visual inspection after acetic acid or acetate shed 2% -5% in the cervix [4]. In cervical cancer control, the Government is targeting at least 80% of women aged 30-50 years of early detection every 5 years. The number of Indonesian women aged 30-50 years is approximately 35 million (35,950,765 people). Up to 2012 the number of women who had been screened by the method of IVA approximately 575.503 people. Showed as many as 25.805 people (4.5%) positive cervical cancer and cervical cancer suspected 666 people with a ratio of 1.2 per 1000. Scope This early detection can be improved with hard work, smart work, and innovation along the whole society [3].

Early detection efforts by way of an IVA (visual inspection with acetate acid) is not widely known by the public. One method to disseminate information about early detection is to conduct health education. Health information can be done with interactive lecture method is an effort that can be used in order to be able to guarantee an increase in knowledge, attitude and behavior change. This study aimed to analyze the differences of knowledge and motivation woman in reproductive age before and after health education about cervical cancer early detection.

METHODS

The study design used pre-experimental pre-post test one group design with the intervention of health education. The population was all woman in reproductive in Sidomukti Village District of Semarang District Bandungan as many as 875 people. The Samples were 27 respondents using proportional random sampling technique. The dependent variable in this study is the knowledge and motivation of women of reproductive age and the independent variable is health education. The study was conducted in the Sidomukti Village District of Semarang because in these areas the incidence of cervical cancer is very high and the lack of knowledge about cervical cancer due to a lack of resources knowledge and education is very low. Calculation of minimum sample size was done using the difference between two test - to the 5% significance level, test the strength of 95% and a two-sided hypothesis test is calculated based on the formula of sample size. Topics to be used when the extension is on early detection of cervical cancer using IVA (visual inspection with acetate acid). Measurement of knowledge and motivation using a questionnaire, before doing the research questionnaire already tested the validity with characteristic the same place where the research. Classification of the value of knowledge and motivation with Low 0-55% categorization, Medium 56-75%, and High 76-100%. Measuring instrument used questionnaires. The number of questions either on the knowledge or motivation questionnaire was 15 items. The data analysis used Wilcoxon test.

RESULTS

Tabel 1. Frequency Distribution Based Knowledge Women in Reproductive Age

Knowledge	Before Health Education		After Health Education	
	Frequency	Percentage	Frequency	Percentage
Low	14	51,9	3	11,1
Moderate	9	33,3	13	48,1
High	4	14,8	11	40,7
Total	27		27	

Tabel 2. Frequency Distribution Based Motivation Women in Reproductive Age

Motivation	Before Health Education		After Health Education	
	Frequency	Percentage	Frequency	Percentage
Low	18	66,7	2	7,4
Moderate	5	18,5	14	51,9
High	4	14,8	11	40,7
Total	27		27	

Table 3. Knowledge and Motivation Level Women in Reproductive Age before and after Given Health Education

Variabel	N	Mean Rank	Z	p-value
Knowledge pre education- post education	27	9,00	-4,025	0,000
Motivation pre education- post education	27	10,00	-4,065	0,000

*) performs by Wilcoxon's Test

Based on Wilcoxon's test was obtained p-value of 0.001. It is seen that the p-value $0,001 < \alpha 0,05$, this indicates that there is a significant difference level of knowledge women in reproductive age before and after given health education in the Village Sidomukti Bandungan District of Semarang District. The results of the Wilcoxon's test for motivation obtained p-value of 0.001. It is seen that the p-value $0,001 < \alpha 0,05$. this indicates that there is a significant difference level of motivation women in reproductive age before and after given health education in the Village Sidomukti Bandungan District of Semarang District.

DISCUSSION

Statistical analysis showed knowledge women in reproductive age before being given health education on early detection of cervical cancer with a lower category of 14 respondents (51.9%), moderate 9 respondents (33.3%), high 4 respondents (14.8%). While knowledge women in reproductive age after given health education on early detection of cervical cancer with a low category 3 respondents (11.1%), moderate 13 respondents (48.1%), high 11 respondents (40.7%). Thus women in reproductive age knowledge before and after health education about early detection of cervical cancer increased. Respondents had understanding on the definition, signs and symptoms, causes, prevention, treatment, understanding IVA (visual inspection with acetate acid) and benefit checks.

At the time of provision of health education there is a change of perception, so that respondents obtain new knowledge and experience. This is seen when the provision of health education, respondents seemed enthusiastic attention to the material provided. Given the attention it will bring a boost curiosity of self respondents who finally made the change in perceptions about the early detection of cervical cancer after a given health education. Curiosity is obtained due to the

stimulation of the provision of health education by way of interesting methods and languages easily understood by respondents [5].

Health education is a process where a person acquires the knowledge, capability and basic that makes them capable or not capable of being a member of a group. This understanding view of socialization as a learning process in which individuals learn and gain value from groups entered. The aim is to improve the knowledge women in reproductive age about early detection of cervical cancer is needed to establish a person's life in a society member.

Wilcoxon test results, obtained p-value of 0.000. It is seen that the p-value $0,000 < (0.05)$, this indicates that there is a significant difference women in reproductive age motivation levels before and after health education about early detection of cervical cancer in the Village Sidomukti Bandungan District of Semarang District. Lack of knowledge of mothers about early detection of cervical cancer by using an IVA (visual inspection with acetate acid) before getting health education due largely women in reproductive age had not received health education about early detection of cervical cancer. So the lack of this knowledge can have an impact on the lack of motivation to do the inspection IVA (visual inspection with acetate acid).

This study used the lecture method is a method that is easy to understand, to increase the motivation there are two ways or methods, the first using the direct method (Direct Motivation) where the direct method is to provide the material and non-material to the directly to meet the needs of a way to increase motivation. The second method of indirect (Indirect motivation) the provision of a facility or health facilities. Understanding already present women in reproductive age then cultivate an awareness to avoid cervical cancer. With these expectations respondents try to apply changes to act on yourself to get the desire to be achieved by starting with changes in self-motivation given after health education [5].

This is reinforced by the statement Fitriatul that the health education and health promotion is a form of intervention or efforts addressed to the behavior, so that the behavior conducive to health. In other words, the extension to strive for the behavior of individuals, groups and communities have a positive effect on maintaining and improving health.

CONCLUSION

There are significant differences between knowledge and motivation WUS before and after health education about early detection of cervical cancer by pvalue = $0,000 < \alpha (0.05)$, with low knowledge category as many as three respondents (11.1%), while as many as 13 respondents (48.1%) and well as much as 11 respondents (40.7%), and low motivation categories as much as 2 respondents (7.4%), being as much as 14 respondents (51.9%) and well as much as 11 respondents (40.7%). It is hoped than is more health education or disseminate information about early detection of cervical cancer with IVA method. This can be done through the provision of information, such as counseling or providing information directly to the mother while visiting health facilities so that the incidence of cervical cancer can be lowered.

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ICASH-A06

**PREGNANCY EXERCISES AND DELIVERY PROCESS IN MOTHERS
GIVING BIRTH AT SUMOWONO HEALTH CENTER SEMARANG
REGENCY**

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ABSTRACT

Background: *Pregnancy exercise is a therapy to prepare pregnant women either physically or mentally, so that the delivery can take place spontaneously. The delivery process is a process of releasing the fetus from the uterus to the outside of the uterus through the birth canal. This study aimed to find the correlation between pregnancy exercises and delivery process in mothers giving birth.*

Method: *This was a descriptive-correlative study with cross sectional approach. The data sampling used purposive sampling technique. The population in this study was all mothers who attended the pregnancy exercises in period from January to December 2014 in the region of Sumowono Health Center Semarang Regency. The samples were 132 respondents. The data analysis used Chi Square test.*

Results: *The results of this study indicated that the mothers who attended the pregnancy exercises regularly and had spontaneous delivery were 88.2%. While the mothers who attended the pregnancy exercises regularly and did not have spontaneous delivery were 56.4%. Based on the Chi Square test obtained p-value of $0.000 < \alpha (0.05)$ so that it could be concluded that there was a significant correlation between pregnancy exercises and delivery process in mothers giving birth at Sumowono Health Center Semarang Regency.*

Conclusion: *It shows that by implementing pregnancy exercises on a regular basis can help the delivery process. Therefore, every pregnant woman is expected to attend and participate in the pregnancy class in their neighborhood.*

Keywords: *Pregnancy exercises, Delivery process*

INTRODUCTION

Each delivery has risks to both mother and fetus, such as pain until death threat. If the mother or fetus is in a condition that causes the complications of childbirth, then to immediately rescue them, we need to make deliveries to the action that vaginal delivery with an action certain tools, such as with forceps, vacuum extraction, or action per abdominal that cesarean section [1]. Labor with action impact on maternal and infant morbidity. Vaginal delivery action with a vacuum or forceps, can increase the danger of tearing the birth and postpartum hemorrhage which is a causative factor of 2.5-5% of maternal deaths, while the act of cesarean section was 14% and the long process of wound healing incisions are at high risk of infection [1].

To deal with labor to be normal by following pregnancy exercise. Pregnancy exercise was instrumental in preparing the process of the birth of pregnant women due to changes in the physical and psychological changes they experienced. With the body fit and healthy, pregnant women can still carry out daily routine tasks, reduce stress from anxiety faced before delivery [2]

Research in 2010 from 132 women the result is significant effect between pregnancy exercise with the birth process in duration stage II of labor with p value = 0.014 [3]. Research in 2012 from 24 respondents obtained p value of 0.001 indicating a significant effect between pregnancy exercises on the long second stage of labor on maternal [4]. Concluded that pregnancy exercise shortening the duration of labor, reducing the incidence of prolonged labor, lower the racing action in the first stage and improve the way of spontaneous labor.

This study aimed to find the correlation between pregnancy exercises and delivery process in mothers giving birth.

METHODS

This type of research used in this research is descriptive correlative. The design used in this study is cross-sectional design. The independent variables in this study is a pregnancy exercise. The dependent variable in this study is the delivery process. Sample was 132 mothers who follow pregnancy exercise in Community Health Center Sumowono Semarang District who meet the criteria. Sampling technique used was purposive sampling.

Inclusion criteria was that following the Mother's maternity pregnancy exercise and recorded in Community Health Center working area Sumowono Semarang regency period from January to December, 2014. Exclusion criteria were used in this study is Interpretation of fetal weight >4000 g, Contraindications pregnancy exercise such as preeclampsia, placenta previa, hypertension, bleeding or recurrent miscarriage in a previous pregnancy, premature rupture of membranes, anemia. a narrow pelvis. Regularity pregnancy exercise in Community Health Center Sumowono Semarang District pregnancy exercise more due to the implementation of an already scheduled is once a week The data analysis used Chi Square test.

RESULTS

Table 1. Frequency Distribution Based on Maternal Maternity Pregnant Exercise in Community Health Center Sumowono Semarang District 2014

Pregnancy Exercise	Frequency	Percentage (%)
Irregular	39	29,5
Regular	93	70,5
Total	132	100,0

Table 2. Frequency Distribution Based on Maternal Maternity Delivery Process in Community Health Center Sumowono Semarang District 2014

Delivery process	Frequency	Percentage (%)
not Spontaneous	28	21,2
Spontaneous	104	78,8
Total	132	100,0

Table 3. Correlation Exercise Pregnant against Mother Maternity Delivery Process in Community Health Center Sumowono Semarang District 2014

Pregnancy Exercise	Delivery process				Total		p-value
	not Spontaneous		Spontaneous		f	%	
	F	%	F	%			
Irregular	17	43,6	22	56,4	39	100	0,000
Regular	11	11,8	82	88,2	93	100	
Total	28	21,2	104	78,8	132	100	

Based on the survey results revealed the data that the 132 respondents follows pregnancy exercise there are 93 respondents (70.5%) were organized in following pregnancy exercise. And there are 39 respondents (29.5%) were irregular in following pregnancy exercise. Based on the obtained Chi Square test p-value 0,000. Therefore, $p\text{-value} = 0.000 < \alpha (0.05)$, it was concluded that there a significant association between pregnancy exercise against labor on birth mothers in Puskesmas Sumowono Semarang regency.

DISCUSSION

Pregnancy exercise in Indonesia has long been a part of the Loving Mother program. Pregnancy exercise applied in Semarang district through private midwives each sub-districts in Semarang. Sumowono districts is one area that has health center with a regular pregnancy exercise program and the active participants. Pregnancy exercise is scheduled once a week in private midwife working area of Puskesmas Sumowono

Based on the results of research using Chi-Square test has been obtained p-value of 0.000 ($p < 0.05$), then H_0 is rejected and H_a is received, it can be concluded that there is a relationship between pregnancy exercise with deliveries in Community Health Center Sumowono Semarang regency.

In this study, mothers who do pregnancy exercise regularly experiencing a process of spontaneous labor 82 respondents (88.2%). While mothers who do pregnancy exercise irregularly who experience spontaneous labor 22 respondents (56.4%). It shows that women who experienced spontaneous labor process is more likely to occur in women who undergo pregnancy exercise regularly than women who undergo pregnancy exercise irregularly.

Pregnancy exercise is one form of exercise that help pregnant women obtain good power so as to expedite the delivery process. Exercise during pregnancy will benefit psychologically, because of fear and anxiety in pregnancy and childbirth can cause rigidity of the muscles of the birth canal so that the delivery run is not normal. With regular practice contractions uterus become better and can give strength to the muscles of the pelvic floor, the muscles of the abdominal wall so that labor becomes shorter and the delivery process can take place spontaneously [5]. One exercise strengthens and maintains elasticity are exercises that strengthen pelvic floor muscles are flexing their usefulness strong pelvic floor muscles in a relaxed state. At the time of straining the muscle will relax actively so that the baby's head will come out easily, thus will expedite the delivery process [6]

Pregnancy exercise regularly may help delivery process takes place spontaneously. Increasing the strength needed during delivery will be formed muscles and strong compared to women who rarely or never followed through pregnancy exercise. Mothers who do not follow the pregnancy exercise frequently or regularly mostly experienced labor is not normal for mothers rarely or never followed through physical exercises or sports during pregnancy so that the muscles of the abdominal wall and muscles of the pelvic floor becomes stiff and not can function perfectly in labor [7].

Based on the data, that there are other factors associated with pregnancy exercise, that is education, age, occupation, and the number of births. From the data obtained, majority of respondents are in the age group 20-35 years. The age group 20-35 years is the age of mature both mentally and physically. The readiness of pregnant women in antenatal care to follow in accordance with the changes that occur due to the interaction with age and experience background [8]. Specific age ranges both to perform the role of antenatal care, when too young or too old may not be able to play such a role optimally. This is supported study 2010 that pregnant women aged 20-35 years, uterus and other organs are ready to accept the pregnancy and expected to be able to more attention for her pregnancy.

The results education also showed that respondents with a basic level, medium or high equally likely to do or not to do gymnastics pregnant. Higher education is not always a positive effect on behavior, including in terms of pregnancy exercise. Likewise, low education does not always influence the negative behavior. Respondents who do not work have more time to perform daily activities and go to health care for pregnancy exercise.

The number of births in the first pregnancy pregnant women will more attention to the condition of pregnancy. On the first pregnancy antenatal care was a new experience so that mothers have a high motivation in checkups in health care as well as participate in activities doing gymnastics pregnant, which aims to make pregnancy and delivery process runs smoothly. Conversely, the more a history of childbirth, went for a health check is reduced, because pregnant women have previous experience that causes less motivated checkups and no exception to conduct pregnancy exercise.

Research in 2010 from 132 women the result is significant effect between pregnancy exercise with the birth process in duration stage II of labor with p value = 0.014 [2]. Research in 2012 from 24 respondents obtained p value of 0.001 indicating a significant effect between pregnancy exercises on the long second stage of labor on maternal [3].

With the influence of pregnancy exercise on the process during childbirth it is expected that every pregnant woman should be able to prepare both physically and mentally to face the future delivery, one is to do pregnant exercises.

CONCLUSION

There was a significant association between pregnancy exercise with childbirth on women giving birth in Community Health Center Sumowono Semarang District (p value < 0.05). By doing exercise pregnant once a week can help with spontaneous labor, in this study mothers who do pregnancy exercise regularly experiencing a process of spontaneous labor 82 respondents (88.2%). Expected to cross-sector cooperation between government and private sectors, one of which is to provide education about the benefits of pregnancy exercise in offices or community environment, so it is not only women but also men and family members can know and support for pregnancy exercise improve physical and mental health of pregnant women.

Researchers can then conduct further research on pregnancy exercise and other factors that affect labor.

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ICASH-A07

**FACTORS AFFECTING THE OCCURRENCE CARIES DENTAL
ON ELEMENTARY SCHOOL STUDENTS IN SD N PADANGSARI II
BANYUMANIK SEMARANG**

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ABSTRACT

Background: Caries is the problems that were encountered in the field of dental health. Dental caries is an important issue for school student because it not only causes complaints of pain, but also spread the infection to other parts of the body resulting in declining productivity.

This study aims to determine what factors are likely to influence the case of caries in elementary school student Padangsari II District Banyumanik 2016.

Methods: This type of research used descriptive analysis with Cross sectional. Samples in this study were 50 students in grade 5 SDN Padasari II who have dental caries remains were taken with purposive sampling method. Collecting data in this study using clinical examination and the distribution of questionnaires. The questionnaire used in this study had previously been through validity and reliability test conducted on 35 students of SDN Meteseh District Tembalang. Methods of analysis used data using statistical calculations using Linear Logistic Regression Test.

Results: The results in the region Padangsari II showed that the Plaque Index value $exp(B) = 5,667$, behavioral factors (knowledge $exp(B) = 3.000$, Attitude $exp(B) = 3.000$, factors action $exp(B) = 2,333$, salivary hydration $exp(B) = 1,520$, salivary viscosity $exp(B) = 1,500$, salivary pH $exp(B) = 1.222$. OHIS $exp(B) = 1.143$, the factor of health care $exp(B) = 0,667$, heredity $exp(B) = 0.667$, environmental factors $exp(B) = 0.429$.

Conclusion: In this study it can be concluded that the plaque index is the biggestt factor in influencing the cavity on the case if community health centers in the region Padangsari II. Because it has the highest score is $exp(B) = 5,667$.

Keywords: Caries, internal factors, external factors

INTRODUCTION

Maintenance of oral hygiene is one way to improve health [1]. In Indonesia as many as 89% of children under 12 years old suffer from gum disease. Gum disease, will affect the health of the growth process and even a child's future. Children are vulnerable to nutritional deficiencies. The pain in the teeth and mouth clearly lowers child's appetite. Another impact a child's learning ability was down so it will obviously affect the learning achievement until the disappearance of the child's future. The one of disease that common in school-age children is dental and oral diseases. Dental caries is a dental hard tissue damage that is chronic and is caused by the activity of microorganisms that lead to dental caries [2]. Increased prevalence of caries in general is influenced by two factors, namely the risk factors and factor modification [3]. Factors directly cause caries is identified as a risk factor. The risk factors consisted of oral hygiene or dental and oral hygiene, bacteria, saliva and chew patterns

modification factor is the factor that indirectly cause caries, but the effect on the development of caries. These factors are age, heredity, gender, social factors and geografis [4].

The prevalence of oral and dental problems in Indonesia in 2013 was 25.9%, while the national prevalence rate brushing teeth every day is 94.2%. In Central Java, the prevalence of oral and dental problems in 2013 was 25.4%. DMF-T index illustrates the severity of tooth decay. DMF-T Index is the sum of the index D-T, M-T, and F-T. DMF-T index increases with age. The national prevalence of DMF-T index was 4.6%. While in Central Java was 4.3% [5].

Based on the results of Preliminary Study in SD Padangsari II Banyumanik Semarang on 18-21 January 2016 with the number of 440 students showed total DMF-T on elementary students Padangsari II is 731 where D = 725, M = 0, F = 8 with an average DMF-T was 3.3 with the criteria being and total def-t was in 1605 where d = 1500, e = 60, f = 45 with bad criteria and average OHIS was 1.5 with the criteria of being where DI = 1.3 and CI = 0.2. In the calculation of the priority problems using ultrasoundgraphy methods.

The purpose of this study was to determine what are the factors that cause caries on primary school students at SDN Padangsari II Banyumanik. Semarang.

METHODS

This type of research used descriptive analysis with Cross sectional. The technique of data collection is Survey. The sample in this study were 50 students taken with purposive sampling technique. Gay formula based on the method descriptive of at least 10% of the population and for a relatively small population of at least 20% [6].

Techniques of data retrieval is done through two phases. First, to determine the internal factors. Data obtained through clinical examination directly to the respondent. On clinical examination will receive the data in the form of a state of dental caries, the salivary pH , plaque index, salivary viscosity, salivary hydration, OHIS. Data obtained from this first phase of the data collection will be affected variable data and data on variable factors influence clinical causes.

The second phase to determine the external factors. Data obtained by filling a questionnaire by the respondent with the guidance and the guidance of researchers. Data obtained from the questionnaires is a non-clinical data is a factor in the variable influences.

Causes factor analysis test in this study using logistic regression. Logistic regression is a test for risk factors used in identifying / determining the causal factors because there are elements estimate the likelihood of an effect.

Then, as the causative factor is identified, do tackle the problem of proposing an alternative plan. In determining an alternative way out usually we collided with some way out. Therefore, to find alternatives which will take precedence will be assisted by a method Rinke (MIVC) [7].

RESULTS

Based on the results of research on the factors cavities on elementary students at SDN Padangsari II Semarang after analysis testing linear logistic regression was then obtained sequences corresponding cause of the problem of cases are most at risk are as follows.

Plaque index factors has a value of exp (B) 5.667 so the plaque index factor is a risk factor, which means that the respondent by a factor of bad plaque index will likely occur 5.667 times for dental caries.

The knowledge factor has the value exp (B) 3,000 so the knowledge factor is a risk factor for poor would likely occur 3,000 times for dental caries.

The attitude factor has the value exp (B) 3,000 so the attitude factor is a risk factor for dental caries remains, which means that respondents with a bad attitude factor that will likely occur 3,000 times for dental caries.

The practice has value factor exp (B) 2,333 practices that factor is a risk factor for dental caries remains, which means the respondent by a factor of bad practice will likely occur 2,333 times for dental caries.

Salivary hydration factor has the value exp (B) 1,520 so that the saliva hydration factor is a risk factor for dental caries, which means that respondents with poor salivary hydration factor will likely occur 1,520 times for dental caries.

The salivary viscosity has a value factor exp (B) 1,500 so that the salivary viscosity factor is a risk factor for dental caries, which means that respondents with a bad of salivary viscosity factors will likely occur 1,500 times for dental caries.

The salivary pH factor has the value exp (B) 1.222 so Salivary pH factor is a risk factor for dental caries, which means that respondents with poor salivary pH factor will likely occur 1,222 times for dental caries.

The OHIS factor has the value exp (B) 1.143 to factor OHIS a risk factor for dental caries, which means that respondents with poor OHIS factors will likely occur 1,143 times for dental caries.

Health Care values obtained for exp (B) 0.667 to factor health services do not have the risk factors and preventive nature.

The heredity value exp (B) 0.667 to heredity as a deterrent. For environmental factors value exp (B) 0.429 to heredity as a deterrent.

Table 1. Cause of the Problem Corresponding Sequence from the Most Risky Cases

No	Independent Variables	exp (B)	Intrepretation
1	Plak index	5,667	Cause
2	Knowledge	3,000	Cause
3	Attitude	3,000	Cause
4	Practice	2,333	Cause
5	Saliva Hidration	1,520	Cause
6	Saliva Viscosity	1,500	Cause
7	pH Saliva	1,222	Cause
8	OHIS	1,143	Cause
9	Health Care	0,667	Cause
10	Heredity	0,667	Cause
11	Environtment	0,429	Cause

Based on table 1 show the result of Regression Logistic Linier Test Analysis found the cause of the problem corresponding sequence from the most risky cases are as follows:

Plaque index factors has a value of exp (B) 5.667 so the plaque index factor is a risk factor, which means that the respondent by a factor of bad plaque index will likely occur 5.667 times for dental caries.

The knowledge factor has the value exp (B) 3,000 so the knowledge factor is a risk factor for poor would likely occur 3,000 times for dental caries.

The attitude factor has the value exp (B) 3,000 so the attitude factor is a risk factor for dental caries remains, which means that respondents with a bad attitude factor that will likely occur 3,000 times for dental caries.

The practice has value factor exp (B) 2,333 so that the attitude factor is a risk factor for dental caries remains, which means that respondents with a bad attitude factor that will likely occur 2,333 times for dental caries.

The hydration saliva factor has the value exp (B) 1,520 so that the hydration saliva factor is a risk factor for dental caries, which means that respondents with bad saliva hydration factor will likely occur 1,520 times for dental caries.

The viscosity of saliva factor has a value exp (B) 1,500 so that the viscosity saliva factor is a risk factor for dental caries, which means that respondents with a bad viscosity of saliva factors will likely occur 1,500 times for dental caries.

The salivary pH factor has the value exp (B) 1.222 so Salivary pH factor is a risk factor for dental caries, which means that respondents with bad Salivary pH factor will likely occur 1,222 times for dental caries.

The OHIS factor has the value exp (B) 1.143 so OHIS factor is a risk factor for dental caries, which means that respondents with poor OHIS factors will likely occur 1,143 times for dental caries.

The Health Care factor has the value obtained for exp (B) 0.667 to health care factor so that the health service factors do not have the risk factors and preventive nature.

The heredity factor has the value exp (B) 0.667 so heredity as a deterrent. for environmental factors value exp (B) 0.429 to heredity as a deterrent.

Tabel 2. Way Out Recommendation

No	Problem Cause Factor	Way Out Alternative
1	Plak index	a. Dental Health Education
		b. Cadre Training
		c. Mass Teeth Brushing Programme
2	Knowledge	a. Dental Health Education
		b. Cadre Training
3	Attitude	a. Dental Health Education
		b. Cadre Training
		c. Mass Teeth Brushing Programme
4	Practice	a. Dental Health Education
		b. Cadre Training
		c. Mass Teeth Brushing Programme
5	Salivary Hydration	a. Dental Health Education

		b.	Cadre Training
6	Salivary Viscosity	a.	Dental Health Education
		b.	Cadre Training
		c.	Mass Teeth Brushing Programme
7	Salivary pH	a.	Dental Health Education
		b.	Cadre Training
		c.	Mass Teeth Brushing Programme
8	OHIS	a.	Dental Health Education
		b.	Cadre Training
		c.	Mass Teeth Brushing Programme
9	Health Care	a.	Dental Health Education
		b.	Cadre Training
10	Heredity	a.	Dental Health Education
		a.	Dental Health Education
11	Environment	b.	Cadre Training
		c.	Mass Teeth Brushing Programme

The findings in Table 1 show a significant correlation between the causes of the occurrence of dental caries, and then table 2 show the plan or propose an alternative way out. Based on table 2 we arrange the Sequence of Planning Way Out Alternative. Here is an alternative way out based on the value expn (B) were obtained:

Table 3. Sequence of Planning Way Out Alternative

Way Out Alternative	M	I	C	V	Total	Priority
Dental Health Education	5	3	4	4	15	I
Cadre Training	3	4	2	3	8	III
Mass Teeth Brush Programme	4	2	3	2	12	II

A top priority of dispute resolution alternative is education about oral health. Alternative becomes the last priority is to do the training of cadres UKGS as the extension of health personnel so promotive oral health.

DISCUSSION

Problem Analysis

PI (plaque index) factor is a causative factor. Dental plaque acid production is a trigger factor of dental caries, and is the most important risk factor against tooth demineralization process [8]. Control of dental plaque in children of school age most efficient is to brush their teeth. Children who do not brush their teeth before going to bed at high risk of caries incidence [9]. Measurement of dental plaque is a major procedure that must be done to identify the risk factors and severity of dental caries.

This is due to lack of knowledge about how to prevent oral health, especially in terms of using water to rinse clean after eating, lack of awareness of respondents to check their teeth every six months and the majority of respondents still eating foods cariogenic [10].

Knowledge, practice and attitude factors expressed as a causes factor. This shows that behavioral factors on respondents are less good [11]. Knowledge in case rinse using clean water is lacking. Time brushing your teeth after breakfast in the morning is still not correct and the lack of

awareness in terms of gear teeth checked if the pain as much. Attitude that is less that in the case of teeth checked every 6 months.

Saliva hydration factor is expressed as a causes factor. Most elementary students in SDN Pasangsari II had low salivary flow rate is <60 seconds. This is because brushing teeth respondents wrong especially when brushing your teeth after breakfast, the lack of knowledge about how to prevent dental caries by means of using clean water rinse after meals [12].

Salivary viscosity factor is expressed as a causes factor. The viscosity of saliva test results show (72%) students have viscosity with high criteria (foamy, bubbly, sticky) and (28%) students have a viscosity at normal criterion (clear water). This could hamper the process of lubrication and cleaning teeth.

Salivary pH factor is expressed as a causes factor. From the results of the pH of saliva obtained as much as 68% of respondents have an acidic pH, where acidity of saliva can cause dental caries. This is due to lack of awareness of respondents to check their teeth if they feel a toothache, lack of awareness of respondents to check their teeth setap 6 months and the lack of knowledge about the time of to brush their teeth after breakfast that morning [13].

OHIS factor is expressed as a causes factor. In a study of factors OHIS be a factor because of the 50 respondents who have criteria were as much as 60% and as much as 6% worse. One of them is due to factors toothbrushing behavior is not timely because there are many students who do not brush their teeth after breakfast [14].

Health services expressed as a deterrent factors. The majority of primary school student in SDN Padangasari II had received counseling on dental health. Dental health services in the infirmary are already available in SDN Padangasari II but apparently UKGS in school is not running. This is due to lack of oral health cadres in schools and the ineffectiveness of dental and oral health services such as counseling and mass brush your teeth [15]. This shows that health care is not optimal.

Hereditary factors expressed as a deterrent factors. Based on the research of primary school students in SDN Padangasari II is an indirect factor for the majority of families of respondents have a neat arrangement of teeth. The process of the role of parents who directs anakya children so that his teeth into a neat growth / no crowding [16].

Environmental factors expressed as a deterrent factors. Based on the research of elementary school students in SDN Padangasari II easy to clean water and clean water to consume. Availability of vegetables and fruit for the family was also able to prevent caries [17].

Problem Solving Alternatives

Dental and oral health education is one way promotional activities against oral hygiene. Effective extension will be a positive influence on oral health. Counseling given is about dental caries, cariogenic foods and the importance of maintaining healthy teeth and mouth [18].

Activity brushing teeth together needs to be done in SD Padangasari II District Banyumanik Semarang to lower the level of bad plaque and changed their brush teeth properly. This activity has been carried out in SD Padangasari II on August 2, 2016.

Combating cases of dental caries is the execution of the training of cadres which dental health promotion efforts can work well to increase the knowledge and attitudes of respondents with respect to dental health, as well as the respondent can participate in preventing dental caries.

CONCLUSION

Causative factor that causes dental caries in elementary school student in SDN Padangsari II District Banyumanik Semarang 2016 include: plaque index, saliva hydration, saliva viscosity, pH salivary, OHIS, behavior (knowledge, practice, and attitude). Deterrence factor that causes dental caries in elementary school student in SDN Padangsari II District Banyumanik Semarang 2016 include: Health services, Environment, and ancestry. Alternative solutions in cases of dental caries in primary school students in SDN II is counseling on dental health with the highest priority, then brush your teeth and bulk latter alternative is the training of cadres. Counseling given is about dental caries, cariogenic foods and the importance of maintaining healthy teeth and mouth. Activity brushing teeth together needs to be done in SD Padangsari II District Banyumanik Semarang to lower the level of bad plaque and changed their brush teeth properly. The training of cadres which dental health promotion efforts can work well to increase the knowledge and attitudes of respondents with respect to dental health, as well as the respondent can participate in preventing dental caries.

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ICASH-A08

**THE POPULATION OF FLIES IN CIKOLOTOK LANDFILL,
PASAWAHAN DISTRICT, PURWAKARTA REGENCY, INDONESIA**

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ABSTRACT

Background: The flies act as mechanical vectors of disease to the digestive tract, such as cholera, typhoid, dysentery, and others. There are a lot of flies in a variety of habitats, one of the preferred habitat is on landfills. The first step to controlling flies is a preliminary survey with collecting data about the population of flies. In the Cikolotok landfill, it has never done a survey population of flies.

Aims: This study aims to look the number of flies and the priority area for fly control, the most active time of flies, and species of flies in Cikolotok landfill, Pasawahan District, Purwakarta Regency, Indonesia.

Methods: This study was an observational-descriptive research. The flies were observed based on the fly that caught by the flypaper trap and cone trap mounted on 3 areas, i.e. area of sorting garbage, area of stockpiling garbage and area of waste treatment. Data were analyzed by univariate method.

Results: The results showed that the density of flies in Cikolotok landfill per point range between 0-179 flies/15 minutes in every 2-hour. The area that had the highest number of flies is area of sorting garbage with 528 flies. The most active time of flies was in a span of 7:00-9:00 am. The species of flies were found are *Chrysomya megacephala* (52%), *Musca domestica* (45%) and *Sarcophaga bullata* (3%).

Conclusion: Sorting garbage area has the highest number of flies and *C. megacephala* more found in landfill because of physical condition of garbage and the condition of area itself. The flies are more active in a span of 07:00-09:00 due to the condition of physical environment. Monitoring, fly control, research about fly-borne disease and relocation of cattle are needed to control the flies and the effects.

Keywords: Population of flies, landfill, Cikolotok landfill, preliminary survey

INTRODUCTION

The fly is one of the insects which has important positions in the field of health. In the world of public health, the flies act as mechanical vectors of disease to the digestive tract, such as cholera, typhoid, dysentery, and others [1]. Universally, a member of the *Calliphoridae*, *Muscidae*, *Oestridae*, *Psychodidae*, *Simulidae*, *Glossinidae*, and *Tabanidae* family have significance in public health [2]. There are a lot of flies in different areas, for example in place of watery, sandy, in plant, under bark and stones, dirt, etc. One of the preferred habitat of the flies was on garbage dumps (landfill). This is because the garbage is an important source in the process of the breeding of flies. Even for urban areas, garbage become the site of the main breed [2].

To date, there has been no further research about the adverse effects on health of flies in the landfill. However, there was worm infestation incidence experienced by the informal waste picker at the landfill. This is based on research conducted by Ottay which stated that there is a relationship between the incidences of worm infestation with behaviour of informal waste picker in Sumompo landfill [3]. The incidence of diarrhea was also experienced by informal waste picker at the landfill, even though there has been no further research if it caused by flies [4]. However, the adverse effects of flies should remain a concern. Myiasis incidence both in humans and in animals is likely to occur [5]. Fast and random deployment of flies also makes it enable to approach the nearest settlement area from the landfill [6]. Rudianto and Azizah stated that the closer the distance between settlement with the landfill in Kenep Village, the number of fly density and the percentage of incidence of diarrhea is higher [7].

This study divided the research site into three, namely sorting garbage area, stockpiling garbage area, and waste treatment area. The division was based on the fact that because of the vast area of landfill and for the effective and efficient process of fly control, authors believed that dividing the research site is important to look for the priority area of control. The survey of the population of flies needed as a reference for the control of flies number and density, which is about when, where and how to control the flies need to be implemented effectively and efficiently [8]

Cikolotok landfill has a capacity approximately 5.6 ha located in Margasari Village, Pasawahan District, Purwakarta Regency, Indonesia. The amount of garbage that daily transported approximately 200 m³/day. Cikolotok landfill using the method of final disposal system named controlled landfills [9], and according to the Head Section of Waste Management, it has never done a survey of fly population before. This research aims to look at the number of flies and priority area for fly control, active time of flies, and species of flies in Cikolotok landfill, Pasawahan District, Purwakarta Regency, Indonesia.

METHODS

Study design

This research was observational-descriptive study. The study was done at the Cikolotok landfill, Indonesia, and the identification process at the Padjadjaran University. The study was conducted in the month of August 2012. All obtained data was processed by univariate analysis.

Research site

The observation area was divided in three areas, namely in area of sorting garbage, area of stockpiling garbage, and area of waste treatment. The classification of this area based on the functions of each area. For the determination of the observation points of the flies population, the garbage sorting area (area P) and the garbage stockpiling area (area T) consists of 5 points, which was determined by selecting a midpoint area (P1 and C1 point) and then selecting the remaining 4 points on the ends of each area (P2, P3, P4, P5, T2, T3, T4, and T5). For the waste treatment area (area O), the observation point was determined based on the number and function of installation, i.e. 3 points (aerobics pond [O1], facultative pond [O2], and maturation pond [O3]) (See Figure 1). The determination is based on the reason that the flies that are on the landfill are very active to move and there is possible that traps installed lost compete with natural attractant of the landfill itself, then it is needed more than one measurement point [10].

Measurements of the physical environment and the number of flies

The field observations started with measuring the physical environmental conditions which affect the activity of flies (temperature, air humidity, wind speed, and light intensity), and then attach

the trap to calculate the number of flies on the points that have been determined per area by turns. The tool that used was traps with adhesive (sticky trap), as it has been applied by Toyama and Lole [10,11]. Researchers used flypaper trap (paper with adhesive glue insects) measuring 29 x 19.5 cm, lot sold in the market. At each point of measurement was performed for 15 minutes, after which the flies that stuck to be calculated [10]. This activity was done in every 2 hours and in a span of 07:00 until 13:00 [12].

Trapping flies for identification

Trapping flies for identification was done in different days. This activity was carried out for 2 hours based on the results of a time span of active flies (after the calculation the number of flies). Trap done using cone trap based on the shape and size of Darr, Drlik, Olkowski, and Olkowski version [13]. Cone trap was placed on the same points when measuring of the number of flies. Flies that get caught in the cone trap given of chloroform and then put in to container which is then taken to a lab to be identified. The containers were differentiated per observation area.

Identification of flies

The identification of flies was done by staff of Laboratory of Entomology, Department Pests & Plant Disease, Faculty of Agriculture, Padjadjaran University. The identification was based on Borror, Triplehorn, and Johnson's book in Bahasa Indonesia version, *Pengenalan Pelajaran Serangga* (Edisi Keenam), translated by Soetiyono Partosoedjono and edited by Mukayat Djarubito Brotowidjoyo, published in 1996 by Gadjah Mada University Press. The book is widely used in the identification process of insects in Indonesia, for example is the study from Falahudin, Pane, and Mawar [14]. The results of identification were based on the certificate No: 001/LARPA/KLINTAN/IX/2012.



Figure 1. Floor plan of the Cikolotok landfill with points of observation research (in scale 1:1000)

RESULTS

Distribution and Active Time of Flies

In the area of sorting garbage, the overall number of flies that get caught were 528 flies. The number of flies mostly were on a span of 07:00-09:00 with 333 flies. In the area of stockpiling garbage, the overall number of flies were 16, and total flies mostly were on a span of 07:00-09:00 with 7 flies. In the area of waste treatment, the overall number of flies was 0 or not obtained flies at all (See Table 1).

From the results of the Table 1 show data that flies in Cikolotok landfill per point are ranged between 0-180 flies/15 minutes in every 2-hour. The area that has the highest density of flies is area of sorting garbage. In addition, based on the calculation in the three areas of the landfill, the most active flies is in a span of 7:00-9:00.

Table 1. Distribution of total flies trapped in Cicolotok landfill on August 11th, 2012

Area	Point	Measure Time			Sub Total (per area)
		07:00-09:00	09:00-11:00	11:00-13:00	
Sorting garbage	P1	162	71	13	528
	P2	56	47	14	
	P3	21	9	3	
	P4	42	10	2	
	P5	52	23	3	
	Sub Total (per time)	333	160	35	
Stockpiling garbage	T1	3	1	0	16
	T2	1	2	1	
	T3	1	1	1	
	T4	1	0	0	
	T5	1	2	1	
	Sub Total (per time)	7	6	3	
Waste treatment	O1	0	0	0	0
	O2	0	0	0	
	O3	0	0	0	
	Sub Total (per time)	0	0	0	
TOTAL		340	166	38	544

Species of flies

Trapping was implemented in the next days from 07:00 until 09:00, based on the active time of the flies. Obtained flies as many as 40 flies, which were all derived in the area of sorting garbage (See Table2). After going through the process of identification, obtained 3 species of flies, namely *Chrysomya megacephala* by as much as 21 flies (52%), *Musca domestica* as much as 18 flies (45%), and *Sarcophaga bullata* as much as 1 flies (3%).

Table 2. The total number of flies obtained and identified in Cicolotok landfill on August 12th, 2012

Species of flies	Area			Number of obtained species
	Sorting	Stockpiling	Waste treatment	
<i>M. domestica</i>	18	0	0	18
<i>C. megacephala</i>	21	0	0	21
<i>S. bullata</i>	1	0	0	1
TOTAL	40	0	0	40

DISCUSSION

The area which has the highest number of flies is the sorting garbage area, with 528 flies. The reason are the sorting garbage area has physical garbage that was new, fresh, and wet, like waste of meat or vegetables, because of this area will be the first area to be occupied by the garbage that came from around Purwakarta Regency. Flies prefer garbage with this condition [15]. In addition, the most component of garbage in Cicolotok landfill that found is organic material, as much as 75% [9]. Furthermore, based on observation in the field is obtained that in the area of garbage sorting there is a lot of cattle which makes this area become places to eat even a place to dump of the feces. The condition makes flies more like this area because other than garbage, there are feces from the cattle

(Figure 2). On the other hand, there is a lot of informal waste picker who lived temporary in this area, even for eat.



Figure 2. Cattle on sorting garbage area in Cikolotok landfill

In the stockpiling area, the obtained number of flies was 16 flies, less than garbage sorting area. One of the cause is the garbage in stockpiling area has a dry physical condition, in contrast to the sorting area. For the waste treatment area that are not flies at all because of treatment environment is free-of-garbage and the results of any treatment not pose a strong scent that makes the flies attracted to activities in this area—although it has optimum physical environmental conditions for the activity of flies. There is a possibility the flies live in these two areas, but they are more interested in the condition of sorting garbage area.

The flies are more active in a span of 07:00-09:00 due to the condition of the physical environment that supports the existence of flies. The temperature and humidity in a span of 07:00-09:00 to approach optimal condition for activity of flies. In the area of sorting garbage was obtained temperature 29-32°C with humidity of 50-60%, in the area of stockpiling garbage was obtained temperature 32°C with humidity of 37-38%, and in the area of waste treatment was obtained temperature of 28-30°C with humidity of 60%. According to the Directorate General of Eradication of Communicable Disease and Environmental Health of Settlements (Direktorat Jenderal Pengendalian Penyakit Menular & Penyehatan Lingkungan Permukiman/Dirjen PPM & PLP), the flies begin flying at the temperature of 15°C and its optimal activity at temperature of 20-25°C. The flies are inactive at temperatures below 7.5°C and above 45°C will make the flies death. The optimal humidity favored for flies is 90% [8]. For comparison, in a span of 9:00-11:00, the temperature in sorting garbage area was 34°-36°C with humidity of 30-34%. In stockpiling garbage area, the temperature was 36°C with humidity of 28-30%. In waste treatment area, the temperature was 33°C with humidity of 34-36%. In a span of 11:00-13:00, the temperature in sorting garbage area was 39°-40°C with humidity of 22%. In stockpiling garbage area, the temperature was 40°C with humidity of 22%. In waste treatment area, the temperature was 38°-39°C with humidity of 24%.

The intensity of the light also affects. Fly is a phototropic insect, which love sunlight/rays, but can be active with the artificial rays in the night [8]. Light intensity obtained in three areas was ranged between 54000-56000 lux. However, because the more daylight, temperature and humidity become not optimal to support the activity of the flies, then the activity of the flies lower. The effect of light on the flies depending entirely on the temperature and humidity [8].

The wind speed at any time and in every area was an average speed of 0.1 km/hour. The flies are very actively looking for food in a calm wind and soft breeze, and will reduce its activities in the strong wind [8]. According to Sir Francis Beaufort, the wind speed can be categorized is quiet on the range 0 up to 1.5 km/h [8]. Therefore in every area and timeframe categorized as calm wind, but time span of 7:00-9:00 which became most active time flies is returned based on temperature and humidity.

The results of the identification shows that the species of *C. megacephala* more found in landfill. This is similar to the research results of Hestiningsih which stated that flies *C. megacephala* dominantly found in landfill or laystall in Yogyakarta [16]. However, the results of this research in contrast to the results of research conducted by Sumarsono in Jatibarang landfill, Semarang City, where the types of flies that found were the *M. domestica* flies [17]. The *C. megacephala* flies breed in the liquid or semi liquid material derived from animals, including meat (fresh or rotten), fish, carrion, and soil containing feces [15]. These conditions are in accordance with the conditions in the field, especially in the area of sorting garbage. This fly has a movement to land between contaminated and clean substrates and can makes them a potential pathogen vector [6].

M. domestica (known as housefly) is the major urban and agricultural species of pest fly in the world [6]. The housefly is important because it is ubiquitous and utilizes many proteinaceous materials, including garbage and human and animal feces, and can develop very quickly [6]. *S. bullata* (known as flesh flies), from family Sarcophagidae, are attracted to animal carcasses and decaying meat, and many deposit living larvae instead of eggs [6]. These flies are known to cause myiasis in humans and animals [6]. All of those species are act as mechanical vector and can be contaminated with more than a hundred different pathogenic organism, such as prions, viruses, bacteria, protozoa, helminths, and fungi, and can cause diseases like diarrhea, salmonellosis, shigellosis, cholera, ascariasis, typhoid, yaws, etc. [6,15,18,19]. Furthermore, those flies also can cause myiasis both in human and animal (cattle) [5,18].

The measurement of the density of flies using fly grill based on technical of Dirjen PPM & PLP [8], which was adapted from Scott and Littig [20], can be used in all places, such as settlements, industry, public places, and others, but is not effectively used in landfill. The cause is the difficulty to count the flies at the moment they stood on fly grill as well as population flies is high and active. Therefore, the development of the survey method using trap flies with a sticky nature (sticky trap) can be used in landfill because it is more effective than fly grill [10,11]. Furthermore, because of the vast area itself, the authors decide to divide the research site (into 3 areas) in order to be more effective in fly control.

Toyama and Lole also stated that monitoring and control of flies periodically is very necessary, at least it is hebdomadal period [10,11]. Yet it had done a survey of fly population and if see the magnitude of the number of flies from researcher's survey at the Cicolotok landfill, fly control and periodic monitoring is indispensable. The reason is the fly have flight distance ranges from 1 to 1.5 km [1,8] can be even more extensive and much more with the help of the wind, animals, and vehicles [6], such as garbage truck or dustcart, which allows these insects to neighborhood residents, where the distance to the nearest settlement of Cicolotok landfill is 2 km [9]. It is also supported by space between landfill and settlement consisting of rice field area (the open space) and the route to the landfill must pass through settlement areas.

CONCLUSION

Garbage sorting area is the area that has the highest number of flies, with 528 flies. The reason is because the physical conditions of the garbage, a lot of cattle feces, and has human activity (informal waste picker) that support flies to breed. The flies are more active in a time span of 07:00-

09:00 due to the condition of physical environment that supports the existence of flies. *C. megacephala* more found in landfill, especially in the area of sorting garbage, because the area condition that support the flies breed, like the conditions of the garbage and soil. Informal waste picker, the cattle, and nearby resident from landfill have fly-borne disease and myiasis risk. From the findings, it is necessary for Sanitary and Landscape Gardening Office (Dinas Kebersihan & Pertamanan) of Purwakarta Regency to build a plan to monitor the fly activity in the landfill and fly control, especially in garbage sorting area in a time span of 07:00-09:00 with residual chemical. Moreover, the Health Office (Dinas Kesehatan) of Purwakarta Regency needs to do a survey or research about the effect of the distance between landfill and settlements about fly-borne disease. In addition, because there is a lot of informal waste picker, their health must be considered too. The expectation to Animal Husbandry and Fisheries Office (Dinas Peternakan & Perikanan) of Purwakarta Regency to relocate the cattle to the outside of landfill. It is to prevent cattle for being exposed by myiasis and they eat the garbage that not healthy for animal health.

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ICASH-A09

**THE EVALUATION OF EARLY INITIATION BREASTFEEDING
PRACTICE
in Dr. mohammad hoesin hospital palembang**

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ABSTRACT

Background: *Compared to other countries, the rate of EIB in Indonesia remains low (34,5%). During our practice, particularly in delivery room, we often find practices which delayed EIB. The recent finding that early initiation of breastfeeding (EIB) could substantially reduce neonatal mortality should result in more comprehensive efforts to increase the number of infants breast-fed within an hour of birth. Such efforts can only be effective if policies and guidelines are based on a solid knowledge of the barriers and facilitators for EIB.*

Aims: *To evaluate EIB practice in Dr. Moh. Hoesin hospital.*

Methods: *This was an analytic observational study, using cross sectional design. Our populations were all of afterbirth mothers (spontaneous or abdominal delivery), doctors, midwives, as well as managerial policy holder. Samples were selected by purposive sampling. Data was obtained from the questionnaire which have been tested for validity and reliability. This study included 29 doctors and 14 midwives as EIB implementers; also 12 managerial staffs.*

Results: *During the period November to December 2016, there were 19 (51.3%) patients with post spontaneous or abdominal delivery practiced EIB and 18 (48.6%) patients did not practice EIB. Most of patients in "no EIB group" had abdominal delivery ($p = 0,003$). Most of patients complained that no EIB policy in operating room. Most of implementers stated that EIB already done well. The EIB implementers complained that there was lack of support about EIB practice from hospital manager and maternal level of knowledge was low. Our study found the disintegration between the managerial and executive staff, causing ambiguity in the practice of the EIB.*

Conclusion: *The opportunity of EIB practice was affected by medical condition of mother and fetus, method of delivery, hospital support, EIB policy socialization, and patient's knowledge. There were so many challenges for our hospital to practice EIB, such as no EIB policy in operating room, the mother's condition was not possible to practice EIB, knowledge of the managerial about EIB differ greatly, low socialization about regulations and other elements of the EIB implementation. There is also disintegration between the manager and executive staff causing ambiguity in the practice of EIB and the lack of supervision of EIB practice in the field.*

Keywords: *early initiation of breastfeeding, opportunity, challenge*

INTRODUCTION

Early initiation of breastfeeding (EIB) is defined as the first time for mother to breastfeed the baby after delivery, particularly in the first hour after delivery. The baby's sucking reflex becomes most active during this time [1]. Baby is given the opportunity to obtain colostrum along EIB process. Colostrum is the white blood cells and antibody-containing immunoglobulin A (IgA), that is very important for resistance to infection, intestinal growth, infant survival, as well as create a protective layer for baby's immature intestines [2,3].

Early or timely initiation of breastfeeding is crucial in preventing newborn deaths and influences childhood nutrition. A study in Ghana concluded if the baby is given the opportunity to suck within the first hour with the skin-to-skin contact, then 22% infants aged less than 28 days can be saved. The study also mentioned if the baby starts to suck within twenty to twentyfour hours of its life, only 16% infants aged less than 28 days can be saved [4]. The national rate of EIB is still low, only 34.5% [5]. There are 18 provinces whose their scope is below the national average. To increase the value of such coverage, there should be an effort to take advantage of opportunities and overcome the challenges of EIB implementation [6].

In Mohammad Hoesin hospital, EIB programme has become a procedure that must be implemented. Although there is a standard procedure, but its implementation has not gone well. After the mother gave birth spontaneously, EIB done in just a few minutes. The newborn is immediately taken from her mother to measure the body weight and length. EIB also did not run after mother had cesarean section. The baby is considered a high-risk infant and should have neonatal intensive care immediately. This study is aimed to evaluate EIB implementation in Dr. Moh. Hoesin hospital from patient, implementer, and manager's point of view.

METHODS

This was a quantitative study, using cross sectional design. Our populations were all of afterbirth mothers (spontaneous or abdominal delivery), doctors and midwives who worked in delivery room, as well as managerial policy holder. Samples were selected by purposive sampling. Data was obtained from the questionnaire which have to be filled out by the samples. The questionnaire have been tested its validity using Cronbach test. Univariate analysis was performed to calculate the frequency distribution and the proportion of the sample's characteristics. Bivariate analysis consists of a table with Chi square analysis and correlation analysis.

RESULTS

The study was conducted from November to December 2016 and included 37 postpartum mothers, 43 implementer staffs (14 midwives and 29 obgyn residents), as well as 12 managerial staff. The rate of EIB in our hospital is 51,4%. These results are still far below the target of Health People 2010, which about 75% [7]. The patient's characteristic in both of groups were similar. In both of groups, the subject majority aged 21-35 years (age of reproduction), live in the urban city, high educated, and multiparous. This study found significant difference in the mode of delivery, where the cesarean section mostly obtained in the group that did not practice EIB ($p = 0.003$). Figure 1 describes most of patient complained that EIB did not performed in the operating room. This finding may be a consideration for the hospital to create a EIB policy in the operating room for cesarean section patients. Also, most of patients suggest for improving the EIB socialization in our society, not only for inlabour mother, but also for pregnant mother. They also suggest to practice EIB in operating room and the information about EIB should be explained clearly to the mother.

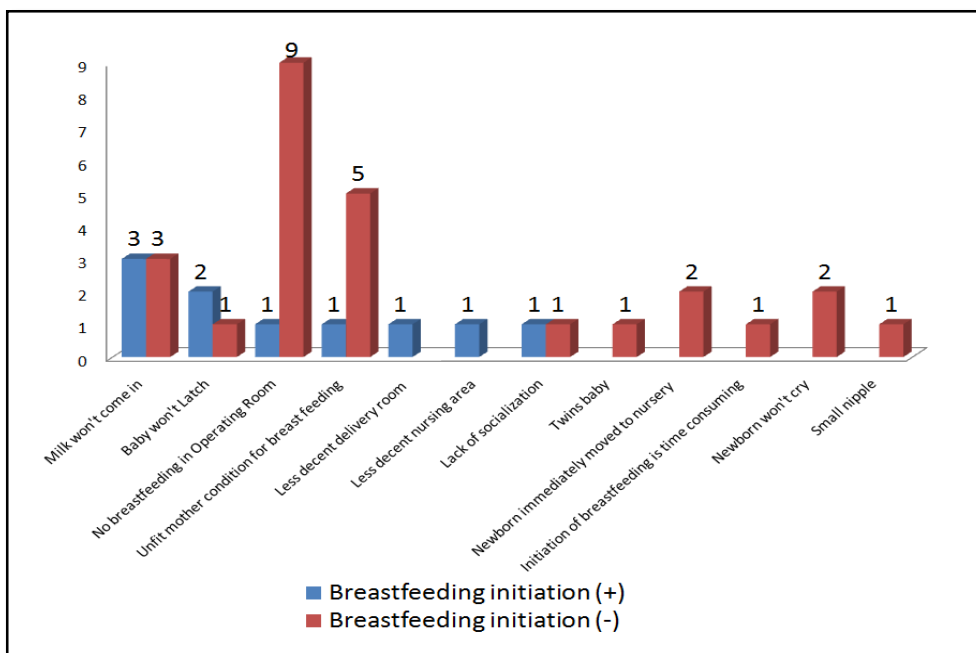


Figure 1. Patient's Complaint about EIB Practice in Moh. Hoesin Hospital*

* Note: a respondent can give more than one complaint

This study also found significant differences in the dimension of EIB implementation in both groups. As many as 50% of respondents from the group "no EIB practice" complained that EIB was unable to do in operating room and delivery room was less feasible. This findings made us outlined that there were four factors inhibiting the EIB in our hospital : no EIB policy in the operating room, delivery room (facilities) were less suitable, socialization about EIB was still low, and education about EIB which was given by doctor or midwife was remain unclear.

From 14 samples of midwife, we found that 12 sampels (85,7%) stated EIB already practice well in our hospital. As well as from 29 sampels of doctor, 19 sampels (65,5%) stated EIB already practice well ($p = 0,279$). Most of them have good knowledge about EIB, whom 9 samples (64,3%) of midwives and 28 samples (96,6%) of doctors ($p = 0,01$). We classified them into 'good' knowledge group if the questionnaire scores ≥ 75 , 'medium' if the scores 55-74, and 'bad' if the scores < 55 . In the doctor group, they complained that maternal knowledge about EIB remain low, lack of support from hospital, and the limited time to practice EIB. While in the midwife group, they stated that not entire of the afterbirth mother able to practice EIB due to her medical reason; also sometimes the newborn condition was unhealthy due to complication from chidbirth. They also complained sometimes the patients do not cooperate because of labor pain and no EIB practice in operating room (figure 2).

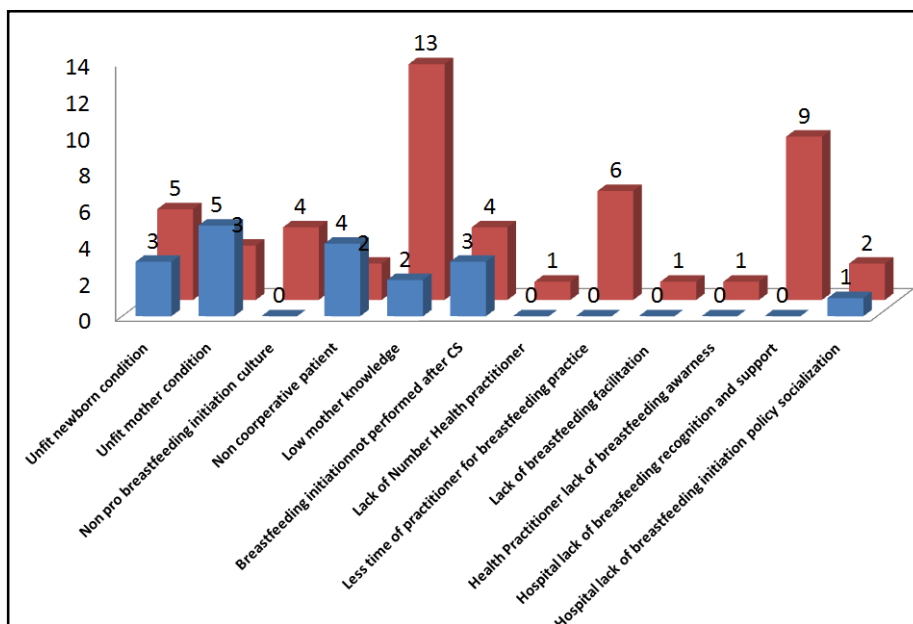


Figure 2. Midwife (red) and Doctor (blue) Complaint about EIB Practice*

* Note: a respondent can give more than one complaint

This study found that EIB has generally been implemented properly. Less recognition and support from hospital toward EIB, unavailability of EIB in cesarean section patient, and low maternal knowledge are major complaints of doctors regarding EIB implementation. The patient's condition (uncooperative, medical conditions that do not allow EIB), unavailability of EIB in cesarean section patient, low maternal knowledge, and less of socialization are midwife complaints regarding EIB implementation in our hospital. Respondents suggested to improve hospital support through the socialization of policy; improving patient education but not only given to maternity patients, but also in pregnant patients; and implement EIB in operating room.

In managerial staff group, only 5 (28.6%) among 12 samples who stated that the EIB has been practiced well in our hospital. They worked as managing director, head of the installation, head of the delivery room, and head of the emergency room. There is a possibility of bias, where respondents with structural positions tend to suggest that EIB has been running well, because it is a measurement of their work performance and answered positively (good) will impress their work. Also, we found a contradiction between both groups. In managerial staff group who stated "EIB has been practiced well", they admit availability of evaluation and monitoring system (MONEV) and indicator of EIB success. However, it is contradictory in managerial staff group who stated "EIB practice was bad", because most of them answered no MONEV system in our hospital.

Barriers to practice EIB in our hospital. The "working attitude" is the greatest obstacle in implementing EIB. The managerial group stated that health professional's (midwife and doctor) attitude were inappropriate, such as doctor or midwife do not allow sufficient time for mother to practice EIB or midwife is in a rush to take away the newborn from mother right after the cord was cut. However, when we crosschecked on the barriers, health professional had their own reasons to limit the EIB practice, such as poor maternal condition after birth so she could not do breastfeed, uncooperative mother, no policy to practice EIB in cesarean section patient, and no socialization about policy to practice EIB. This study also found disintegration pattern between the two sides (health

worker/ professional vs managerial staff) leading to the unproperly implementation of EIB in our hospital. Unintegrated EIB service raised misunderstanding issue in both providers. It requires an effort to solve the problem by sitting together among providers to formulate an integrative mechanism that benefits all parties about the EIB practice.

DISCUSSION

We found significant differences in the mode of delivery. The group that did not practice EIB had majority cesarean section ($p = 0.003$). This finding gave a hint that one of the obstacles in practicing EIB is no policy to do EIB in cesarean section patient. Mothers who had cesarean section delivery do not get opportunity to practice EIB. Helda wrote in her dissertation that a study held by Doung et al. found the probability risk of postcesarean section mother for not having exclusive breastfeeding is 18,52 [8]. Chandrasekhar in West Nepal stated normal delivery has 7,6 times opportunity to practice EIB than cesarean section patient [9,10].

In managerial group, the knowledge about EIB is varied greatly, so socialization once again seems to be a major obstacle not only at the level of the patient, the doctor and midwife implementers, but also to the managerial level which should dominate all the rules and policies in our hospital. In addition, there is a discrepancy between the managerial groups. In managerial staff group who stated "EIB has been practiced well", they admit availability of evaluation and monitoring system (MONEV) and indicator of EIB success. However, it is contradictory in managerial staff group who stated "EIB practice was bad", because most of them answered no MONEV system in our hospital. This is interesting because actually all of them should have already know and understand about EIB policy. This discrepancy may occur as a result of unproper EIB policy- not only in patients but up to managerial level.

The opportunity of EIB practice is affected by medical condition of mother and newborn, method of delivery, hospital support, EIB policy socialization, and patient's knowledge. There are so many challenges for our hospital to implement EIB, such as no EIB policy in operating room, the majority of patients are obstetric referral case with complication so that the mother's condition is often not possible to run EIB, knowledge of the managerial about EIB differ greatly, low socialization about regulations and other elements of the EIB implementation. There is also disintegration between the manager and health worker/ professional causing ambiguity in the implementation of the EIB and the lack of supervision of EIB implementation in the field.

This is the first study in our hospital that evaluate EIB practice and explore its issues at various levels provider. This study used a questionnaire with closed and open questions based on a model of human behavior (Health Believe Model and Malcolm Bridge Model), so it covers the majority of human behavior dimension and makes it possible to analyze each of the behavior. The weakness of this study is its design, using the cross-sectional design, and we did not evaluate the objectivity respondent's answer. We had tried to minimize this weakness by doing cross-checking at all provider levels to reach conclusion. We use a questionnaire that may not necessarily include all issues that may exist in the field, however we tried to minimize this bias by open label question.

CONCLUSION

The rate of EIB in our hospital from November-December 2016 is 51,3%. The opportunity of EIB implementation is affected by medical condition of mother and newborn, method of delivery, hospital support, EIB policy socialization, and patient's knowledge. There are so many challenges for our hospital to implement EIB, such as no EIB policy in operating room, the majority of patients are obstetric referral case with complication so that the mother's condition is often not possible to run EIB, knowledge of the managerial about EIB differ greatly, low socialization about regulations and

other elements of the EIB implementation. There is also disintegration between the manager and health worker causing ambiguity in the implementation of the EIB and the lack of supervision of EIB implementation in the field.

From this study result, we suggest to have socialization of EIB policy by the hospital staff, informative education about EIB to the patients, the new policy of EIB in the operating room, and the EIB integrated service system. Further research needs to be done with a single variable based on the problem issues summarized in this study, so it can focus to evaluate the EIB problems with more valid study design and bias control, also with a larger number of samples.

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ICASH-A10

**ASSOCIATION OF PREMENSTRUAL SYNDROME TO STRESS
INCIDENT AMONG XI GRADERS IN YOGYAKARTA, INDONESIA**

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ABSTRACT

Background: Menstruation is the blood loss that occurs periodically through the vagina comes from the uterine wall. The discomfort of women before, during and after menstruation the women usually feel discomfort or it is called premenstrual syndrome. The incidence of premenstrual syndrome in Indonesia is about 23%. Premenstrual Syndrome was disturbing about 30-40% of women reproductive age.

Aims: The aim of this study to identify existing correlation stress premenstrual syndrome female adolescent girls of XI grade in SMK X Yogyakarta Indonesia.

Methods: This study is a descriptive analytic design with cross sectional. This study population involved 82 students was using purposive sampling. The instrument was a questionnaire to measure the presence or absence of stress and premenstrual syndrome. The data analysis was used chi square.

Results: The level of stress in women adolescents mostly in the mild category 48 (58.5%), the incidence of premenstrual syndrome in adolescents in the category of pre menstruation syndrome (PMS) is 58 (70.7%) and in this study no experience severe stress and very heavy. Students with mild stress who experience premenstrual syndrome were 39 (47.6%), while students with moderate stress experienced premenstrual syndrome were 19 (23.2%). The results of the analysis using Chi-Square showed that the relationship between stress and the incidence of premenstrual syndrome in young women in the category of weak.

Conclusion: There is no relationship between stress and the incidence of premenstrual syndrome in girl adolescents of XI grade in SMK X Yogyakarta Indonesia

Keywords: Stress, Premenstrual Syndrome, Young Women

INTRODUCTION

A few days before menstruation, women may experience discomfort, one or more symptoms before menstruation called premenstrual syndrome (PMS) [1]. Forty percent of women on reproductive age were experienced with premenstrual syndrome [3]. Two to three percent of women have severe symptoms [3]. Peak age began in the mid-30s but premenstrual syndrome can occur at any time in the years. Premenstrual syndrome is a common health problem most commonly reported by reproductive aged women. The incidence of premenstrual syndrome or incidence of about 80%. Epidemiological studies indicate approximately 20% of women of reproductive age experience premenstrual syndrome moderate to weight. Approximately 3-8% have severe symptoms until called Premenstrual Dysphonic Disorder (PMDD) [4].

Premenstrual Syndrome is disturbing about 30-40% of women on reproductive age. PMS toughest cases occur in approximately 2% of women aged 26-35 year [2]. While the study sponsored by the WHO in 1981 showed that the symptoms of premenstrual syndrome experienced by 23% of women Indonesia [1]. The high premenstrual syndrome in women issues will have an impact on work productivity. These symptoms exist that are severe enough to interfere with daily life day. Some women report that life disruption due to severe premenstrual syndrome, which negatively affects their interpersonal relationships, this syndrome is usually easier to occur in women who are more sensitive to hormonal changes in the cycle menstruation. However, there are several factors that increase the risk of premenstrual syndrome are women who have given birth (premenstrual syndrome more weight after giving birth several children), age (premenstrual syndrome increasingly interfere with the increasing age, especially between the ages of 30-45 years), stress (factor aggravate stress disorder premenstrual syndrome). Psychological factors, family problems, social problems also play an important role. More likely to suffer from premenstrual syndrome are women who are more sensitive to hormonal changes in the menstrual cycle and the factors psychology 75.7% of respondents had experienced moderate stress and 63.2% had pre-menstrual syndrome [5].

There is a positive relationship with the correlation being between stress levels with the incidence of premenstrual syndrome menstruation. According to a preliminary study that researcher's do in SMK X Yogyakarta Indonesia found that many obstacles in the learning process, Adolescent in XI grade SMK X Yogyakarta, the duties and obligations of students that can cause stress. The samples of preliminary study were 10 female students in SMK X Yogyakarta. The respondents were questioned by questionnaires about symptoms of premenstrual syndrome, symptoms of affective and somatic symptoms. The result found that 7 of the 10 were complained of irritability, breast pain and abdominal pain before menstruation. Based on these reasons, the researchers interested in conducting research with the title "The relationship between the incidence of premenstrual syndrome in female students of XI grade Academic Year 2013 / 2014 in SMK X Yogyakarta Indonesia."

METHODS

This research is a part of descriptive analytic correlation with cross sectional approach. This study examined the correlation of stress with the incidence of premenstrual syndrome. The research was conducted at SMK X Yogyakarta Indonesia. The population of this study were all female students in XI grade academic year 2013/2014 as many as 534 students. The sampling technique is purposive sampling. The data analysis of this study was univariate. It describes the characteristics of each of the variables in the form of a frequency distribution table and bivariate analysis is to determine whether there is a correlation using chi square test.

RESULTS

The table 1 shows that the age of menarche in female students of XI grade academic year 2013/2014 in SMK X Yogyakarta Indonesia aged 10-13 years by 82 (100.0%). The menstrual cycle of female students in XI grade of academic year 2013/2014 at SMK X Yogyakarta Indonesia mostly \geq 3 weeks as many as 65 (79.3%) of respondents.

Table 1. Frequency Distribution of menarche and menstrual of female students in XI grade academic year 2013/2014 at SMK X Yogyakarta Indonesia

Menarche Age	Frequency	Percentage (%)
10-13 Year	82	100,0
14-16 Year	0	0
Total	82	100,0
Menstrual Cycle	Frequency	Percentage (%)

≥3 weeks	65	79,3
≤ 3 weeks	17	20,7
Total	82	100,0

Table 2 shows that the stress level in female students in XI grade of the school year 2013/2014 in SMK X Yogyakarta Indonesia mostly in the lightweight category were 48 (58.5%) of respondents and from research conducted no student is experiencing severe stress and very heavy.

Table 2. Frequency Distribution of Stress in Young Women Class XI Academic Year 2013/2014 at SMK X Yogyakarta Indonesia

Stress in Young Women	Frequency	Percentage (%)
Light	48	58,5
Average	34	41,5
Total	82	100,0

Table 3. Frequency Distribution Genesis Premenstrual Syndrome in Young Women Class XI Academic Year 2013/2014 at SMK X Yogyakarta Indonesia

The incidence of PMS	Frequency	Percentage (%)
PMS	58	70,7
Not PMS	24	29,3
Total	82	100,0

Based on Table 3 the incidence of premenstrual syndrome in adolescent girls class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia mostly in the category of PMS as many as 58 (70.7%) of respondents.

Table 4. Characteristics of Stress in Young Women Class XI Academic Year 2013/2014 at SMK X Yogyakarta Indonesia

Characteristics	Stress in Young Women				Total	
	Mild		Moderate			
	F	%	F	%	F	%
Age of menarche (10-13 years)	48	58,5	34	41,5	82	100,0
Menstrual cycle						
≥3 weeks	39	47,5	26	31,7	65	79,2
≤3 weeks	9	11,0	8	9,8	17	20,8
Total	48	58,5	34	41,5	82	100,0

Based on table 4 of the result of cross tabulation age of menarche in young women with stress class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia aged 10-13 years most experienced mild stress as many as 48 (58.5%) of respondents. Correlation with the menstrual cycle of stress on young women class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia mostly ≥3 weeks experienced mild stress as many as 39 (47.5%) of respondents.

Table 5. Characteristics of the Genesis Premenstrual Syndrome in Young Women Class XI Academic Year 2013/2014 at SMK X Yogyakarta Indonesia

Characteristics	Genesis Premenstrual Syndrome				Total	
	PMS		Not PMS		F	%
	F	%	F	%		
Age of Menarche (10-13 years)	58	70,7	24	29,3	82	100,0
Menstrual cycle						
≥3 Week	47	57,3	18	22,0	65	79,3
≤3 Week	11	13,4	6	7,3	17	20,7
Total	58	70,7	24	29,3	82	100,0

According to the table of the results of the cross tabulation 5 menarche with Premenstrual Syndrome incidence in young women class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia aged 10-13 years mostly have PMS as many as 58 (70.7%) of respondents. Relationship with the incidence of menstrual cycle Premenstrual syndrome in adolescent girls class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia mostly ≥3 weeks PMS as many as 47 (57.3%) of respondents.

Table 6. Relationship with Genesis Premenstrual Stress Syndrome in Young Women Class XI Academic Year 2013/2014 at SMK X Yogyakarta Indonesia

Stress in Young Women	Premenstrual Syndrome Genesis				Total	X ²	p-value	C	
	PMS		Not PMS						
	F	%	F	%	F	%			
Light	39	47,5	9	11,0	48	58,5	6,187	0,013	0.265
Moderate	19	23,2	15	18,3	34	41,5			
Total	58	70,7	24	29,3	82	100,0			

Results from cross-tabulations in Table 6 unknown stress on young women mostly have mild premenstrual syndrome incidence in the category of PMS as many as 39 people (47.5%). The stress in adolescent girls who are largely having events in the category PMS premenstrual syndrome as many as 19 people (23.2%).

DISCUSSION

Characteristics of Respondents

The results of the frequency distribution characteristics of respondents in adolescent girls class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia showed that the age of menarche in adolescents aged 10-13 years are as much as 82 (100%) of people, and experienced a ≥ 3 weeks of the menstrual cycle as much as 65 (79.3%) persons. This indicates that the characteristics of adolescents who experience menarche in normal age.

Menarche is a time period / menstruation comes first to a woman who is being stepped up. Age girls experience menarche at a time different, because it depends on genetic factors (heredity), body shape, and nutrition person. Generally menarche occurs at age 10-15 years, but the average going at the age of 12.5 years. However, there are also experiencing faster / under that age. Menarche occurs before the age of 8 years called menstruation praecox [6].

Stress in Young Women

The results of the frequency distribution of stress on young girls class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia mostly in the lightweight category were 48 (58.5%), while the other teens experience stress was about 34 (41.5), and not there are experiencing severe or very severe stress. This means that the stress in adolescent girls class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia is included in mild stress. Stress is an environmental event or stimulus that causes people to feel tense. Stress refers to the events of the perceived harm someone's physical and psychological well-being [7].

Genesis Premenstrual Syndrome in Young Women

The resulting distribution of frequency of occurrence of premenstrual syndrome in adolescent girls class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia in the category of PMS as many as 58 respondents (70.7%) and PMS as many as 24 (29.3%). This means that the incidence of premenstrual syndrome in adolescent girls class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia mostly experiencing PMS. Premenstrual syndrome (PMS) is a condition that consists of multiple physical changes, emotional and behavior experienced by a woman before the arrival of the menstrual cycle, which caused it to crash in the functions and activities of everyday life, these symptoms will disappear when menstruation arrives [8].

Stress Levels in Young Women by Characteristics

Based on the results of cross tabulation characteristics of the respondents relationship with the stress on girls in class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia. This suggests that the association menarche in young women with stress class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia aged 10- 13 years most experienced mild stress as many as 48 (58.5%) of respondents. Relations with the menstrual cycle of stress on young women class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia mostly ≥ 3 weeks experienced mild stress as many as 39 (47.5%) of respondents.

Age 10-13 years with menstrual circles ≥ 3 weeks is a normal thing experienced by teenagers. The normal menstrual cycle is calculated from the first day of bleeding during the initial months up to the first day of bleeding in the following month. But each menstrual cycle on every woman is different. Female adolescents usually do not keep their menstrual cycle, disco, this is still considered normal. Have a disease, weight changes, and stress can make menstrual cycles easily disturbed by the condition. it can be concluded that the teenage years when he is stressed, although adolescents experience a mild stress, the menstrual cycle on the adolescent will also change even irregular [9].

Genesis Premenstrual Syndrome in Young Women by Characteristics

Cross tabulation of menarche relationship with the incidence of premenstrual syndrome in adolescent girls class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia aged 10-13 years mostly have PMS as many as 58 (70.7%) of respondents. Relationship with the incidence of menstrual cycle Premenstrual syndrome in adolescent girls class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia mostly ≥ 3 weeks PMS as many as 47 (57.3%) of respondents. Normal ovulation cycle triggers to events Premenstrual syndrome in women who have an abnormal response to progesterone that can be caused by a deficiency of serotonin function [10].

Relationship with Genesis Premenstrual Stress Syndrome in Young Women Class XI Academic Year 2013/2014 at SMK X Yogyakarta Indonesia

Based on the results of cross tabulation relationship with the incidence of premenstrual stress syndrome in young girls class XI of the school year 2013/2014 in SMK X Yogyakarta Indonesia, that girls who fall into the category of mild stress and experience premenstrual syndrome, 39 (47.5%) of respondents, while young women who fall into the category of moderate stress and premenstrual syndrome experienced by 19 (23.2%) of respondents and respondents who experience severe stress and is very heavy in this study was not found. In fact, both mild stress and stress were all regulars there who experience premenstrual syndrome was due not only stress that become a factor in the premenstrual syndrome, but there are other factors such as diet, deficiency of macro and micro nutrients, marital status and age [1].

CONCLUSION

All respondents had experienced menarche at age 10 to 13 years with the menstrual cycle is about 3 weeks (73,9%). Young women stressed lightweight category (58,5%) and most are premenstrual syndrome (70,7%). There is a relationship between stress and the incidence of premenstrual syndrome in young women SMK X Yogyakarta Indonesia with a value of X^2 count $> X^2$ table ($6.187 > 3.841$) and p value = 0.013 ($p < 0.05$), the relationship with the incidence of premenstrual syndrome in young women in weak category ($C = 0,265$).

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ICASH-A12

**SHOULDER FLEXIBILITY IN COLOR GUARD PLAYER
FOLLOWING POSTERIOR SHOULDER STRETCHING AND
MUSCLE ENERGY TECHNIQUE**

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ABSTRACT

Background: Color guard players often exhibited loss of glenohumeral joint range of motion (ROM) in internal rotation which has been associated with shoulder pathology. Current stretching protocols aimed at improving flexibility of the posterior shoulder have resulted in different outcomes and previous studies have not been discussed color guard players for the subject.

Aims: This study was to determine the differences effects between non assisted posterior shoulder stretching (NAPSS) and muscle energy technique (MET) to increase internal rotation ROM of glenohumeral joint of the color guard marching band.

Methods: This study is experimental pre test and post test two group design, the subjects are 18 color guard players. The subjects were divided into 2 groups that 9 subjects in group I treated NAPSS and 9 subjects in group II treated MET. The treatment was given for 5 times per week in 2 weeks. This study used goniometer for measuring internal rotation ROM. Saphiro Wilk test for the normality test. Paired sample T-test to determine increasing of internal rotation ROM for group I and group II. Independent sample T-test to determine the differences effect between group I and group II.

Result: The result of paired sample T-test is $p=0.001$ ($p < 0.05$) in group I and $p=0.001$ ($p < 0.05$) in group II which exhibited that there is an effect the treatment of both posterior shoulder stretching and muscle energy technique to increase internal rotation ROM. The result of Independent sample T-test is $p=0.084$ ($p > 0.05$) indicated that there is no different effect between posterior shoulder stretching and muscle energy technique.

Conclusion: NAPSS and MET were capable of significantly increasing internal rotation ROM of glenohumeral joint and no different effects between the methods. Both methods can be used as stretching program before marching band exercise.

Keywords: Posterior Shoulder Stretching, Muscle Energy Technique, Goniometer, Range of Motion, Color Guard Marching Band.

INTRODUCTION

Overhead throwing is a highly dynamic movement requiring a balance of strength and flexibility, as well as coordination of all body segments for optimal performance [1,2]. Glenohumeral joint attains extreme ranges of motion (ROM) [2], velocities [2] and forces [1] throughout the throwing motion. Glenohumeral joint internal rotation reaches peak angular velocities of nearly 7000°/s [2], and deceleration during the follow-through occurs at 500 000°/s [3], creating a large force for the posterior shoulder to counteract as the humerus continues to internally rotate [4]. It is hypothesized that these substantial speeds and forces occurring at the posterior shoulder result in altered glenohumeral joint ROM and posterior shoulder tightness in throwing athletes [5].

Color guard player produced high force for throw equipments like flag, saber, stick, and rifle. As a result of the high forces experienced at the upper extremity joints, physical examinations of athletes who use overhead throwing consistently demonstrates unilateral soft tissue adaptations, such as increased external rotation range of motion, decreased internal rotation ROM in their throwing arms [2]. Tightness of posterior shoulder structures and decreased internal rotation ROM has been linked to nonspecific shoulder pain [6], subacromial impingement [7, 8], superior labrum anterior to posterior lesions [7,9], pathologic internal impingement [10], and ulnar collateral ligament insufficiency [11] due to its altering effect on glenohumeral arthrokinematics [7,12,13] and scapulothoracic kinematics [14].

One of the most effective methods to increase internal rotation ROM is stretching or technique. Nowadays, different stretching methods are used to increase ROM, for internal rotation ROM of glenohumeral joint can used non assisted posterior shoulder stretching (NAPSS) and muscle energy technique (MET). NAPSS and MET have been discussed on previous researches, but the subjects on those research are baseball players. The research about posterior shoulder tightness in color guard players is not yet found. So, in this study effectiveness of NAPSS and MET to increase internal rotation ROM in the color guard marching band player have been examined. Because on the future, physical therapist can participate in marching band world, especially for ergonomic and treatment.

METHODS

Fifteen female and three male of color guard players from five Universities in Yogyakarta participated in this study. Group I (8 females & 1 male) treated NAPSS and group II (7 females & 2 males) treated MET. Subjects completed a questionnaire with regard to their age, height, gender, duration become color guard player, exercise duration, the difficulty of throwing, and internal rotation ROM of glenohumeral joint was measured. Color guard players aged 15-24 years who had limitation internal rotation ROM less than 70° in their dominant arm were included, whilst those who had history of trauma, fracture, subluxation, dislocation, or surgery in the shoulder were excluded. Goniometer was used to measure internal rotation ROM of glenohumeral joint.

In order to assess internal rotation ROM, subjects were placed in side lying position. Side lying measurements of shoulder internal rotation PROM were obtained with the subject lying on the involved side, in a position in which the acromion processes were aligned perpendicular to the plinth by visual estimate. The shoulder was flexed to 90° with 0° rotation and the elbow was flexed to 90°. No manual stabilization of the scapula was required, but the rater visually ensured that the subject kept the acromion processes perpendicular to the table. The rater passively internally rotated the humerus while maintaining 90° shoulder and elbow flexion. The rater located the goniometer such that the fulcrum was placed over the olecranon process, the stationary arm was aligned with the plinth edge, and the movable arm aligned with the subject's ulnar styloid process [15]. The procedure was repeated thrice.



Figure 1. ROM measurement by goniometer

Subjects were randomly divided to two groups. Each subjects received ten session of specific treatment. The treatment was given for 5 times per week in 2 weeks

Non assisted posterior shoulder stretching

Subjects were given treatment horizontal cross arm stretch and standing sleeper stretch at 45°. Horizontal cross-arm stretch, the subjects stood with the involved side and lateral border of their scapula against a wall. The dominant shoulder was flexed to 90° and passively horizontally adducted by the subjects to end range using the contralateral arm.⁸ Proper stabilization of the scapula was ensured by having the subjects lean against the wall using his body weight, preventing the scapula from following the humerus across the body [16].

Standing sleeper stretch at 45°, the subject stood with the involved side against the wall and flexed to 45° with elbow in 90° of flexion. The subject leaned against the wall applying pressure to the lateral border of the scapula while the head and neck remained in a neutral position, looking straight ahead. The scapula remained pressed against the wall while the subject used the contralateral hand to rotate the dominant shoulder into internal rotation [17].



Figure 2. Performance of a standing sleeper stretch at 45°

Post-stretch ROM measurements were performed immediately following the completion of the last set of stretch (within 1 to 2 minutes) [17].

Muscle energy technique

A single application of MET was applied to the glenohumeral joint external rotators. The subject was in a supine position on the examination table. With the humerus supported and the subject's shoulder and elbow in 90° of abduction and flexion, respectively, the examiner passively moved the humerus into internal rotation until the first barrier of motion was reached. The subject was then instructed to perform a 5-second isometric contraction of approximately 25% maximal effort in the direction of external rotation, against an opposing force provided by the examiner at the distal forearm. Following the contraction, the subject was instructed to internally rotate the arm toward the ground as a 30-second active assisted stretch was applied. The subject was instructed to relax, and a new movement barrier was then engaged by the examiner. This protocol was performed for a total of 3 repetitions [5].

The Saphiro-Wilk test was used to determine the normal distribution of the data. Data were analyzed using paired sample *t*-test for pre and post test in both groups and independent sample *t*-test was used to compare increasing internal rotation ROM of glenohumeral joint between two groups. The data were analyzed using SPSS 17.

RESULTS

Anthropometric characteristic of the study subjects are shown in Table 1. Females in group I is more than group II. Height of players in group I and group II, the different of both were not significant. For color guard duration, MET had higher mean that means old player in MET group is more than NAPSS group. Exercise duration from two groups is significant difference, MET group is

longer for exercise than NAPSS group, and the last is the difficulty of throwing, color guard player who feel difficult of throwing in NAPSS group is more than MET group.

Table 2 represents the results of internal rotation ROM of glenohumeral joint for both groups. The improvements of internal rotation ROM were 21° and 28.8° for NAPSS and MET groups.

Table 1. Anthropometric characteristics of 18 subjects

Characteristic		NAPSS group (N=9)	MET group (N=9)
		Mean ± SD	Mean ± SD
Gender	15 F> 3 M	1,89 ± 0,33	1,78 ± 0,44
Height	149-175 cm	160,22 ± 6,94	161,78 ± 8,26
CG duration	4-84 months	19,78 ± 14,64	26,33 ± 24,72
Exc duration	8-160 hours/month	58,67 ± 45,78	83,56 ± 45,80
The difficulty of throwing	No>Yes	1,44 ± 0,53	1,78 ± 0,44

Furthermore, there was no significant difference between NAPSS and MET to increase internal rotation ROM of glenohumeral joint.

Table 2. Effect of non assisted posterior shoulder stretching and muscle energy technique to increase internal rotation range of motion of glenohumeral joint

Internal rotation ROM	NAPSS		MET	
	Range (°)	Mean ± SD	Range (°)	Mean ± SD
Pre	30-52	42,78 ± 7,26	30-61	47,44 ± 11,02
Post	50-95	63,78 ± 14,21	45-95	76,33 ± 14,73

DISCUSSION

This study presents that gender, height, color guard duration, exercise duration, and the difficult of throwing is influence increasing internal rotation ROM of glenohumeral joint of color guard marching band on NAPSS and MET. In this study, female players had greater improvement internal rotation ROM than male. Research by Schneider (18) proves that female is more flexible than male on active straight leg raise and shoulder mobility.

Color guard players who had height greater than 160 cm had greater improvement internal rotation ROM than color guard players who had height less than 160 cm, this is because color guard player who had height less than 160 cm result higher force to throwing equipment. This study is relevant with previous study where wall painter who paint higher wall result higher force than short and medium wall [19].

Player who becomes color guard player less than 3 years is greater for improvement internal rotation ROM than color guard that play more than 3 years, this study is reverse with another work where baseball player who did longer stretching program, internal rotation deficit will be smaller [20]. This is presume because different exercise program between baseball player and color guard player, activity of color guard player like spin and throwing equipment is longer than stretching program.

Exercise duration every color guard player was different, color guard players who exercise greater than 8 hours per month had greater improvement than color guard player who exercise less

than 8 hours per month. Lintner has assessed characteristic ROM professional baseball player who did stretching program everyday and reported athlete who did a stretching program more than 3 years had internal rotation ROM greater than athlete who did stretching program less than 3 years [20].

Color guard players that feel difficult of throwing have been 4 until 12 months become color guard. Criteria the difficulty of throwing is player couldn't throw equipment like other players, for the example player could throw two rounds of rifle and for the other players could throw three rounds rifle with same technique. From the interview, players will be fatigue after exercise on the target like decrease of power when throwing equipment and spasm when spin too much and too fast. According to Jonsson, prolonged static elevated arm tasks at 10% maximum voluntary contraction (MVC) is adequate because muscular fatigue [21], in repetitive arm loading like throwing by color guard player result MVC greater than 10% that cause fatigue muscle.

Several research have evaluated that overhead throwing athletes exhibit decrease in glenohumeral joint in the dominant arm than dominant arm [2]. Loss of internal rotation ROM has been associated with glenohumeral internal rotation deficit (GIRD).

Burkhart *et al* [8] on clinical observation indicated that sleeper stretch can increase glenohumeral joint internal rotation ROM in patients with symptomatic GIRD within 2 weeks of use. Oyama found new techniques of sleeper stretch for athlete with stand position, from that research increasing horizontal cross-arm and sleeper stretch at 45° is greater than group means and could increase internal rotation ROM [17]

Moore demonstrated MET for glenohumeral joint external rotators in baseball player with dosage 5 contractions held for 5 seconds each, with a stretch following each contraction that ranges 30 seconds [5]. Five times per week didn't improve posterior shoulder flexibility. But, in our research with same dosage, MET for glenohumeral joint external rotators in color guard player improved significant internal rotation ROM. However, Moore examined on male players, and this study examined majority on female players.

If we can see from the result, NAPSS and MET can be performed on color guard players. NAPSS can be performed on the field and can be used as home program. MET didn't improve posterior shoulder flexibility on baseball players that their gender were males [5]. Therefore, in the future MET is better used on female players. In this research, MET couldn't be performed if there is no clinician that help player, but on the future in the field clinician can be replaced by other player, so this technique can be used as stretching program before exercise. One limitation in this study is color guard players did non assisted posterior shoulder stretching by themselves, researcher just monitored them via communication network and check list. So, in the next research need more control for NAPSS groups.

CONCLUSION

The present study demonstrated that the two methods of NAPSS and MET significantly improves internal rotation ROM of glenohumeral joint. But, there is no significant difference effect between NAPSS and MET for increasing internal rotation ROM. Recommendation for marching band team, NAPSS and MET can be performed on color guard players as stretching program before marching band exercise and NAPSS technique can be used as home program. The finding of this study may help future research to compare stretching methods with different parameters.

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ICASH-A13

THE RELATIONSHIP BETWEEN AGE AND PARITY WITH MYOMA UTERI IN DR. H. SOEWONDO HOSPITAL KENDAL

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ABSTRACT

Background: Myoma uteri is one of benign gynecological tumors are the most common, found one in four women of reproductive age. The incidence of uterine myoma approximately 20-30% of all women. Myoma uteri was not found in children who have not menstruating, in women aged 35-45 years was found about 25% and in menopausal women is only about 10%. Just a little possibility of developing uterine myomas in women often give birth than those who were never pregnant or just had a single pregnancy.

Aims: The purpose of this study was to determine the relationship between age and parity of women with myoma uteri.

Methods: This research is analytic survey with case control method. The study was conducted at Dr. H. Soewondo Hospitals in Kendal Regency in July 2011. The population of this study were all patients with gynecological diseases are treated in March to July, 2011. Samples taken are saturated sample with accidental sampling method, which is 59 people. Data analysis using Chi-Square test.

Results: The analysis showed no relationship between age and uterine myoma ($p \text{ value} > \alpha (0.05)$) and there is a relationship between parity with the incidence of uterine myoma ($p \text{ value} < \alpha (0.05)$).

Conclusion: Further research is needed with the bigger number of samples than this study and the cohort studies may be better for this study.

Keywords: age-parity-myoma uteri

INTRODUCTION

One of the diseases of the female reproductive system is myoma uteri [1]. Myoma uteri is a benign tumor most often found, it was found one in four active women of reproductive age. This number can estimates that the incidence of uterine myoma approximately 20-30% of all women. In the United States, there are 650,000 hysterectomies every year, 27% (175,000) of the cases of hysterectomy due to uterine myoma [6]. In Indonesia, myoma uteri was found from 2.39 to 11.7% of all gynecological patients were treated [2]. The majority (about two thirds) of women with uterine myomas are asymptomatic. The emergence of symptoms depends on the number, size, location, state and condition (usually supply of blood vessels) tumors [4]. At Dr. Soewondo Hospitals in Kendal Regency, in 2010 there were 47 cases of uterine myoma, the majority of sufferers are middle adult women (40 to <60 years old) and primiparas.

Based on previous research by Ririn Ariyani tells us that 65% of patients with myoma uteri aged > 35 years to < 50 years. The high incidence of uterine myoma at reproductive age indicate a relationship with estrogen myoma uteri. At the time of menopause, myoma uteri regression occurs

because both ovaries no longer produce estrogen again [6]. Based on the theory Genitoblast (cell nest) Meyer and De Snoo declare every month continuous stimulation of estrogen affects the growth of uterine myomas [5]. Based on the autopsy, Noval suggests that 27% of women who aged 25 years have a myoma nest, from 27% of women with the myoma nest, 50% found in the black woman and 25% in white woman [2].

Effects myoma uteri in pregnancy depends on the size and position of the tumor. If the tumor led to a distortion of the uterine cavity, the risk of spontaneous abortion to be doubled and the increased likelihood of preterm labor. Tumors in the lower part of the uterus can cause obstruction of the birth canal, thus inhibiting vaginal deliveries [1]. Moreover, myoma uteri can also cause infertility through distortion or block the fallopian tubes [8].

After birth, a woman's life is divided into several periods, namely infants, children, puberty, reproduction, klimakterium and senium. Myoma uteri are not found in children who do not menstruate [5]. Myoma uteri is most common in women aged 35-45 years (approximately 25%) and rarely found in women aged 20 years. After menopause only about 10% myomas that are still growing. The uterine myoma is said to be experiencing downsizing after menopause. Based on previous research by Siti Mursidah said that 63.4% of patients with myoma uteri is primiparas. The possibility of developing of uterine myoma in women who gave birth less often than women who were never pregnant or just had a single pregnancy [1].

METHODS

The design of this research is analytic survey research using case control method. In this research there are independent variables are age and parity and the dependent variable is myoma uteri. The study was conducted at Dr. Soewondo Hospitals in Kendal Regency in July 2011. The population of this study were women with gynecological diseases at Dr. Soewondo Hospitals in Kendal Regency from January 2011 to April 2011. A sample is taken using a non-random (non probability) sampling with accidental sampling, ie taking cases or respondents who happen to be there or available. Samples taken are all cases in the population (total sampling).

Case criteria determined in advance which patients with myoma uteri is numbered 29 people, and then determine the control criteria that patients with gynecological diseases besides myoma uteri by the same amount that is 29 people. Data were collected by study of the documentation and analyzed retrospectively. The instruments used in data collection study is to use a checklist. This checklist contains a list of variables to be collected in the form of a column of data by age, parity and suffer from myoma uteri or not. Data analysis was performed after the data is collected. Analysis of the data used univariate and bivariate analysis. Univariate analysis used to determine the frequency distribution and percentage of each variable. The bivariate analysis conducted on two variables were related or correlated, which is independent variables (age and parity) and the dependent variable (myoma uteri) using Chi-Square test with a confidence level of 95%, then the data is processed using a computer with SPSS.

RESULTS

Based on the results of research on age and parity in women who were treated at the "Mawar" Lounge in Dr. Soewondo Hospitals in Kendal Regency can be seen in the following table.

Table 1. Characteristics of respondents

Parameters		Frequency	Percentage
Age			
< 35 yo		15	25,9
35 – 45 yo		27	46,6
> 45 yo		16	27,6
Total		58	100
Parity			
Nulliparous		20	34,5
Primiparas		16	27,6
Multiparas		11	19,0
Grande multiparas		11	19,0
Total		58	100
Myoma uteri			
Yes		29	50
No		29	50
Total		58	100

Shown in Table 1, the frequency distribution of respondents by age showed that most are aged 35-45 years is 46.6% and the least was <35 years is 25.9%. The frequency distribution of respondents by parity shows that most are nulliparous respondents which is 34.5% and the least was multiparas and grandemultiparas with the same percentage of 19%. By the incidence of uterine myoma showed 50% of respondents suffered from myoma uteri and 50% of respondents never experienced myoma uteri.

Table 2. Relationship between age and parity to the incidence of uterine myoma

Parameters		Incidence of Myoma Uteri			P value	
		Yes (case) %	No (control) %	Total		
Age						
	< 35 yo	N	6	9	15	0,054
		%	20,7 %	31,0 %	25,9 %	
	35 – 45 yo	N	18	9	27	
		%	62,1 %	31,0 %	46,6 %	
	> 45 yo	N	5	11	16	
		%	17,2 %	37,9 %	27,6 %	
Total	N	29	29	58		
	%	100 %	100 %	100 %		
Parity						
	Nulliparous	N	14	6	20	0,012
		%	48,3 %	20,7 %	34,5 %	
	Primiparas	N	10	6	16	
		%	34,5 %	20,7 %	27,6 %	
	Multiparas	N	3	8	11	
		%	10,3 %	27,6 %	19 %	
	Grande multiparas	N	2	9	11	
		%	6,9 %	31,0 %	19,0 %	
	Total	N	29	29	58	
		%	100 %	100 %	100 %	

Presented in Table 2, the relationship between age and incidence of myoma uteri obtained from calculations using formulas Chi-Square with a confidence level of 95% or $\alpha = 0.05$ was not significant, obtained at 0.054. The present study highlighted a significant relationship between parity and incidence of myoma uteri with p value of 0.012.

DISCUSSION

The study was conducted on 58 respondents in Dr. Soewondo Hospitals in Kendal Regency, Indonesia, in January to April 2011. In this study concluded that there was no significant relationship between age and incidence of uterine myoma in Dr. Soewondo Hospitals in Kendal Regency based on the results of Chi-square test with p value of 0.054.

In theory, there are several factors that affect the incidence of uterine myoma in addition to the age of the patient, one of which is due to hormonal factors. Allegedly one of the factors associated with the development of myoma uteri are hormonal factor that is the hormones estrogen and progesterone. Myoma rarely occur at puberty, increases in the reproductive age and regress after menopause [3]. Myoma uteri most commonly found at the age of 35-45 years (approximately 25%) and has never been found before menarche [2]. Although these results were not statistically there is a relationship between age and uterine myoma, but look at the results of the frequency distribution of clinical myoma uteri is more common in women aged 35-45 years. It is the same as that expressed by previous research by Ririn about a descriptive study of patients with myoma uteri were mostly (65%) patients with myoma uteri were women aged > 35 years and < 50 years. However, in this study shows that at Dr. Soewondo Hospitals in Kendal Regency there is no relationship between the incidence of uterine myoma with a woman's age. This can happen because the population and a sample obtained by researchers is limited.

Data obtained from studies in Dr. Soewondo Hospitals in Kendal Regency showed that of 29 patients with myoma uteri respondents, most commonly found in nulliparous women is 14 respondents and the primiparas 10 respondents and in multiparas 3 respondents. At least match grandemultiparas which is 2 respondents.

The analysis of the relationship between parity with the incidence of uterine myoma, the results of Chi Square test results obtained p value of 0.012 so it can be concluded that there is a significant relationship between parity with the incidence of uterine myoma in Dr. Soewondo Hospitals Kendal. This strengthens the existing theory that there is a relationship about myoma uteri with parity. The possibility of developing of uterine myoma in women who gave birth less often than women who were never pregnant or just had a single pregnancy. From the statistical and clinical outcomes, uterine myoma most commonly found in nulliparous. In addition to strengthening the theory, these results also reinforce previous research by Siti Mursidah who stating that the majority of patients with myoma uteri are nulliparous. Uterine fibroids are more common in nulliparous women or infertile. Hereditary factors also play a role in this matter. Myoma uteri are more common in nulliparous women or infertile likely due to estrogen receptors continuously during the menstrual cycle. Where stimulation of estrogen can stimulate the growth of cells myoma itself. The longer the exposure to estrogen such as obesity or early menarche, will further increase the incidence of uterine myoma. In this study there is agreement between theory and reality on the ground, that myoma uteri is commonly found in nulliparous women and the number decreased in women who are said to be infertile or have more than one child. In this study also found myoma uteri occur in women who have more than one child. This can occur due to other factors that affect the growth of uterine myomas such as heredity, family history, age of menarche or weight.

CONCLUSION AND RECOMMENDATION

Based on the results of research and discussion that has been described previously, it can be concluded found 29 cases of uterine myoma in January to April 2011. Of the 29 cases of uterine fibroids occur most commonly at the age of 35 to 45 years which is there were 18 cases (62.1%). Using the statistical test Chi Square obtained p value of 0.054. The test means that there is no relationship between age and uterine myoma in Hospital Dr. H. Sowondo Kendal. Based on 29 cases of uterine myoma, mostly found in the nulliparous group with 14 cases (48.3%). Using the statistical test Chi Square obtained p value of 0.012. The test means that there is a relationship between parity with myoma uteri in Dr. Soewondo Hospitals in Kendal Regency.

For the women in order to further enhance the knowledge of myoma uteri in order to know the early symptoms of uterine myoma and should immediately contact health professionals if you find symptoms of uterine myoma so get treatment early. For further research, in conducting the study are expected to multiply the number of samples so that research can represent the actual incidence of uterine myoma in reality.

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ICASH-A14

NURSE'S ATTITUDE TOWARD PATIENT SAFETY POLICY IN BALI ROYAL HOSPITAL, INDONESIA: INDIVIDUALIZED APPROACH USING HEALTH BELIEF MODEL

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ABSTRACT

Background: Patient safety is one of the most important dimensions in quality of healthcare. Nurses are the key in care delivery, their compliance toward Patient Safety policy cannot be overlooked. Studies evaluating determinants of nurse's compliance to Patient Safety policy is still lacking.

Aims: To evaluate nurse's attitude toward Patient Safety policy using Health Belief Model (HBM).

Methods: An analytical cross-sectional study was carried on in Bali Royal Hospital, Indonesia, on December 2016. An anonymous, self-administered questionnaire was used to collect the data on socio demographics, knowledge, and attitude toward Patient Safety policy. Attitudes are specifically assessed using HBM.

Results: A total of 124 nurses are included in this study. Mean age of the study population was 29.7±6.7 years. Mean score for knowledge about Patient Safety policy was 12.68±3.40 from 18.0-point scale. Nurses perceived a low risk of non-compliance (mean perceived risk 8.07±1.89) and a low barrier to comply with Patient Safety policy (mean perceived barrier 8.66±1.78). Knowledge and attitudes toward Patient Safety policy did not differ by sex and educational background but it did differ according to unit of workplace. Age and length of work correlated positively to knowledge (Spearman's $r=0.439$, p -value 0.000; and $r=0.400$, p -value <0.001, respectively). A positive and moderate correlation was observed between knowledge vs. perceived severity ($r=0.394$, p -value <0.001) and knowledge vs. perceived benefit ($r=0.422$, p -value <0.001). There was a strong and positive correlation between perceived severity and perceived benefit ($r=0.725$, p -value <0.001).

Conclusion: Nurse's attitudes toward Patient Safety policy were generally good and correlate positively with knowledge. The use of HBM provides an increased understanding of how individual perceptions can be influenced to improve nurse's engagement in promoting safer health care.

Keywords: Nurse, Health Belief Model, Bali Royal Hospital, Patient Safety.

INTRODUCTION

Quality in healthcare has different dimensions and elements [1-4], of which patient safety is one of the most important dimensions [5]. Patient safety is a serious global challenge [6,7]. According to WHO, in low and middle income countries (LMIC) one out of ten patients is harmed while receiving health services [8]. The Canadian Adverse Events Study found an incidence rate of 7.5% of adverse events, (i.e. unintended injuries or complications resulting in death, disability or prolonged hospital stay that arise from health-care management) among hospitalized adults in Canada, extrapolating to nearly 185,000 hospital-related adverse events annually [9]. Moreover, nearly 70,000 of these adverse events were found to be potentially preventable. Other research on patient safety in the United States, UK, Australia and elsewhere [10-14], and policy documents including the Institute

of Medicine's *To Err is Human* [15], point towards the injury burden resulting from unintended harm resulting from care, and the need to address these issues. In Bali Royal Hospital, Indonesia, there were 7 reports of patient safety incidents in May 2016, and 4 reports in July 2016. Thus, it necessitates some efforts to be done to prevent patient safety incidents.

One key strategy for improving patient safety is involving nurse in recognizing risks and preventing harm. Nurse involvement has been an integral part of a number of international patient safety campaigns, including the World Health Organization's patient safety campaign. Nurses are the key in delivering care to the patient and their compliance with Patient Safety policy cannot be simply overlooked. Compliance is greatly influenced by personal attitude among nurses. However, studies evaluating nurse's attitude toward Patient Safety Policy are still lacking. Therefore, their personal attitudes toward Patient Safety policy are not known.

Health belief model (HBM) is a psychological model that is widely used to explain and predict health behavior. According to HBM, health behavior is greatly influenced by personal attitude and beliefs and thus, health behavior can be predicted by focusing on the attitudes of individuals (Figure 1) [16,17]. Attitude is defined as personal perception, i.e. a settled way of thinking or feeling, toward some issues that is reflected in a person's own behavior. Therefore, according to HBM, nurse's compliance toward patient safety is reflected by their own behaviors whether they comply or not comply with Patient Safety policy, and their behaviors will be greatly influenced by their personal perception or way of thinking, i.e. their attitude, toward Patient Safety policy. Health behavior is a complex concept and rather difficult to observed and measured directly, but it can be predicted by a more measurable and obvious variable, i.e. personal attitude.

There are four main domain of attitude in HBM, i.e. *perceived risk or susceptibility*, *perceived severity*, *perceived benefits*, *perceived barriers* [16,17]. Perceived risk or susceptibility is perceiving and believing that an individual faces the disease risk. Perceived severity is perceiving and believing that problem is serious and the health problem may lead to a serious problem for the individual. Perceived barriers are physical, mental or financial and etc. encountered by individual for adopting health behavior. Perceived benefits are individual's belief in behavior or observing the suggestions with benefits or effects on prevention of a disease or reduction of its severity and side effects. However, studies conducted using HBM to evaluate nurse's attitude toward Patient Safety policy is still lacking.

Since HBM is very efficient in evaluating or predicting personal attitude, and thus, health behavior, the present study is aimed to evaluate nurse's attitude on complying with Patient Safety policy during care delivery by using HBM. Results of this study can be used as a reference for the future studies and for adopting policies and educational program aiming at promotion of care delivery that complies with the Patient Safety policy.

METHODS

A cross-sectional study was carried on in Bali Royal Hospital, Denpasar, Indonesia, on December 2016. A cross sectional study or a cross sectional analysis is a type of observational study that analyses data – collected from a population, or a representative subset, at a specific point in time – thus, we derived the cross-sectional data on both independent and dependent variables at one point of time [18]. Registered nurses who had been working in Bali Royal Hospital for more than 6 months since the commencement of the study were consecutively recruited into the study population. Samples were selected among nurses in the emergency room, outpatient clinic, inpatient ward, critical care ward, operating room, labor and delivery, hemodialysis unit, IVF clinic, and managerial office using a purposive sampling. Nurses from many departments were selected into the study population to give

insight on nurse's attitude difference according to which department they are working on. A total of 124 nurses gave informed consent and participated.

An anonymous, self-administered questionnaire was used to collect the data. The selected participants were assembled in a meeting room on the day of survey and were given brief information containing the purpose and procedure of the survey by the first author. Each participant then completed the questionnaire under a close supervision of the first author. Independent variables were socio demographic characteristics (age, sex, marital status, educational background, and monthly salary), unit of work, length of work, and knowledge about Patient Safety. Dependent variables were attitudes toward Patient Safety policy. Dependent variables were analyzed specifically using Health Belief Model (HBM) theory.

Knowledge was assessed based on nurse's response to 18 factual statements about the hospital Patient Safety policy that has been adopted in daily practice. Each statement had three possible responses (true, false, or don't know), with every correct response assigned a score of 1, and every incorrect/don't know response assigned a score of 0. A total score was then calculated (range 0.00 to 18.00). Attitudes toward Patient Safety policy was specifically assessed using a Health Belief Model (Figure 1), with the main constructs of attitudes measured were *perceived risk/susceptibility*, *perceived severity*, *perceived benefit*, and *perceived barrier*.

Perceived risk or susceptibility was assessed using a four-item scale, with each scale item measured using a 4-point response scale, labeled "strongly disagree", "somewhat disagree", "somewhat agree", and "strongly agree." The four specific items comprising the perceived risk scale were as follows: i) I don't understand the hospital policy on Patient Safety; ii) I don't think I've involved in sufficient training on Patient Safety; iii) My knowledge in Patient Safety is lacking; iv) My skills in delivering care according the principles of Patient Safety is lacking. Responses were coded so that higher values indicated higher perceived risk (possible range, 4.0-16.00).

Perceived severity was assessed using a four-item scale, with each scale item measured using a 4-point response scale, labeled "strongly disagree", "somewhat disagree", "somewhat agree", and "strongly agree." The four specific items comprising the perceived severity scale were as follows: i) Patient safety incident is a serious matter; ii) Patient safety incident can be fatal; iii) Patient safety incident can jeopardize the image of the hospital I've been working at; iv) Patient safety incident can negatively impact my salary. Responses were coded so that higher values indicated higher perceived severity (possible range, 4.0-16.00).

Perceived Benefit is an individual perception on the positive impacts resulting from compliance to the Patient Safety policy, and was assessed using a four-item scale, with each scale item measured using a 4-point response scale, labeled "strongly disagree", "somewhat disagree", "somewhat agree", and "strongly agree." The four specific items comprising the perceived benefit scale were as follows: i) Delivering care that comply with the principles of Patient Safety policy can enhance patient's satisfaction; ii) Delivering care that comply with the principles of Patient Safety policy positively impact the image of the hospital I've been working at; iii) Delivering care that comply with the principles of Patient Safety policy positively impact my salary; iv) Delivering care that comply with the principles of Patient Safety policy give me satisfaction or pride. Responses were coded so that higher values indicated higher perceived benefit (possible range, 4.0-16.00).

Perceived barrier is an individual perception on barrier of delivering care that comply with the principles of Patient Safety policy, and was assessed using a four-item scale, with each scale item measured using a 4-point response scale, labeled "strongly disagree", "somewhat disagree", "somewhat agree", and "strongly agree." The four specific items comprising the perceived barrier

scale were as follows: i) It's hard for me to deliver care that comply with the principles of Patient Safety because my knowledge is lacking; ii) It's hard for me to deliver care that comply with the principles of Patient Safety because I don't receive enough support or motivation from my working environment; iii) It's hard for me to deliver care that comply with the principles of Patient Safety because I don't have enough time to do it; iv) It's hard for me to deliver care that comply with the principles of Patient Safety because my work burden is exhausting. Responses were coded so that higher values indicated higher perceived barrier (possible range, 4.0-16.00).

Data were analyzed using SPSS version 16.0. Univariate analysis was used to generate frequencies and percentages of categorical variables. Continuous variables are presented as Mean \pm SD. Bivariate analysis was used to evaluate the relationship between independent variables and dependent variables. Spearman correlation was used to test the hypotheses. Level of statistical significance (P-value) was set at 0.05.

RESULTS

Characteristics of the study population

A total of 124 nurses are included in this study, 21.0% of them are male, 66.9% are married, and 54.8% had a diploma in nursing. Mean age of the study population was 29.7 \pm 6.7 years. Background characteristics of the study population are summarized in Table 1.

Table 1. Distribution of respondent's characteristic

Parameters		Number of Respondents (N)	Percentage (%)	
Age	21-30 years	91	73.4	
	31-40 years	25	20.2	
	41-50 years	5	4.0	
	51-60 years	2	1.6	
	Older than 60 years	1	0.8	
	Total	124	100.0	
Sex	Male	26	21.0	
	Female	98	79.0	
	Total	124	100.0	
Marital status	Single	41	33.1	
	Married	83	66.9	
	Total	124	100.0	
Educational background	Diploma	68	54.8	
	Bachelor	56	45.2	
	Total	124	100.0	
Unit of work	Emergency room	19	15.3	
	Inpatient ward	29	23.4	
	Critical care ward (ICU, PICU, NICU)	17	13.7	
	Outpatient clinic	19	15.3	
	Labor and Delivery	6	4.8	
	Operating room	19	15.3	
	Hemodialysis unit	3	2.4	
	IVF Clinic	3	2.4	
	Managerial office	9	7.3	
	Total	124	100.0	
	Rank/Status	Practitioner	82	66.1
		Chief/Team leader	26	21.0
Chief of Unit/Manager		16	12.9	
Total		124	100.0	

Length of Work	Less than 1 year	7	5.6
	1-3 years	50	40.3
	3-5 years	53	42.7
	More than 5 years	14	11.3
	Total	124	100.0
Monthly salary	Less than IDR 2 millions	44	51.2
	IDR 2-4 millions	34	39.5
	IDR 4-6 millions	7	8.1
	More than IDR 6 millions	1	1.2
	Total	86	100.0*
Attendance to training or workshop on Patient Safety in the last 1 year	Never	4	3.2
	Once	70	56.5
	Twice	37	29.8
	More than twice	13	10.5
	Total	124	100.0
Encountering patient safety incident in the last 1 year	Never	33	26.6
	Once or twice	70	56.5
	3-4 times	14	11.3
	More than 4 times	7	5.6
	Total	124	100.0

*valid percentage

Knowledge and attitudes toward patient safety policy

Mean score for knowledge about Patient Safety policy was 12.68 ± 3.40 from 18-point scale. About 38.7% nurses had knowledge score below this mean. Mean score for each attitude construct are summarized in Table 2. In general, nurses perceived a low risk of non-compliance to the Patient Safety policy (mean perceived risk 8.07 ± 1.89 of 16-point scale) and a low barrier of compliance to the Patient Safety policy (mean perceived barrier 8.66 ± 1.78 of 16-point scale). Knowledge and attitudes toward Patient Safety policy did not differ by sex and educational background (Table 3). Married nurses scored higher in knowledge but not in attitudes toward Patient Safety policy compared to single nurses.

However, knowledge, perceived risk, perceived severity, and perceived benefit differ significantly among different departments ($p < 0.05$, Table 4). In post-hoc analysis, critical care ward nurses had better knowledge than ER, inpatient ward, and outpatient clinic nurses ($p < 0.05$). Critical care ward nurses also had lower perceived risk than inpatient ward nurses ($p < 0.05$) and higher perceived severity than outpatient clinic nurses ($p < 0.05$). Critical care ward nurses had higher perceived benefit compared to inpatient ward and outpatient clinic nurses.

Table 2. Mean Score for Knowledge and Attitudes toward Patient Safety Policy

	Knowledge	Perceived Risk /Susceptibility	Perceived Severity	Perceived Benefit	Perceived Barrier
N	124	124	124	124	124
Mean	12.68	8.07	13.64	13.64	8.66
SE of mean	0.30	0.17	0.20	0.19	0.16
SD	3.40	1.89	2.21	2.10	1.78
Minimum	6.00	4.00	4.00	4.00	4.00
Maximum	18.0	16.0	16.0	16.0	16.0

Table 3. Mean Knowledge and Attitudes According to Sex, Educational Background, and Marital Status

		Knowledge	Perceived Risk	Perceived Severity	Perceived Benefit	Perceived Barrier
Male	mean±SD	11.92±2.81	8.15±2.63	13.69±1.87	13.5±1.79	8.57±2.30
Female	mean±SD	12.88±3.52	8.05±1.65	13.62±2.30	13.67±2.18	8.68±1.63
	p-value	0.113	0.736	0.931	0.593	0.193
Diploma	mean±SD	13.08±3.43	7.92±1.87	13.77±2.10	13.98±1.84	8.50±1.40
Graduated	mean±SD	12.19±3.33	8.25±1.91	13.46±2.35	13.21±2.33	8.85±2.15
	p-value	0.089	0.272	0.550	0.094	0.994
Single	mean±SD	11.82±2.81*	8.00±1.71	13.85±1.86	13.46±1.74	8.48±2.02
Married	mean±SD	13.10±3.59*	8.10±1.98	13.53±2.37	13.72±2.26	8.74±1.66
	p-value	0.009	0.680	0.590	0.391	0.169

*significant at the 0.01 level

Table 4. Mean Knowledge and Attitude According to Unit of Work

	Knowledge	Perceived Risk	Perceived Severity	Perceived Benefit	Perceived Barrier
Emergency room	12.94±1.71	7.78±2.32	13.94±2.12	13.82±1.77	8.42±2.19
Inpatient ward	12.24±3.78	8.17±1.81	13.51±2.33	13.17±2.10	9.20±1.65
Critical care ward (ICU, PICU, NICU)	15.05±1.29	7.05±1.56	14.88±1.36	14.82±1.59	8.41±1.83
Outpatient clinic	9.57±2.67	7.68±0.82	12.15±2.36	12.26±2.49	8.42±1.53
Labor and Delivery	14.33±1.50	8.16±0.75	14.33±1.86	14.83±1.83	8.00±1.09
Operating room	11.31±4.12	8.47±1.86	12.82±2.19	13.36±2.08	8.78±2.20
Managerial office	15.33±1.87	9.11±2.02	14.22±1.85	14.22±1.56	8.11±1.05

Note: IVF clinic and hemodialysis unit are omitted from the analysis due to small number of sample. Post hoc analysis described within the text.

Correlation between socio demographics, knowledge, and HBM constructs

Age and length of work correlated positively to knowledge about Patient Safety policy (Spearman's $r=0.439$, p -value 0.000; and $r=0.400$, p -value <0.001, respectively). A positive and moderate correlation was also observed between knowledge vs. perceived severity ($r=0.394$, p -value <0.001) and knowledge vs. perceived benefit ($r=0.422$, p -value <0.001). There was a strong and positive correlation between perceived severity and perceived benefit ($r=0.725$, p -value <0.001). Thus, the more the nurses understood the impact of patient safety incident, the more they understood the benefit that would come if they comply with the Patient Safety policy.

Table 5. Spearman correlation coefficients between socio demographics and HBM constructs

		Perceived Risk	Perceived Severity	Perceived Benefit	Perceived Barrier	Age	Length of work	Knowledge
Perceived Risk	r	1						
	p-value	1						
Perceived Severity	r	-0.351**	1					
	p-value	0.000	1					
Perceived Benefit	r	-0.221*	0.725**	1				
	p-value	0.014	0.000	1				
Perceived Barrier	r	0.164	0.155	0.056	1			
	p-value	0.069	0.086	0.535	1			
Age	r	-0.029	0.005	0.119	0.106	1		

Length of work	p-value	0.753	0.952	0.187	0.240	1		
	r	-0.118	0.122	0.258**	0.059	0.692**		
Knowledge	p-value	0.192	0.176	0.004	0.512	0.000	1	
	r	-0.147	0.394**	0.422**	0.279**	0.439**	0.400**	
	p-value	0.104	0.000	0.000	0.002	0.000	0.000	1

**Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

DISCUSSION

Our study highlights several important findings. Nurses in general perceived a low risk of non-compliance and a low barrier to comply with Patient Safety policy. Perceived benefit of compliance and perceived severity of non-compliance were good, and there was a strong and positive correlation between them. Knowledge was shown to have a moderate and positive correlation to perceived benefit and perceived severity. This study provides an insight on nurse's attitude toward Patient Safety policy.

Studies using HBM construct to evaluate the nurse's attitudes toward Patient Safety policy is still lacking. In one study measuring the HBM constructs in nurse's hand hygiene behavior [19], they found HBM was a good model to evaluate nurse's attitude.

This present study has several limitations. First, we didn't measure the actual behavior of nurses during delivery of care that comply or not comply with the principles of Patient Safety. We are aware that actual behavior on complying with the Patient Safety policy is a complex concept. We've only studied nurse's attitude or personal belief toward compliance to Patient Safety policy in one exact frame time. However, its effect on future behavior toward Patient Safety is not known. Second, our sample size is relatively small. Third, we collect our samples consecutively as randomization might be problematic. Thus, it may limit the generalizability of our results.

CONCLUSION

Our study provides an insight on nurse's attitude toward Patient Safety policy according to Health Belief Model. Our study also demonstrates that knowledge is an important factor that correlates with several aspects of attitude, i.e. perceived benefit and severity. The results of this study can serve as a reference for future study on Patient Safety policy as well as a base for adoption in designing policy in order to promote compliance toward Patient Safety among health care professionals.

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ICASH-A15

**A QUALITATIVE STUDY: EVALUATION OF WAITING TIME IN
REGISTRATION FROM HUMAN RESOURCES WITH MALCOM
BALDRIGE APPROACH**

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ABSTRACT

Background: Building a health system is one of the SDG targets – universal health coverage (UHC). Strong primary health care system needs to be in place (4). The critical issue is the quality of health by improving patient safety, effectiveness, focus on patients, timely, efficient and fair (4, 10). Long waiting times decreased utilization of national health insurance, decreased use by the public and the rising cost of health. (5,7,8,9). The aim of this paper is to investigate how the human resources can lead to long waiting times in the registration by using Malcolm Baldrige approach (6).

Method: This study used qualitative design to describe waiting time problem and it's causes. Informants were appropriately and adequately selected in relation to waiting time including patients clinic, staff and management so the information were triangulated by resources, by methods and by data itself. The results were write as transcription and content analysis carefully done to identify themes and problem. This study held at Public Health Center, Cariu, Bogor, Indonesia in December 2016.

Results: All the informants expressed their concern related to waiting time and need to formulate effective solutions. The solutions were proposed related to causes to the waiting time ; no monitoring and evaluation effort to control waiting time and it's impact, clinical safety procedures, unsatisfied patients and ineffective clinical outcomes ; low priority to human resources management; no supervision ; no on the job training; no evaluation of patients need and expectation, the public health center never had services design ; network instability and inflexibility in the provision of facilities.

Conclusion: Monitoring and evaluation, human resources management, supervision, on the job training, strategic planning, patients focus , commitment and the leadership itself are needed to decrease waiting time.

Keywords: the waiting time of registration, the quality of health services, human resources

INTRODUCTION

Building a health system that can provide access to health inputs and services for the whole population without causing financial hardship is one of the SDG targets – universal health coverage (UHC). Before achieving universal health coverage, however, a strong primary health care system needs to be in place. In 1978, the World Health Organization's Alma-Ata declaration identified primary health care as pivotal to delivering health for all [4]. To ensure healthy lives and promote well-being for all at all ages", we need to address a critical issue: the quality of health care by improving patient safety, effectiveness, focus on patients, timely, efficient and fair [4,10]. In Indonesia, primary health care is realized in Public Health Center (Puskesmas). The Ministry of

Health of the Republic of Indonesia improves the quality of health services at health facilities both human resources and infrastructure with a variety of programs [11].

In primary health care facilities, long waiting times result in decreased utilization of national health insurance, decreased use by the public and the rising cost of public health. [5,7,8,9]. Some research shows that waiting time, administrative inefficiencies, weak case management or insensitive, drug stock-outs, shortages of equipment and poor condition of the facilities have all been shown to limit the intended benefits of universal health coverage. Quality considerations as important as the direct and indirect costs in determining health-seeking behavior, but still do not receive the same attention from health planners as the scope of services and affordability [5]. Research in Tanzania concluded, the perceived quality of health services is a strong determinant of health service utilization and have a different impact on health care utilization [7]. Similarly, research in El Salvador show that households do not appreciate the community health workers, and prefers the high cost of private treatment, even the poorest families, because the waiting time is lower and a higher probability of successful treatment. Similarly, a higher level of publicly funded health centers and hospitals-are preferred because they are less costly in terms of time because they offer a "one stop shopping" and does not require multiple visits, and the success of treatment is higher than among the health post, health unit or community health workers. The purpose of this research is how the human resources know the waiting time of registration as one of the quality of health services, what problems are there in the waiting time and how to find a way out. The aim of this paper is to investigate how the human resources can lead to long waiting times in the registration by using Malcolm Baldrige approach to find root causes and the solutions [6]. Malcolm Baldrige's theory provides direction to be able to analyze the problems of an organization. There are 7 things considered in Malcolm Baldrige namely Result (product services); Management Process; Customer Focus ; Work Force; Strategic Planning ; Leadership and Measurement, Analysis and Knowledge Management . All components are equally important role in an organization [6].

METHODS

This study used qualitative design to describe waiting time problem and it's causes. Informants were appropriately and adequately selected in relation to waiting time including patients clinic, staff and management so the information were triangulated by resources, by methods and by data itself. Further the results were write as transcription and content analysis were carefully done to identify themes and problem causes. Interviews were conducted with unstructured, no answers are provided. Interview progressed to the fundamental answer is found. Data interviews were recorded, analyzed and summarized by the researcher. The results of the interview to be convinced by looking at some documents the results of the registration process and also to observe directly the registration process in Public Health Center. The study was conducted in Public Health Service, Puskesmas Cariu, Bogor Regency, West Java, Indonesia in December 2016.

RESULTS

All the informants expressed their concern related to waiting time and need to formulate effective solutions. The solutions were proposed related to causes most probable to the waiting time i,e related to; there is no monitoring and evaluation effort to control waiting time and it's impact especially related to clinical safety procedures, unsatisfied patients and ineffective clinical outcomes. Long ineffective waiting time was related to low priority to human resources management in the public health center . The informants mentioned that there is no supervision , no on the job training among other. Other factors related to ineffective services waiting time is there no evaluation of patients need and expectation so the public health center never had services design and arrangement

to prevent patient crowding in specific times. Beside, network instability and inflexibility in the provision of facilities caused by desentralisation financial system contribute to long waiting times.

DISCUSSION

The deep interviewing of informants has pointed some conditions which led to long waiting time in registration. The main problem is the lack of registrars. As the lack of workforce is still a problem in Indonesia, the government still focuses on the medical workforce such as doctors, dentists, nurses, midwives, pharmacists, public health, nutritionists [12]. The non-medical workforce is still not a priority for the government. The inappropriate educational and background, the untrained registrar is contributing to the long waiting time in registration. In the case of workforce performance, human capital or assets, including employee knowledge, skills, experience, ability, personality, internal and external relationships, attitudes, and behaviors are essential for creating firm-specific advantages [13]. The research done by Neti M. Bustani concluded that long waiting time is caused by a lack of registrar [14].

The second main problem of the long waiting time in registration is the facilities of public health centers. Computer and internet connections are needed for online registration since the National Health Insurance held by BPJS which evaluates the performance of public health centers by the Pcare [16]. Software can reduce waiting time hopefully [17], but a lot of rural areas are not covered by good connections. Unstable networks take time to enter the data of registration. Research done by Sondang et al. showed that utilization of Pcare by primary health care is still not optimal. Barriers of using Pcare come from the connection [18]. Public health centers cannot provide computers soon because of the financial management system of the local government. Providing a good and stable connection is not a single effort of public health centers. It needs cooperation with other stakeholders in the government.

The third problem found is the management process in health care and leadership. There is no job description of the staff, the schedule is unclear and uncoordinated. Yes, Nong et al. research that job scheduling methods can reduce waiting time variance [19]. The lack of information to patients about how important the medical card is for the registration process. Poor information systems increase hospital queues [20]. There is no assessment problem in the registration process. The staffs are not involved in handling the registration's problem. Responsiveness of the leaders is still low. Staffs are still late. Lack of assertiveness. Attention to the weakest part of the registration staff is still lacking. Public health centers are government institutions where the leader is appointed by the government. The leader is the manager. In the research of human resource management practices by Christopher Collins explain how to manage employee performance by: direct monitoring; cultural and peer pressure; professional standards; processes, rules and procedure. Direct monitoring believes that the only way to ensure that employees perform as expected is by continually monitoring their actions. It can be done by managers and supervisors or use technology to monitor the employees. Cultural and peer pressure encourage employees to provide feedback to one another, ask for co-worker input on employee performance appraisal, and design work-based work-around teams. Professional standards believe that individuals are motivated to perform at high levels and do excellent work because of their professional socialization. Processes, rules and procedure believe that individuals will perform to expectation if the company clearly lays out expectations. It has detailed job descriptions and explicit work rules for employees to follow, has detailed organization charts so employees understand reporting lines, and have a formal process of performance appraisal and regularly scheduled meetings to provide performance feedback to employees [21]. The research said that a leader plays a role in the management. The government should consider the right leader in public health centers and also conduct trainings to produce a qualified workforce.

Limitation of the study was to convince staffs to give answers and or opinions. However with slow and careful persuasion the level of trust was high that can be seen no hesitation to discuss and ask sensitive issues such family matter ; rational logical answer among informants; can be explained by any theory related to quality of care

CONCLUSION

Conclusion The human resources plays a very great improvement in the quality of service in this case is the waiting time of registration. And of all the human resources section foremost leaders determine how the service takes place. Knowledge, exemplary, caring, coaching, assertiveness is expected of a leader. Leadership and other human resources also hampered by infrastructure and facilities in health centers. Monitoring and evaluation, human resources management, supervision, on the job training, strategic planning, patients focus, commitment and the leadership itself are needed to decrease waiting time. Suggestions from this study is the training of registration, medical records personnel training, leadership training for leaders of quality improvement, team building work, increase the intensity of the performance evaluation, and socialization of quality improvement among the staff.

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ICASH-A16

FACTORS INFLUENCING PATIENT SATISFACTION: A SYSTEMATIC REVIEW

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ABSTRACT

Background: Along with the progress of time, hospital as service provider is required to provide better services. The challenge for hospitals is to fulfill the expectations of society for better health care. Patient satisfaction is a comparison between the perceptions care received by expectations before getting treatment.

Aims: This is to evaluate patient satisfaction as an effort to see the level of success of the hospital.

Methods: The method was a systematic review by using the search facility online. Only research in English language and describe factors that influence patient satisfaction is maintained. The results of this study were 565 journals found at early stage and at the end we found 7 journals in review.

Results: The purpose of research is to describe the level of satisfaction of hospital. All the four items namely performance of housekeeping staff, operational x-ray facilities, maintenance of file records and transparent billing procedure are significant in predicting satisfaction towards internal facilities provided in the hospitals.

Conclusion: Overall, on the articles reviewed accepted that all the patient satisfaction dimensions positively and significantly contribute towards patient satisfaction which also acts as an important mediating factor between dimensions and loyalty.

Keywords: patient satisfaction; hospital; health services

INTRODUCTION

Excellent service is an essential element in the ministry of health in the era of globalization both in hospitals and other health units. Health facilities are required to provide a comprehensive healthcare which includes aspects of promotive, preventive, curative, and rehabilitative services. Apart from the facilities provided by the hospital, other factors to be considered are the attitude and human resource services that affect the services produced.

In recent years, there has been increasing interest in hospital services, as standards of living have changed and there is a demand for better medical care to improve lifestyles. Improving the quality of medical care services has become a primary concern for patients, and, in order to provide better service to patients, service quality has become increasingly important for hospitals in respect of satisfying and retaining patients [1]. Patient satisfaction is an important indicator of quality of care in hospitals. Reliable and valid instruments to measure clinical and outpatient satisfaction already exist [2].

Improving patient satisfaction is a key element in strategies for improving the long-term economic viability of health care institutions. Patients satisfied with the health care services of a particular hospital may tend to visit the institution consistently and maintain beneficial relationships with health care providers [3]. The patient satisfaction strategy requires effective marketing plans, policies, and practices that meet the needs of varied consumer segments [4]. For these reasons, hospitals providing tertiary care services regard customer satisfaction as a crucial determinant of institutional viability and make efforts to respond flexibly to changing health care environment and the public's health care needs [3]

Patient satisfaction is evaluated on the basis of both provider – and client – focused aspects. While provider-focused aspects refer to the provision of sound medical skills, client focused aspects are centered on the extent to which the patients feel their needs and expectations are being met during the provision of health care services [3]

Improvement in quality of care is of fundamental importance to every stakeholder in health care. Strategies to improve quality of care are needed not just at the clinician patient interface, but also at the regional and national levels [5]. An important step in improving the responsiveness of hospitals to patients' needs is to ask the patients themselves about their experiences and opinions [6]. Patients' perception of healthcare is a critical indicator in measuring medical service quality [7].

METHODS

Knowing factors that influencing patient satisfaction presented descriptively based on existing studies to approach systematic review. In early stages, journals were searched by using the facility database online through Proquest and Google Scholar. Search using a specific keyword is "patient satisfaction" AND "hospital". Then, journals were screened by year, title and abstract. All retrieved journals are published in 2012-2016 to obtain the latest information. Journals that are not relevant to the topic of study was eliminated.

Journals that have been further filtered using inclusion criteria. Only in English language journals and describe the factors that influencing medication error were maintained. The journals obtained after the filtration are seven journals, then performed systematical review to find out factors that influencing patient satisfaction.

RESULTS

We found 565 journals search by using data base online through Proquest and Google Scholar by using keywords "patient satisfaction" AND hospital, 184 journals were found from Proquest and 381 journals from Google Scholar. Then we screened by year 2012-2016, English language, and only describe factors influence patient satisfaction were maintained. At the end we found seven journals in review, and 558 journals from Proquest and Google Scholar were issued because they didn't describe factors that influence patient satisfaction (Fig.1).

Based on articles reviewed, the study was primarily conducted to assess the structure of patient satisfaction construct in the daycare, public and private health care, military health service, and hospital. The analysis results indicated that patient satisfaction depend on physical maintenance, physician care, nursing care and internal facilities.

Patient consider physical maintenance to be the utmost importance in the level of positive perception towards health care services. The study specifically found items such as clean toilets, natural light, overall cleanliness, internal atmosphere, spacious wards and good outer appearance to be significant to explain physical maintenance. The consumers seeking treatment from the hospitals

specifically considered friendliness, helpful and supportive behaviour and responding quality, as per their expectations. The nursing care was found in the study to be the function of availability of nurses at the time of requirement, spending sufficient time with patients, supportiveness, providing adequate medical treatment, responding quality and caring attitude in both the hospitals.

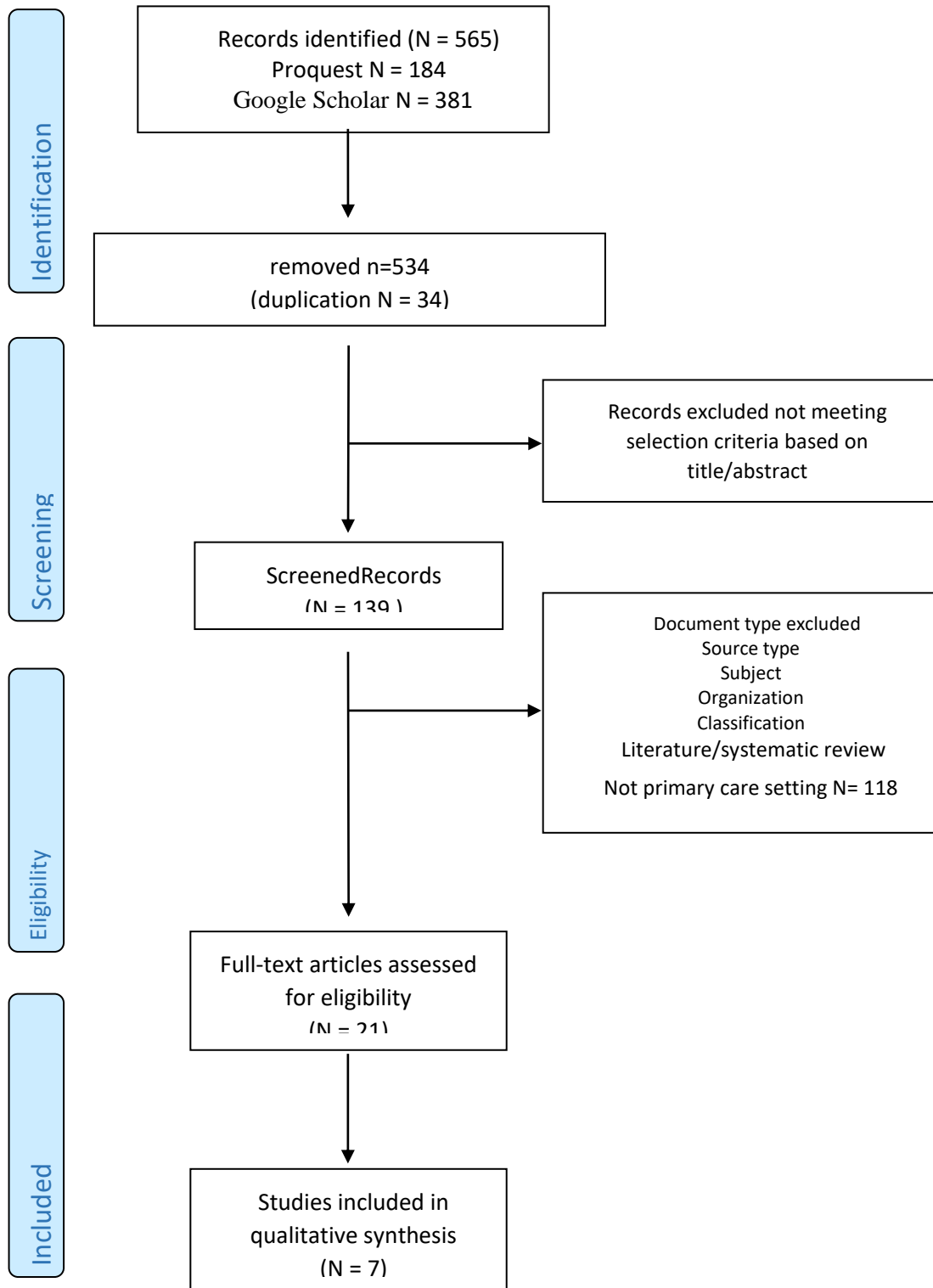


Figure 1. Systematic review flowchart

The results of the study also indicate that all the four items namely performance of housekeeping staff, operational x-ray facilities, maintenance of file records and transparent billing procedure are significant in predicting satisfaction towards internal facilities provided in the hospitals. Patient in the hospitals are averagely satisfied with regard to internal facilities provided by the hospitals. All these facilities specifically enable the patients to feel like home and help them to recover from their ailment in comparatively shorter time which subsequently leads to patient satisfaction.

Overall, on the articles reviewed accepted that all the patient satisfaction dimensions positively and significantly contribute towards patient satisfaction which also acts as an important mediating factor between dimensions and loyalty.

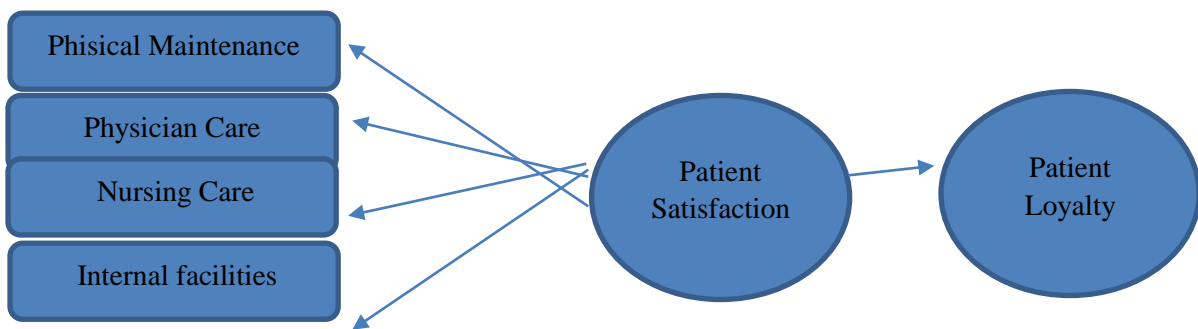


Figure 2: Impact of patient satisfaction dimensions on patient satisfaction and loyalty [4]

Table 3. Results of systematic review

Authors	Title	Methods	Variabels	Results
Amin, M., & Nasharuddin, S. Z. (2013)	Hospital service quality and its effects on patient satisfaction and behavioural intention. <i>Clinical Governance.</i>	Survey	hospital service quality, patient satisfaction and behavioural intention from the perspective of patients	Five dimensions – admission, medical service, overall service, discharge and social responsibility – are a distinct construct for hospital service quality. Each dimension has a significant relationship with hospital service quality. The findings of this study indicate that the establishment of higher levels of hospital service quality will lead customers to have a high level of satisfaction and behavioural intention.
Chahal, H., & Mehta, S. (2014)	Developing patient satisfaction construct for public and private health care sectors	Survey	model 1 depicting the impact of dimensions on satisfaction and model 2 depicting impact on both satisfaction and loyalty showed good fit for both the hospitals	reveal patient satisfaction is a multidimensional construct comprising of four dimensions namely, physical maintenance, physician care, nursing care and internal facilities in both the sectors.
Ham, H.-S., Peck, E. H., Moon, H. S., & Yeom, H.-A. (2015)	Predictors of patient satisfaction with tertiary hospitals in Korea. <i>Nursing Research and Practice</i>	cross-sectional descriptive	predictors of outpatient satisfaction with tertiary health care	Of the five domains, nurse service was the domain with the highest mean score (M = 4.21) and convenience was the domain with the lowest mean score (M = 3.77). The most significant predictor of patients' satisfaction was the constructs of convenience ($\beta M = 0.21$).
Kleefstra, S., Kool, R., Zandbelt, L., & de Haes, J. (2012)	An instrument assessing patient satisfaction with day care in hospitals. <i>BMC Health Services Research</i>	Survey	Admission procedure, Nursing care, Medical care, Information, Autonomy and Discharge and aftercare in day care hospitals	The COPS-D was sent to 8355 patients discharged from a day care unit from the five general hospitals. The average responses rate was 46% (range from 38% till 60%). The strongest interdimensional correlation is the one between the dimensions <i>Information and Discharge</i> and the weakest correlation is the one between <i>Admission and Medical Care</i>
Lv, Y., Xue, C., Ge, Y., Ye, F., Liu, X., Liu, Y., & Zhang, L. (2016)	Analysis of factors influencing inpatient and outpatient satisfaction with the Chinese military health service.	Survey	Patient satisfaction (Demographic characteristics; outpatient characteristics, inpatient characteristics, perception variables such as medical personnel explanation, doctor communication, environment satisfaction, trust in medical staff)	<i>Outpatient dissatisfaction was lack of medicine (33.4%), poor service attitude (30.1%) and poor equipment (25.9%); Inpatient dissatisfaction was poor service attitude (40.3%), lack of medicine (33.7%) poor medical technology (32.9%)</i>
So, J. P. P., & Wright, J. G. (2012)	The use of three strategies to improve quality of care at a national level. <i>Clinical Orthopaedics and Related</i>	Survey	three questions: (1) does pay-for-performance improve the quality of care; (2) do surgical safety checklists improve the quality of surgical care; and (3) do practice guidelines improve the quality of care? improve quality of care are	Pay-for-performance improved the process and to a lesser extent the outcome of care. Surgical checklists reduced morbidity and mortality. Explicit practice guidelines influenced the process and to a lesser extent the outcome of care

Research.

Zhang, M., Zhang, C., Sun, Q., Cai, Q., Yang, H., & Zhang, Y. (2014)	Questionnaire survey about use of an online appointment booking system in one large tertiary public hospital outpatient service center in China.	Survey	waiting times	The 1000 outpatients randomly selected for the survey were least satisfied about the waiting time to see a doctor. Even though the WAS provided a much more convenient booking method, only 17% of patients used it. Of the 197 doctors surveyed, over 90% thought it was necessary to provide alternative forms of appointment booking systems for outpatients. However, about 80% of those doctors who were not associated professors would like to provide an 'on-the-spot' appointment option, which would lead to longer waits for patients.
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DISCUSSION

Improving quality of care is of prime consideration for patients, clinicians, and healthcare providers. Although many approaches are available [5]. Service quality as a comparison differentiation between the customer perception and expectation of the service and the actual performance of the service received by the customer provided by the company at a certain period of time [1].

Inpatient and outpatient services differed with respect to treatment measures, standards time, and environment. Outpatient care is a short-term medical service that does not require an overnight stay in hospital or a medical facility [7].

Patient satisfaction is seen as an indicator of quality of care and satisfaction may depend on the type of hospitalisation, it is reasonable to assume there is a difference in satisfaction between different kinds of hospital care [2]. Patient satisfaction is a vital instrument that acts as a direct indicator of quality and is simultaneously also helps service providers and policy makers in designing health care strategies and policies. Hence it needs to be measured regularly and consistently so that a specific localized health care plan can be developed. Patients' evaluation also suggests guidelines for improving the attitudes of doctors and other paramedic staff in better serving the patients thereby improving the health services [4].

The study has measured patient satisfaction using physician care, nursing care, internal facilities, physical maintenance and patient loyalty from patients' perspective. Patient loyalty is the outcome of patient satisfaction which subsequently helps to improve as well as to maintain the organization's image in the market. It is generally considered as patient's commitment to prefer and recommend the same product over a period of time irrespective of financial and location barrier [4].

CONCLUSION

The main reason the perception of health care is patient dissatisfaction. In order to achieve better health services will require improvement in patient satisfaction. From this systematic review it can be concluded that in private hospitals there is a positive response on patient satisfaction lies in three dimensions, i.e. service of doctors, nurses and support staff, meanwhile in government hospitals all three dimensions, is a factor that is unfavorable to influence patient satisfaction then the government hospital is recommended to be improving in all three dimensions. Hospitals must keep

improving their service to make sure the level of service quality is at the high level to gain patients satisfaction and have an impact on patient's future behavioural intention.

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ICASH-A17

TEACHERS AS AGENTS OF CHANGE: SCHOOL-BASED DIAGNOSIS AND TREATMENT OF MALARIA POSITIVELY IMPACTS CHILD MORBIDITY

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ABSTRACT

Background: Teachers in developing countries traditionally send home children found sick in class. Yet infection due to malaria is the principal reason a child will miss school in sub-Saharan Africa and the leading cause of death in school-aged children. Rapid diagnostic testing (RDT) and treatment with artemisinin combination therapy (ACT) is the management for malaria recommended by the World Health Organization (WHO) but RDT/ACT are not available in schools.

Aims: To evaluate the impact on child morbidity from malaria of engaging teachers to provide RDT and administer ACT in primary schools in rural Uganda, using duration of absence from school as a surrogate measure of morbidity.

Methods: This was a 2 year project. Pre-intervention (year 1) we trained teachers to identify probable infectious illness, conduct RDT, and administer ACT; conducted baseline evaluation of malaria knowledge, and monitored days of absence from school. Intervention (year 2) trained volunteer teachers administered RDT to children found to be sick at school and treated those positive with ADT; data collection was ongoing.

Results: Teacher administered RDT/ACT was implemented and sustained in 4 rural schools (grades primary 1-5). Teachers participated willingly. Year 1 (pre-intervention) 953 of 1764 pupils were sent home due to illness; mean duration of absence from class was 6.5 (SD 3.17) school days. Year 2: (intervention with RDT/ACT) 1066 of 1774 pupils were identified as sick, 765/1066 (67.5%) tested positive by RDT for malaria and received ACT and their duration of absence fell to 0.59 (SD 0.64) school days ($p < 0.001$); and overall absence decreased to 2.55 days from 6.5 in year 1 ($p < 0.001$).

Conclusion: RDT/ACT use by teachers as a school-based health practice is novel and reduced child morbidity significantly. Our model of engaging and training teachers represents a community empowerment approach applicable to other low-resource settings worldwide where malaria is endemic and morbidity high.

Keywords: Artemisinin, Malaria, Rapid diagnostic testing, School-based intervention, Teachers

INTRODUCTION

In many countries worldwide malaria is the main reason a school-aged child will die and the principal reason why a child will be absent from school [1,2]. Teachers recognize that the duration of malaria-related absence, frequency of absence due to repeated infection, residual malaise from sub-optimal treatment or permanent neurological complications of falciparum malaria can all compromise a child's potential to learn [3-5]. Where malaria is endemic the burden of disease is greatest amongst

children in low resource settings. The World Health Organization (WHO) advocates early, accurate diagnosis of malaria and prompt, effective and affordable treatment within 24 hours of the onset of illness [6]. Validated measures to do this exist, but to date health resources to diagnose and treat malaria are scarce in most developing countries especially in rural and low resource communities, and have not been made available in schools.

A diagnosis of malaria is difficult to make because symptoms are not specific; a lack of knowledge about appropriate treatment and limited access to care also contribute to morbidity and mortality [7]. Hence, there is an urgent need for the simple, accurate and inexpensive diagnostic tools and effective therapeutic agents that now exist to be made available at a community level [8].

The combined use of Rapid Diagnostic Test kits (RDT) to accurately diagnose malaria and prompt administration of a locally effective therapeutic agent in those who test positive (Artemisinin Combination Therapy (ACT) in Africa and many other countries where *P. Falciparum* infection predominates) has improved both diagnostic accuracy and treatment efficacy. RDT kits are now available in many countries and the feasibility of using them in rural clinics without laboratory facilities has been demonstrated [9,10]. But deployment of RDT and ACT has been slow, especially in low resource settings as the engagement of the population necessary to spread the knowledge that this approach is effective and empower rural communities to use them has been missing [8]. Although RDT and ACT use is recommended by WHO, training low cadre health care workers, including school staff, in their use has not occurred.

Malaria RDTs provide a diagnosis in minutes by detecting the presence of malaria parasites in human blood. RDT kits vary, but the principles of how they work are similar [11]. Most are for individual use and include a lancet to obtain blood from a finger-prick. A drop of blood from a sick patient is put onto a reagent strip to test for the presence of specific proteins (antigens) produced by malaria parasites. If malaria antigens are present, they bind to the dye-labeled antibody reagent in the kit, creating a colour change in the results window. The sensitivity and specificity of RDTs is good enough for them to replace conventional testing for malaria [12].

WHO recommends ACTs as the first-line therapy for *P. falciparum* malaria worldwide [13, 14]. Originally sourced from the natural herb artemisinin can now be made synthetically. ACTs combine artemisinin which kills the majority of parasites in a few hours, with a longer half-life partner drug of a different class which eliminates the remaining parasites in a single fixed-dose tablet. Benefits of genuine ACTs include high efficiency, fast action, few adverse effects, low cost and the potential to lower the rate at which resistance emerges and spreads [13]. Care must be taken in the choice of preparation in developing countries as counterfeit products with little or no efficacy are widespread.

Since 2006 we have established Health Promoting School (HPS) using the WHO model in rural Uganda to deliver low cost health education in schools [15]. We learned from teachers that absence from school due to malaria is high, and on investigation found that most children sent home due to febrile illness do not then get taken to a clinic for diagnosis and treatment; reasons for this include the distance to a clinic, cost, and lack of awareness that care is important. Hence, as a logical and medically expedient response, we designed a trial where diagnosis and treatment using RDT/ACT would be provided in schools by trained volunteer teachers to address the challenge and burden of malaria amongst children in rural resource-poor settings.

The hypothesis was that with engagement of teachers to provide school-based rapid diagnostic testing, all sick children normally just sent home with presumed infectious illness would be screened for malaria using RDT and those who tested positive given ACT, and as a result child

morbidity due to malaria would improve, as measured by a significant reduction in days absent from school.

METHODS

This was a community outreach health education project conducted in 4 newly established health promoting schools by the Health and Development Agency (HEADA) Uganda. HEADA is a non-governmental agency funded by the Hillman Medical Education fund to implement comprehensive health education, treatment, and support programs in Western Uganda [16]. The project followed the principles of participatory action research and incorporated related process to promote participation and achieve trust in the communities engaged [17]. The full protocol and sequence for community engagement has been described previously [16]. Key elements included Teachers and HEADA staff and Community leaders (teachers and elders).

The teachers in the schools were central to this intervention. Teachers and HEADA staff held public forums to inform and engage members of the community. These included presentations with question and answer sessions where teachers explained how absence from school due to malaria was having a negative impact on the education of a large number of children; that the current practice of sending children home who were sick was problematic, as although many were assumed to have malaria, once home their parents often did not take any action to get a diagnosis or treatment; and that many children were absent for more than a week due to illness, and then often remained unwell for days or even weeks after they returned, so consequently were unable to benefit fully from being back in school. HEADA staff then summarized current knowledge about the benefits of interventions available to help manage malaria and the practicalities of delivering them, particularly the use of RDT kits in government clinics for prompt diagnosis and benefits of early treatment with ACT.

Community leaders (teachers and elders) subsequently chose a school-based intervention to address malaria absenteeism and HEADA coordinated data gathering and problem-solving discussions on implementation. These included establishing if teachers would invest the time to take the training required, be prepared to sustain a school-based program, and perform testing involving collection of blood from a finger prick.

Teachers in the schools then invited parents to participate in community-wide sessions, allow dialogue regarding the process and obtain consent; no parents wanted their child excluded. It was explained that for evaluation purposes data on absenteeism would be recorded by the school, and in those children who became sick and were sent home from school with signs suggestive of an infectious illness additional data would be collected. Each school signed an agreement to follow the co-developed action protocol for a trained teacher to evaluate all children identified as sick who would normally be sent home, conduct the RDT and administer ACT in those positive.

The teachers in the 4 schools were orientated on the action protocol by HEADA staff who visited each school weekly to support the teachers, collect data sheets documenting the pupils absent from school and the sick, tested and treated children and deliver supplies (RDT kits, ACT medication, and sharps boxes for used blood lancets and biohazard bags for safe waste disposal. Ninety km separated the 4 schools; a motorcycle and fuel costs were included in the budget.

In year one the action protocol included data collection on sick pupils sent home and subsequently absent. Absence for reasons other than presumed infectious illness was excluded. HEADA trained the teachers who volunteered to conduct RDT and administer ACT in one day interactive workshops supervised by a physician and run by two trained laboratory staff and two nurses. One teacher was trained from each school as the primary evaluator and one as a back-up.

Instruction included: how to evaluate a child for a presumed infectious illness; the theory and practice for conduct of RDT and administration of ACT; record keeping; needle safety and waste disposal techniques [16]. Practical competency was evaluated and a refresher course given in year 2. The RDT kits used were: Malaria Ag pan/Pf Malaria test kits ‘Malarascan’ (Zephyr Biomedical Systems) which targets HRP2 and Pan Aldolase of Plasmodium falciparum and other less common Plasmodium species (*P. vivax*, and *P. ovale*); sensitivity (96.3%) and specificity (98%) are high (16).

In year two the action protocol added screening with RDT by teachers and treatment of those testing positive for malaria with ACT [18]. A single dose ACT preparation was used to ensure a full course of treatment was completed; this was to avoid the potential for partial treatment bias if any of the five additional doses that would have had to be given at home were missed had a conventional 3 day 12 hourly regimen been used. The ACT given was Arco (Artemisinin-Naphthoquine) (Midas Care Uganda, Ltd). The drug was taken with milk or juice to aid tolerance under teacher supervision. Children were observed for at least 1 hour for side effects; the protocol called for another dose to be given if vomiting occurred [16].

Throughout the 2 year intervention HEADAs and the schools maintained community-based dialogue to sustain the school-based action and promote new knowledge and behavioral change community wide. In the schools classroom education was added to increase knowledge and develop practices and behaviours to benefit the children in the context of malaria. A pre-assessment of children’s knowledge preceded new HPS activities and post-intervention assessment followed for comparison. In the community HEADAs provided feedback via workshops reporting on the conduct and efficacy of the intervention.

RESULTS

Four primary schools were engaged in geographically separate low resource settings in south western Uganda [16]. Table 1 shows the demographic data, and results from Year 1 (pre-intervention) and Year 2 (intervention). Total pupil enrollment was 1764 in year 1 and 1774 in year 2 across classes primary 1-7.

Table 1. Study demographics and diagnostic, treatment and absenteeism data for the 4 participating schools: Year 1 - Pre-intervention - Year 2 - Intervention by teachers using RDT and ACT. Modified from Macnab et al. *IJLTER*. 2016 5(7);20-37 (16)

	Year 1					Year 2				
Children	1764					1774				
Age-years	5-13					5-13				
Gender M/F	49/51%					49/51%				
Schools		1	2	3	4		1	2	3	4
Children at each school		412	451	189	712		422	451	189	712
Children found to be sick at school	953					1066				
Sick/per school		221	200	218	314		263	201	300	302
Sick/per term							56/127/80	27/97/77	55/135/110	70/133/99
Sick sent home	953									
Sick tested RDT						1066				
Sick positive RDT result						715	27/92/49	20/74/57	28/68/106	35/98/62

MALARIA										
Sick treated ACT						715	27/92/49	20/74/57	28/68/106	70/133/99
Absence (Days) Sick sent home TOTAL (mean)	6.5 (3.2)	6.2	6.5	6.7	6.6	2.55 (3.35) p < 0.001	2.4	2.8	3.0	2.5
Absence (Days) Sick sent home RDT POSITIVE for MALARIA						0.59 (0.64) p < 0.001	0.49	0.66	0.72	0.48
Absence (Days) Sick sent home RDT NEGATIVE						4.62 (3.54)	4.1	6.1	4.5	3.8

Community-based dialogue (May – September 2013) led to the collaborative decision to introduce school-based teacher-administered RDT and ACT to address absence from school due to malaria. Statements made by Head Teachers included: a) “This is exactly what we need, testing and treating malaria at school. We are ready to collaborate”. b) “Our children suffer from fever and malaria, but we send them home where they are given local herbs and paracetamol. Malaria affects children’s brains and ability to learn; it is a great opportunity for us to be trained to prevent this from continuing to happen”. c) Our teachers are enthusiastic about being involved in testing and treating children after they have undergone training. Our School Board Chairman has endorsed the idea. We are grateful for this initiative” [16].

Logistic planning, baseline assessment and teacher training (September 2013 - August 2014 – Year 1) and was followed by action/intervention with ongoing evaluation (September 2014 - August 2015 – Year 2). This allowed a 2 year evaluation where pre and post intervention data were collected over comparable 3 term periods during 2 consecutive school years, recognizing the seasonal nature of malaria.

Knowledge and awareness about malaria causation, transmission, prevention, diagnosis and management amongst the children was assessed in classroom sessions. Pre-intervention less than 20% of the children knew mosquitos transmitted malaria, the role of bed nets in prevention, how malaria can be diagnosed and why prompt and effective treatment is important. By early year 2 virtually all children had this knowledge, and understood how infection would probably make them feel and how to access diagnosis and treatment.

Questionnaires established that all teachers (except one) wanted training to do RDT for malaria and administer ACT. All agreed to take on the additional work of evaluating sick children and follow the action protocol. To provide the 2 trained teachers the 4 schools asked for to conduct the duties required (one as primary evaluator and one as a back-up) eleven volunteers were trained over 2 years; their performance and a refresher course evaluation confirmed all retained the necessary knowledge and practical competency.

We also identified that for the majority of sick children sent home in year 1 with symptoms compatible with malaria parental management was not in keeping with WHO recommendations [6]. Only 26% were taken for clinic-based diagnostic and/or anti-malarial treatment measures and the majority (42%) were only given an anti-pyretic (e.g. paracetamol/Tylenol); other care included local herbal remedies (19%), being taken to church (8%), or to a traditional healer (6%) [18].

Children identified by their classroom teachers as being sick and needing to be sent home using the school's regular criteria numbered 953 in year 1 (pre-intervention) and 1066 in year 2 (intervention). These 1066 were evaluated by a trained teacher and an RCT performed; 715/1066 (67.5%) tested positive and all 715 of them received immediate treatment at school with a single dose ACT preparation (Artemisinin-Napthoquine).

The mean duration of absence in children sent home with a presumed infectious illness in year 1 was 6.5 school days from onset of illness to return to class. In year 2 mean duration of absence overall decreased to 2.55 days ($p < 0.001$), and fell to 0.59 days in the 715 children RDT positive for malaria who were treated immediately with ACT ($p < 0.001$). In those RDT negative duration of absence was 4.62 days. Many treated children felt well enough to ask to return to class within hours of receiving ACT, and consequently had no days when they were absent from school. Some very small variations in absenteeism rates were evident over the 2 years between schools, across classes (grades) and from term to term (season). But overall, absence from school was reduced by 60.8% during this teacher-driven intervention using RDT/ACT. If the same percentage of children sent home in year 1 had malaria as were diagnosed using RDTs in year 2 this would equate to 1358 cases in 1775 children over the 2 years - a malaria incidence rate of 79% across the 4 schools. No adverse events occurred in the context of RDT screening and no adverse reactions resulted from administration of the single dose ACT preparation which was well tolerated. No children died from malaria during the intervention year.

Post-intervention the consensus in the community was that participating children had derived both health and educational benefits from having school-based RDT/ACT provided by teachers. Also, that new knowledge was now resulting in behavioral change over how suspected malaria was managed in the broader community. It was agreed that teachers in the 4 schools would continue to offer RDT/ACT, but via a modified intervention where RDT positive children would now be given a conventional and 3 day ACT regimen (Artesunate-Amodiaquine) as the cost was less. Knowledge transfer was also extended beyond the community to engage the Health Ministry.

DISCUSSION

Teachers can be effective agents for change in the context of malaria. This community-based health promotion intervention has confirmed the feasibility of school-based RDT kit use by teachers to screen children for malaria, and the efficacy of accurate diagnosis combined with prompt treatment with ACT at school.

Amongst sick primary school children who would otherwise just have been sent home 67.5% tested positive for malaria and received ACT. Subsequently, many felt well enough to choose to go back to class rather than be sent home, presumably because their malaria was diagnosed soon after symptoms developed, promptly treated and the ACT rapidly cleared their blood of parasites [19].

For these children, their duration of absence from diagnosis to return to class fell 60.8% when compared to the duration of absence overall in the pre-intervention cohort sent home with a presumed infective illness - from more than a week (6.5 school days) to < 1 day.

Knowledge and awareness related to malaria also improved among the children, and behaviours related to malaria management in the broader community also showed evidence of change. Children now knew how malaria was caused, the symptoms that suggest infection, that prompt diagnosis and effective treatment are available and the importance of both; and parents learned that malaria can be rapidly diagnosed and that there are benefits from early treatment. This later change is significant as this was a low resource rural setting where prior to this school-based initiative, less than

a third of febrile children sent home from school received management for malaria that met WHO recommendations for prompt, accurate diagnosis and comprehensive treatment within 24 hours of the onset of illness [6].

Although use of school-based RDT and ACT by appropriately trained teachers is a novel approach to managing malaria in children our findings are broadly in agreement with previous findings in Uganda related to RDT kit and ACT use. Importantly, studies indicate that kits can be stocked and used appropriately outside formal health facilities [20], and that training comparable to ours enables individuals without a health care background to use them reliably [21, 22].

While the overall incidence and number of deaths from malaria are decreasing worldwide the disease is still a major cause of mortality and morbidity especially among children [11,13]; 50% of deaths occur in school-aged children [3]; up to 50% of preventable school absenteeism is due to malaria [1]; the potential to reduce morbidity and achieve educational benefits and infection with *Plasmodium falciparum* is associated with permanent loss of cognitive and fine motor function in children where diagnosis is delayed and/or treatment is sub-optimal [23,24]. Hence, where teachers are engaged to provide school-based intervention with RDT/ACT, there is the potential worldwide for child morbidity to be reduced and educational benefits achieved. This applies even where efforts to promote preventive measures exist, as in many developing countries < 50% of households own a mosquito net and most children do not sleep under insecticide treated nets.

As our intervention took place in 4 geographically separated rural schools in low resource communities, and all children identified to be sick with a presumed infectious illness were included, we believe our results and the benefits we describe can be generalized to other areas with a similar endemic setting for malaria. Hence, our model of school-based diagnosis and treatment is probably applicable worldwide, provided RDT kits and treatments appropriate for the locally endemic strains of malaria are used [18], and has worldwide relevance as malaria remains the most prevalent parasitic disease that affects human beings worldwide. It is endemic in 108 countries, with >3 billion people estimated to be at risk, among whom the burden of disease is highest or children in low resource communities [24].

The development of RCT/ACT is an example of health promotion that successfully integrates technology and health care policy. It is effective, affordable and easy to use, and has the potential to reduce malaria transmission within communities, because each treated individual's malaria episode will be shorter, less severe, and hence less likely to result in mosquito-borne transmission to others [13,19]. However, the missing link to date has been the lack of social engagement to make this technology accessible to rural populations [8], but now deploying school-based programs run by volunteer teachers offers a logical response to the burden of malaria in resource poor settings and is an approach that our initiative indicates is both feasible and effective.

The cost and cost-benefit of RDT/ACT are relevant; the cost of ACTs especially has been identified as a potential barrier to scale up of initiatives that use them. [8,22]. Our cost for RDT was about US\$ 0.50 per kit. We chose to use a relatively expensive (US\$ 2.2) single dose ACT formulation to eliminate any partial treatment bias during our evaluation phase. Now a conventional 3 day 6 dose ACT preparation (Artesunate-Amodiaquine) is being used which is considerably cheaper (US\$ 1.0). Other teacher-driven school-based health intervention programs have been proven to be valuable and cost-effective, including nationwide anti-helminth treatment in Uganda [25], provision of intermittent anti-malarial therapy in Kenya [26,27] and prophylactic chloroquine in Sri Lanka [28], and analysis shows that health program delivery costs can be reduced by having teachers implement care [29].

WHO has always placed community participation at the centre of ‘health for all’ strategies [30]. It was the school teachers in the community who identified the burden malaria was causing on children’s education; they co-developed a realistic school-based ‘action’, and their ongoing active participation was integral to the success of the intervention. Teachers were readily trained to conduct RDTs, maintained practical competency and followed the ‘action’ protocol consistently. Teachers have also administered diagnostic and treatment protocols successfully in Tanzanian schools [31].

We recognize limitations in what we report. Principally that we chose absence from onset of illness to return to school as the outcome measure as a surrogate for malaria morbidity. Also, that we can only compare year 2 data from the RDT positive and ACT treated children with year 1 data from the cohort where infectious illness was presumed, but the actual number of malaria cases is unknown. This is because it was not feasible to follow each child sent home for parental care in the community during year 1 to establish if a diagnosis of malaria was made and if so what treatment resulted. However, the >10 fold difference in the duration of absence strongly suggests benefit from the school-based RDT/ACT initiative trialed in these 4 rural schools. And, the burden of illness from malaria was significantly reduced as 67.5% of sick children who would otherwise have been sent home were accurately diagnosed and promptly treated, as per WHO guidelines, in a community where the majority would not have been taken for appropriate care by their parents based on documented pre-intervention behavior.

In addition to the improvement in malaria morbidity evident from reduced duration of absence, it is likely that in the longer term the learning potential and educational outcomes of children managed with school-based RDT/ACT will also improve. While children diagnosed and treated in this initiative missed less school as they recovered quickly, it is also probable that they recovered more completely and with fewer, or no long term consequences. Malaria in Uganda is predominantly caused by *Plasmodium falciparum*. This infection is known to be associated with brain related consequences, especially when treatment is delayed, incomplete or absent, and functional impairment occurs that involves all cognitive spheres: language, attention, memory, visuospatial skills and executive functions [5,24,28,32,33].

It should also be stated that, although not directly measured, our belief is that this action research project has also broadened community knowledge about malaria, probably because the initiative was co-developed and collaboratively delivered by the communities where the 4 schools were located. If so, this is a secondary benefit of importance. Prior research has identified that improved health knowledge and health-related behaviors are often evident in the community as a whole where comprehensive school health promotion programs are delivered [34,35].

Importantly, even though the provision of RDT and ACT has not happened previously in schools this approach to malaria diagnosis and treatment is recommended by WHO and endorsed by many governments worldwide. The low complexity and diagnostic reliability of RDT and efficacy and reliability of ACT invite their use by personnel without formal medical training. And, as malaria remains a priority area for governments, aid foundations, health care providers and educators worldwide [11,13,27,36] novel and effective avenues for enhancing intervention are constantly being sought. Because schools are being used increasingly as platforms for delivering simple, safe and cost-effective health interventions [26,29,37], and our intervention now provides evidence of the feasibility and efficacy of school-based RDT/ACT in reducing child morbidity due to malaria, we suggest our teacher-driven community empowerment model is applicable in low resource settings worldwide where morbidity from malaria is high.

CONCLUSION

RDT/ACT use by teachers as a school-based health practice is novel and reduced child morbidity significantly. Our model of engaging and training teachers represents a community empowerment approach applicable to other low-resource settings worldwide where malaria is endemic and morbidity high.

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ICASH-A18

HOME BASED CARE BY PROVIDING PREVENTION OF MOTHER-TO-CHILD TRANSMISSION (PMTCT) HANDBOOK ON WOMEN'S PERCEPTION OF HIV/AIDS PREVENTION IN MOTHER TO CHILD IN PURWOKERTO

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ABSTRACT

Background: Previous research, surveillance, and epidemic data of HIV/AIDS in Indonesia show the number of women and infants infected HIV/AIDS increases. Pregnant women with HIV/AIDS may transmit to their child. This is known as mother to child transmission (MTCT). Women with HIV/AIDS face several problems, such as physical, psychological, cognitive, social, cultural, and spiritual problems. Previous literatures, home based on care is a family approach to care for women with HIV/AIDS and handbook of preventive MTCT helps women improve their perception of HIV/AIDS prevention in mother to child.

Aims: The research aimed to evaluate women's perception of HIV/AIDS prevention in mother to child in Banyumas District in intervention and control group.

Methods: The research was a two group pre-post quasi-experimental design. The research was conducted in Margono Soekarjo hospital and "Mandiri" shelter of HIV/AIDS in Purwokerto. The samples were recruited by purposive sampling method. The number of samples were 30 subjects; 15 subjects in intervention group in the shelter and 15 subjects in control group in the hospital. Home Based Care with PMTCT handbook was applied for a month with twice visit. Data were collected with Questionnaires of Perception of HIV/AIDS prevention in mother to child at pre and post intervention. Data were analyzed by paired and independent t-test.

Results: The findings show that the scores of perception of HIV/AIDS prevention in mother to child within intervention increased significantly ($p < 0,00$). There were significant differences of perception scores of HIV/AIDS prevention in mother to child between intervention and control group ($p < 0,00$). The Home Based Care with PMTCT handbook could improve women's perception of HIV/AIDS prevention in mother to child.

Conclusion: The Home Based Care with PMTCT handbook can be implemented in home care or public health center and women with HIV/AIDS can follow the handbook to prevent infection from mother to child.

Keywords: home based care, PMTCT, HIV/AIDS, perception.

INTRODUCTION

Deficiency Acquired Immune Syndrome (AIDS) is a collection of symptoms caused by the Human Immunodeficiency Virus (HIV) and is characterized by severe immunosuppression that causes opportunistic infections, secondary neoplasms, and neurological manifestations (Kumar, 2007). The estimated number HIV / AIDS cases In Indonesia up to January-September 2012, 3,541 cases. The cumulative number of AIDS cases from 1987 to September 2012 as many as 39 434 cases. The percentage of AIDS cases in men as much as 66.8% and females 32.9%. The amount of the highest

AIDS case was self-employed (4,604 cases), followed by women's household (4,251 cases), power non-professionals (employees) (4,056 cases), a laborer (1,512 cases), the farmer / rancher / fisherman (1,497 cases), peddlers sex (1,320 cases) and school children / students (1,022 cases) (Ministry of Health, 2012).

The results of the study, surveillance and epidemiological data of HIV and AIDS in Indonesia showed an increase in the increasing number of women and infants were reported as new cases of AIDS, In June 2006 the percentage of new AIDS cases in women was 16.9% in 2011 to 35.1%, while the perinatal transmission (from woman to babies) increased from 2.16% to 4.7% (Ministry of Health, 2012). Banyumas ranks third with high HIV / AIDS in Central Java province. The high number of female-dominated household (KPA Central Java, 2013). Therefore Infection with *Human Immunodeficiency Virus* (HIV) in infants and children is a public health problem is very serious because of the number of people a lot, always increasing and most of the women of the household.

The prevalence of HIV / AIDS on women in Indonesia is only 39%, but because the majority of women who have HIV / AIDS are of reproductive age (15-49 years) that is equal to 92.54%, then this raises the risk of pregnancy by HIV positive number will increase. HIV-positive women of reproductive age can experience the condition of pregnancy, this raises the risk of HIV transmission from women to children, or so-called vertical transmission (mother to child transmission). This transmission can occur during pregnancy and lactation. Besides the occurrence of HIV / AIDS on women will also have an impact in terms of physl, psychological, social and spiritual (Ministry of Health, 2011).

One intervention that is through the *Home-Based Care*, which is a model of nursing innovation focused on the priorities and needs of women, children and families (Pilliteri, 2007). With home care (*Home-Based Care*), is expected to increase women's knowledge about the transmission of female child transmission (MTCT), can reduce the burden of women with HIV / AIDS, both physically, psychologically, and socially. According to Zwelling (2006), *Home-Based Care-Base* includes education prenatal, care, *intrapartum* post-partum women and infants are still breastfeeding, and family visits (*Home-Based Care*).

Home-Based Care or home health care is a program that already exists and needs to be developed, as has been the people's needs. According to WHO (2010), the purpose of the *Home-Based Care* is that individuals with disabilities can maintain the best possible quality life, independent and confident. Based on the literature study by Ibrahim et al (2010) stated that the Home-Based Care is a health care facility that is appropriate for patients with HIV / AIDS are also family. The Home Base Care maintenance intensive, can significantly boost knowledge about HIV / AIDS and treatment, thereby reducing morbidity and mortality (Young et al ,2010).

METHODS

This study is a *quasi-experiment* (quasi-experimental), using the design of the study: *non-equivalent control group pretest and posttest design*. This design by using two groups. The first group to do a *Home-Based Care* and Handbook is given to women with HIV / AIDS about the transmission of HIV / AIDS on children, while the second group as a control given the appropriate intervention procedures. Both groups underwent initial and final test. Results from this study are the comparison between the group treated with the control group. This is consistent with the purpose of the study was to determine the effect of applying the concept of *Home-Based Care* and the provision of Handbook on the level of Perception of women with HIV / AIDS on the transmission of transmission to the child in the area of Purwokerto.

RESULTS

Table 1 presents a full description of characteristics of the 30 participants. The characteristics of respondents in this study include age, education, and work. Table 1 shows description characteristics of respondents by age. The results of the analysis obtained an average age of respondents was 24.87 years with a median of 24 years. Then, most respondents' age was 24 years with a standard deviation of 3.655 years. The youngest age 19 years old and the oldest 34 years of age.

Table 2 shows characteristics of respondents by education, work in the control group and intervention. The results of the analysis of the majority of the respondents' education are secondary education as much (60%), while the high school as much (40%). On the employment status of respondents showed the number of 15 people (50%) while those not working as many as 15 people (50%).

Table 1 Participant Characteristics by age (n = 30)

No.	Variable	Freq%	Mean	Median	Mode	SD	Min-Max
1.	The age of						
	<15	0	0				
	16-19	1	3.3	24.87	24	24	3655
	20-50>	29	96.7				19-34
	50	0	0				

Table 2 Participant characteristics by education, work (n = 30)

No	Variable	Frequency	Percentage
1.	EducationLevel		
	Basic education		
	Junior	18	60
	High School	12	40
2.	Work		
	Work	15	50
	Not work	15	50

Perceptions of Women with HIV / AIDS on the Transmission Childhood Intervention between intervention group and control group.

The following will be explained about the difference in the average level of the perception of women with HIV / AIDS on the transmission of infection in children between the intervention group and the control group before the intervention period.

From table 3 shows the perception of the control group was 3.50 with a standard deviation of 1.694 while the intervention group the average level of perception is 4.08 with a standard deviation of 1.530. The results of the analysis we found no significant difference in the average level of perception in the control group and the intervention or in other words the average Perception of the two similar groups ($p < 0.000$).

The perception of women with HIV / AIDS on the transmission of infection in children between the control group and the intervention after being given a home base care and Handbook

showed on the table 4 was the control group was 89.13 with a standard deviation of 1.187, while for the intervention group the average rate is 94.07 with the Perception of a standard deviation of 2,404. The results of the analysis we found no significant differences in the average level of Perception in the control group and intervention, which means home-based-care actions and Handbook can increase women's Perceptions to HIV / AIDS in children ($P > 0.000$, $\alpha = 0.05$).

Table 3 Distribution of the perception before the intervention period (n = 30)

group	Control			Interventions			P
	n	Mean	SD	N	Mean	SD	
Perception	15	88.80	1,207	15	88.67	1234	0000

Table 4 Distribution of the perceptions after a given intervention

group	Control			Intervention			p
	n	Mean	SD	n	Mean	SD	
Perception	15	89.13	1,187	15	94.07	2404	0000

The HIV / AIDS women Perceptions on Transmission In Children Pre and post intervention control and intervention group

To determine the effect discharged home-based-care and Handbook in women with HIV / AIDS it is important to know the difference the average level of knowledge women in the control group and the intervention before and after the intervention period. Similarly, the Perception should be known to the average difference in the Perception of the control and intervention groups before and after the intervention period. Measuring average before and after the intervention period using the formula *paired t-test* (dependent t-test).

The results of analysis of table 5 shows the average level of Perception in the control group before the given intervention is 88.80 with a standard deviation of 1,207 while after the intervention period gained an average rate of Perception was 89.13 with a standard deviation of 1.187. The results of the analysis we found no significant difference in the average Perception in the control group before and after the intervention period ($p < 0.055$).

Table 5 shows the average Perception in the intervention group before being given the intervention was 88.67 with a standard deviation of 1,234 while after the intervention period gained an average rate of Perception was 94.07 with a standard deviation of 2,404. The results of the analysis we found no significant difference in the average activity level of Perception in the intervention group before and after the intervention period ($p < 0.000$).

Table 5 Distribution of the Perceptions before and after the intervention period between control and intervention group, (n= 30)

Perception	Before the intervention			After the intervention			p
	n	Mean	SD	n	Mean	SD	
control	15	88.80	1207	15	89.13	1187	0055
intervention	15	88.67	1,234	15	94.07	2404	0000

DISCUSSION

The results of this research note that the education level of secondary education as much (60%), while the high school as much (40%). These results indicate that the education of women with HIV / AIDS in Purwokerto and Banyumas in September - November 2014 the average was enough that junior. Knowledge obtained from the learning process through formal and informal education. The process is expected to gain a better knowledge. Higher education will allow a person to receive information and knowledge to lead a healthy life as well as health problems (Ali, 2003 cited by Estutiningsih, 2009). Another study conducted by Fatmawati (2007) with the results of primary education (42.5%).

In a study conducted Hastomo (2009) states that the education of parents, especially women are one of the key socio-cultural changes. Educated women will have a relatively high maintenance actions better health. Women with higher levels of education will have a greater knowledge than the lower educational levels.

The results of the research results that the application Home Base Care and Handbook influence the level of in women with HIV / AIDS. It can be seen in the results of the bivariate analysis, finds that there are significant differences between the Perception of women with HIV / AIDS, in the intervention group before and after the intervention period. Then there is no significant difference between the average level of knowledge and Perceptions in the control group before and after the intervention period. These results suggest that *home-based care and Handbook* influence the level of knowledge and Perceptions on women with HIV / AIDS.

According to the results of qualitative research conducted by Oktavia (2010) regarding the experience of mothers in MTCT (mother to child transmission), it turns out knowledge of mothers on MTCT is still lacking. Information gained slightly and still frequent unplanned pregnancy. Similarly, the results of research conducted by Subedi, et al (2007), which has conducted a qualitative study in Nepal showed the results of research the most dominant factor in women infected with HIV because of the lack of knowledge, social capabilities, high-risk domestic violence. Studies conducted Bureau (2004) shows that women have a low knowledge about HIV transmission and only 30% of women who know about their risk of contracting. This is one of them because they onset of stigma from the community about HIV, especially HIV in women.

The results of the analysis we found no significant differences in the average level of Perceptions in the control group and intervention, which means actions *home-based-care and Handbook* to enhance the Perceptions of women with HIV / AIDS about the transmission of HIV / AIDS in children. In accordance Pillitteri opinion, (2007) that the *Home-Based Care*, a nursing innovation models that focused on the priorities and needs of women, children, and families. With

home care (*Home-Based Care*), is expected to increase women's knowledge about the transmission of female child transmission (MTCT), can reduce the burden of women with HIV / AIDS, both physically, psychologically, and socially. According to Zwelling (2006), *Home-Based Care-Base* includes education prenatal, care, *intrapartum* post-partum women and infants are still breastfeeding, and family visits (*Home-Based Care*).

The purpose of the *Home-Based Care* is that individuals with disabilities can maintain the best possible quality of life, independent and confident WHO (2010). The literature study by Ibrahim et al (2010) stated that the Home-Based Care is a health care facility that is appropriate for patients with HIV / AIDS are also family. The intensive maintenance Home Base Care, can significantly boost knowledge about HIV / AIDS and treatment, thereby reducing morbidity and mortality (Young et al , 2010).

The results of the analysis we found no significant differences in the average level of Perception in the intervention group before and after the intervention period, which means the provision of *home-based care and Handbook* can increase the level of knowledge and Perception of women with HIV / AIDS on the transmission of infection in children. This is consistent with the results of research Young (2010) which state that the home-based care can reduce clients with HIV / AIDS was hospitalized and could improve the quality of life that can decrease morbidity and mortality.

The Perceptions toward counseling and testing for HIV / AIDS voluntary in Semarang otherwise good health center or to agree as much as 26 respondents (57.8%) (Nuraeni ,2012), While the research Desy, (2010, p. 45) states that the Perception of adolescents about HIV / AIDS tend to be less supportive. This can occur because of the knowledge and experience of pregnant women with different teenagers. Between thinking that is limited to me with the thought for others who are still closely associated. Being supportive (positive) from pregnant women is influenced by knowledge about HIV / AIDS and VCT good. Perception is not an action or activity but predisposes acts/practices (Nuraeni, 2012)

CONCLUSIONS

There is a significant difference in the Perception of women with HIV / AIDS on controlling the transmission of the child after the intervention in the control group and intervention. It shows that *home-based care* and Handbook can improve the Perception to women with HIV / AIDS to always check the health to prevent the transmission of infection in children. Programs *Home-based-care* and Handbook can be applied to women with HIV / AIDS in order to assist government programs to improve the health of women and infants.

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ICASH-A19

**THORAX MULTI-SLICE COMPUTER TOMOGRAPHY (MSCT)
EXAMINATION TECHNIQUE IN THE CASE OF MEDIASTINUM
TUMOR AT RADIOLOGY INSTALATION OF SEMARANG DISTRICT
GENERAL HOSPITAL**

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ABSTRACT

Background: Thorax Multi-slice computer tomography (MSCT) scan examination requires contrast medium to image the difference in density with the surrounding tissue. The contrast images is largely determined by the volume of contrast, injection rate and injection methods. Thorax CT scan is performed by slice thickness of 5-10 mm. Meanwhile, it should use the routine slice thickness of 10 mm. Slice thickness of 8-10 mm of coronal and sagittal images require reconstruction by thin slices of 1-1.5 mm and subsequently by applying 3D.

Aims: This is to analyse the volume of contrast and slice thickness used in the examination of tumor mediastinum by thorax MSCT examination.

Methods: This research used descriptive qualitative design with case study approach, described and explained systematically, related to the procedure of Thorax MSCT examination technique in the case of mediastinum tumor with 3 samples of 3 patient and assessment performed by three radiologist as respondents.

Results: This study indicates the success of the use of proper contrast of 80 cc and slice thickness of 2-3 mm to observe lesions of mediastinal tumor.

Conclusion: Thorax MSCT examination in the case of mediastinum tumor should use contrast 80 cc and slice thickness of 2-3 mm to observe lesions of mediastinal tumor and coronal and sagittal axial slices, because the sagittal slice can show the lymphadenopathy enlargement so that the mediastinum tumor is clearly visible. The print out or filming results should be included the MPR or 3D to show the presence or absence of bone destruction and metastases.

Keywords: Thorax MSCT, Mediastinum Tumor, Contrast medium, Slice Thickness

INTRODUCTION

Thorax CT scan examination technique is a radiological examination technique to obtain anatomical information of cross-sectional or cross-axial slices of the thorax. Mediastinum CT scan cannot be separated from the examination of the thorax cavity, so abnormalities that will be examined in mediastinum are abnormalities found in the thorax cavity itself. Additionally, abnormalities that can be observed through Thorax CT Scan are mediastinum tumor, aneurysm, and abscesses, lesions on hilar or mediastinal or aortic surgery [1]. Important process that involves the mediastinum includes emphysema, bleeding and infection and many types of primary tumors and cysts. Systemic disorders such as metastatic carcinoma and many granulomatous diseases can also be involved in the mediastinum. Lesions which are primarily derived from the esophagus, trachea, heart and major blood

vessels are usually associated with a specific organic compounds involved rather than the mediastinum [2].

Examination of mediastinum tumor in the thorax cavity is to obtain information on the location, type and size and metastases of the tumor. These examinations require contrast medium which aims to see the difference in density with the surrounding tissue. The quality of images produced with the use of contrast medium is largely determined by the volume of contrast, injection rate and injection methods. The volume of contrast medium used in a Thorax CT Scan on mediastinum tumor is as much as 80-150 ml, the injection rate is 2-3 ml/sec with automatic injector, and the contrast volume used is between 80-100ml [3].

Thorax CT scan is performed by using slice thickness of 5-10 mm. Meanwhile, it should use the routine slice thickness of 10 mm. Slice thickness of 8-10 mm of coronal and sagittal images require reconstruction by thin slices of 1-1.5 mm and subsequently by applying 3D [4]. Thick slices can be between 5-10 mm depending on the size of lung lesion or make a combination of 10 mm in the area with no lesion and thin slices in the area of the lesion. Coronal and sagittal slices are obtained by MPR technique and thin slice between 2-3 mm is necessary [5].

Based on the observations at Radiology Installation of Semarang District General Hospital, Thorax MSCT examination procedure in all cases one of which mediastinum tumor is performed by using 50 cc of contrast medium, with axial and coronal slices alone and do not use sagittal and thin slice MPR and 3D on the area of abnormality. From the difference in examination technique between Radiology Installation in Semarang District General Hospital and the existing theories regarding the various uses of contrast medium and recommended slice thickness in the Thorax MSCT examination procedure in the case of mediastinum tumor. This study is to analyse the volume of contrast and slice thickness used in the examination of tumor mediastinum.

METHODS

This study was a descriptive study with case study approach. The subjects of this study were 3 patients with thorax MSCT request in the case of mediastinum tumor, 3 radiographers and a 2 radiologist, 1 sender doctor. Data were collected in April 2013 and were resumed in July 2013.

The data collection method used was the author held a direct observation on the Thorax CT scan in the case of Mediastinum Tumor at Radiology Installation of Semarang District General Hospital, conducted direct interviews with radiographers and radiologists. The interviews were related to the subject matters, including collection of the data included radiographs, the request letter of CT-scan, photographs readings and other records related to the Thorax MSCT examination in the case of mediastinum tumor at Radiology Installation of Semarang District General Hospital. The data were collected in the form of interview transcripts and then were reduced. After data reduction open coding was carried out by analyzing them based on observations and interviews with respondents and data collection from observations. Coding was done in an effort to clarify the validity of the data collected. Coding was done to facilitate the analysis results describing so the author could draw conclusions.

RESULTS

Procedures

a. Patient preparation

Patient 1, 2 and 3 had the same preparation that is the guideline for Thorax MSCT examination in the case of mediastinal tumor in Radiology Installation of Semarang District General Hospital. The patient must fasting 6 hours before the test, bring the laboratory results of Blood Urine

Nitrogen (BUN) and creatinine serum (Sc). The lab results of urea, creatinine in 3 patients were normal, patient 1 had urea of 28.0 mg/dl and creatinine of 0.6 mg/dl; patient 2 had urea of 30.0 mg/dl and creatinine of 0.5 mg/dl; patient 3 had urea of 25,0 mg/dl and creatinine of 0.8 mg/dl. The patients' clothes were changed with a gown. Objects that can cause artifacts on the area to be examined (thorax) such as necklace and bra were removed. Before the examination the patients were asked to fill out an informed consent as an approval to perform MSCT examination by using contrast medium, and received a brief explanation of the examination procedure.

b. Tools and materials preparation

Tools and materials used in the Thorax MSCT examination in patients with mediastinum tumor are as follows: MSCT machine of Philip Brilliance 16 slices with kV max of 150 kV and mA max of 300 mA. A single syringe Mallinckrodt Injector was used, blankets, central oxygen, infusion standard, fixation devices, agfa printer, CT Scan films, Iopamiro contrast medium with the concentration of 300, 10 ml of NaCl.

c. Patient position

The patient position was supine on an exam table with both hands above his head and the patient was covered and fitted by fixation devices (straps) on the patient's body with his feet near the gantry (feet first). Mid Sagittal Plane (MSP) of the body was arranged parallel to the longitudinal indicator lights and Mid Coronal Plane (MCP) was arranged parallel to the horizontal indicator lights.

d. Scanning technique

After setting the position of the patient then the next step was to enter patient data into the computer data entry included: name, age, gender, number of CT scans, body weight, clinical diagnosis, sender doctor, radiologist reading the results, radiographer performing the examination, the type of inspection and the patient's position when he or she come in the gantry. After the patient data were entered, then arrangements of the axial slices were made with the slice thickness of 7mm with lung apex to the diaphragm/supra-renal, Scanning was performed pre contrast and post contrast.

e. Filming technique

After the post-contrast scanning then it was reproduced and printed as many as 20 images on one sheet of film and it took 3-4 sheets of film for pre and post contrast for axial and coronal slices.

Thorax MSCT examination

Shown in Figure 1, in Patient 1, mild tracheal deviation to the right, the narrowing of the trachea was invisible. The anterior mediastinum masses of DD thymoma/lymphoma. The main bronchus left was not narrowed, but the bronchus branching to the lower lobe of left pulmonary showed narrowing because it was depressed by a mass, and caused atelectasis at the entire lower left pulmonary. The whole left hemi thorax pleura seemed thickened mainly in the medial part near the mass of 2.2 cm and pleura in posterior-lateral part of the left of 1 cm. The heart was not enlarged but only seemed thickened on the left ventricular wall of 1 cm, while the right atrial wall was not thickened. Massive left pleural effusion, invisible bone destruction.

Recorded as in Figure 2, in Patient 2, in 1, 2, 3 and 6 segments of the right pulmonary: an image of infiltrates with the cavity and broncho-grams water therein in accordance with the image of active pulmonary tuberculosis. There was solid mass filled the superior mediastinum. There was a narrowing of the right superior lobar bronchus.

Figure 3 shown suspected tumor on left pulmonary of patient 3. Multiple infiltrates were scattered throughout the dextra or sinistra pulmonary. There was an image of solid multiple in the

mediastinum. Bronchiectasis in the upper field on some portion of left lung pleura was thickened. There was no lymphadenopathy in the thorax cavity. Invisible bone destruction.

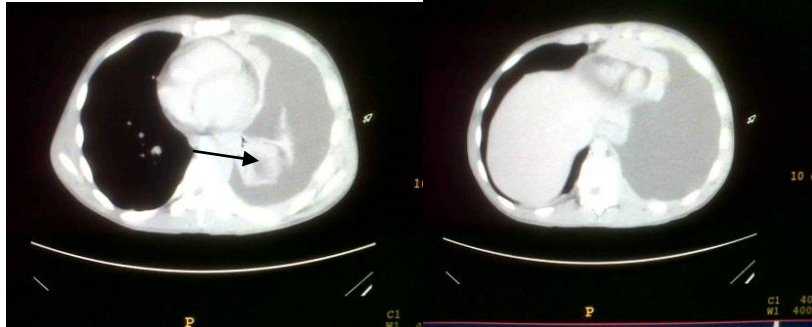


Figure 1. The 6th and the 8th slice scanning result at patient 1. The arrow points the tumor

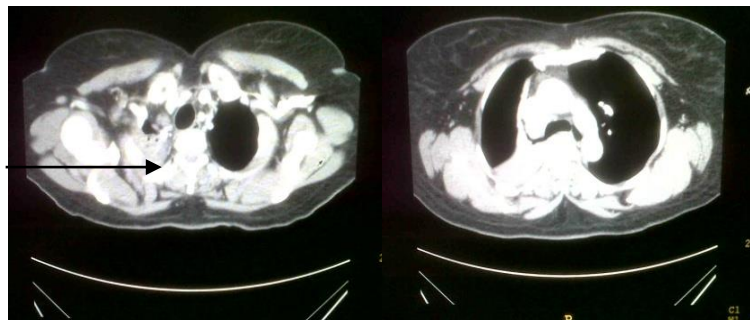


Figure 2. The 2nd slice and the 4th slice scanning results at patient 2. The arrow points the tumor

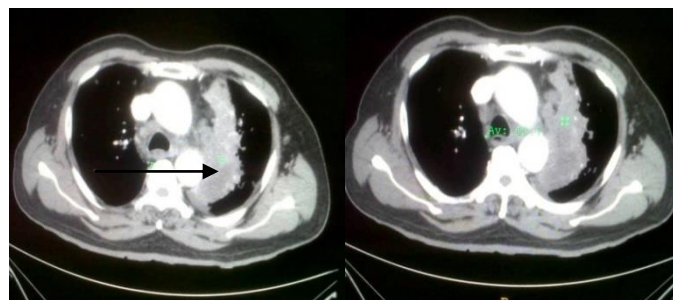


Figure 3. The 4th slice and the 6th slice scanning result at patient 3. The arrow points the tumor

DISCUSSION

Thorax MSCT examination technique in the case of Mediastinum Tumor at Radiology Installation of Semarang District General Hospital only used axial and coronal slices alone. In the opinion of the author, to better see abnormalities and tumor mass one should use axial, coronal and sagittal slices. Axial and coronal slices can present an image of broncho-vascular on the right and left lung, how is the fibrosis and consolidation of the lung ground glass and irregular thickening of the left/right pleura and the existence of visible nodules or masses or tumors or other pathological lesions. Soft tissues such as the axillary and malignant lesions, aortic arch, hilum, coronary artery, aorta

pulmonary, lung parenchyma, pleura, bone destruction. Sagittal slices show nodules, lesions and lymphadenopathy in the thorax cavity because the sagittal slices will be obvious, usually the presence of mass is followed by lymphadenopathy enlargement. Preferably sagittal slice should be added in MSCT Thorax so that it can show the lymphadenopathy enlargement of the mediastinum tumor.

Thorax MSCT examination technique in the case of Mediastinum Tumor at Radiology Installation of Semarang District General Hospital used contrast medium volume of 50 cc by using Iopamiro Iodine concentration of 300 with flow rate of 2,8ml/sec. According to PDSRI Thorax CT-scan should use contrast medium volume of 80-150 cc. According to the author the volume of contrast medium injected, the time of injection rate and the concentration of iodine used greatly affect a tumor to show maximum enhancement so that the image is more optimal. It is characterized by the increase in Hounsfield Unit value of the tumor, because the tumor vascularization is very much, the original appearance of vascular that is gray or gray scale may become white when iodine contrast is injected and if it is measured, it would increase the original HU of 20HU to be 1000 HU. This description will hyper dense and equitable if all the tissues in the tumor are filled with contrast medium. Contrast medium which is evenly distributed in the tissues is determined from the number and volume of contrast injected.

Provision of contrast medium was in a flow rate of 3-4ml/sec required iodine with standard concentration (300-350). Provision of contrast medium was in a flow rate of 2,5-3ml/sec required high concentration of iodine (350-370) to provide a clear distinction between vascular and the other surrounding tissues, especially in arterial area and intraluminal abnormalities. According to PDSRI Thorax CT-scan should use contrast medium volume of 80-150 cc [10]. According to the author, to get better results, we should use contrast medium volume of at least 80 cc or according to the weight of the patient, and use a high iodine concentration of 370 to provide a good enhancement to the tumor.

Thorax MSCT examination technique in the case of Mediastinum Tumor at Radiology Installation of Semarang District General Hospital did not use thin slices MPR. According to the authors, Thorax CT scan for diagnosis is better using MPR, 3D and ROI. To see mass or lung lesions, one should use coronal and sagittal slices with a thin slice of 2-3 mm. Using thin reconstruction of 1-1.5 mm with 3D applications is more informative. To see nodules and lesions by using 2-3 mm will clarify the mediastinum tumor. 3D can also be used to see whether there is bone destruction and metastasis of the tumor. This is different from the theory according bontranger routine 10 mm slice thickness can not show bone destruction and disorder.

CONCLUSION

Thorax MSCT examination technique in the case of Mediastinum Tumor at Radiology Installation of Semarang District General Hospital in this study was made by using a contrast medium volume of 50 cc, the flow rate of 2.8 ml/sec with iodine concentration of 300 and it could show abnormalities of mediastinum tumor. Thorax MSCT examination technique in the case of Mediastinum Tumor at Radiology Installation of Semarang District General Hospital which only used sagittal and coronal slices alone could diagnose, saved the use of CT-Scan film. Thorax MSCT did not use thin slice because it could reveal the location and size of the tumor and mediastinum tumor metastases.

Thorax MSCT examination should use contrast medium of at least 80 cc. Thorax MSCT examination in the case of mediastinum tumor should use coronal and sagittal axial slices, because the sagittal slice can show the lymphadenopathy enlargement so that the mediastinum tumor is clearly visible. The print out or filming results should be included the MPR or 3D to show the presence or absence of bone destruction and metastases.

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ICASH-A20

PREGNANT EXERCISE INFLUENCE ON THE BABY'S BIRTH WEIGHT AND POSTPARTUM HEMORRHAGE

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ABSTRACT

Background: The benefits of exercise during pregnancy have been reported to be higher than its negative side effects. A reduction in low birth weight, a decrease in heart rate abnormalities of the baby and a decrease in excessive bleeding after 24 hours of labor are among those positive outcomes of the exercise during pregnancy.

Aims: This study was meant to determine the effects of exercise during pregnancy

Methods: This research was an explanatory research using cross sectional design. The research respondents were 42 mothers who were admitted to give birth in Hermina Hospital. Twenty-one mothers who practiced twice a week of a combined yoga, pilates, hypnotherapy, and tai chi were recruited as a case group in this study. Meanwhile, 21 mothers who did not practice exercise during pregnancy were requested to participate in the control group of this study. The infants' birth weight was weighed immediately after birth with the baby scales, and the mothers' post-partum hemorrhage (PPH) were measured by the need bandages and blood ejected through similar toilet ≥ 500 ml. A statistical test used is the T-Test Independent and Mann-Whitney.

Results: The results showed that the postpartum hemorrhage occurrence was less among respondents who practiced a regular exercise during pregnancy than who did not. However, there was no evidence of statistically difference between the two groups. The average of birth weight babies born to mothers who practiced a regular exercise during pregnancy was $3,418 \pm 215$ grams or greater as compared (2643 ± 180 grams). It showed a significant difference in birth weight between mothers who did exercise during pregnancy than mothers from other group ($p = 0.001$).

Conclusion: In conclusion, the exercise during pregnancy has a positive impact on the birth weight of the babies. Thus, the authors suggest to all maternal and child health service providers to plan a pregnancy exercise program.

Keywords: Pregnant exercise, Postpartum hemorrhage, Birth Weight, Hermina Hospital, Semarang

INTRODUCTION

The success of a pregnancy can be measured if the birth weight > 2500 g and the mothers do not experience hemorrhage the child birth. The expected impact of the baby and his mother are spared from death, because of maternal and perinatal mortality is an indicator of the success of health care.

The success of the pregnancy can be realized with a normal birth weight and no postpartum hemorrhage. Fetal growth is influenced by the amount and quality of food also the mother who is routinely doing the pregnancy exercise [1].

Pregnancy exercise can increase the amount of oxygen in the mother's blood circulation, causing the supply of sufficient oxygen through the placenta, so that optimal fetal growth. Pregnancy exercise can improve maternal glucose tolerance, thus becomes optimal fetal growth.. Birth weight

are critical to the morbidity and mortality of infant, and child development in the next life cycle [2,3]. Movement exercises during pregnant may increase fetal brain development so that the baby has a score of languages and intelligence skill at the age of five [2].

Pregnant exercise is a exercise movement specially designed by medical and fitness experts to strengthen the uterine and the pelvic floor muscles, in order to facilitate the delivery process and reduce the risk of hemorrhage postpartum. Combined yoga, Pilates, hypnotherapy, and tai chi called Yophyta Maternal [1].

Pregnancy exercise has been reported to decrease the incidence of low birth weight, heart rate normal heart rate, and also reducing hemorrhage after childbirth [1,3]. Exercise during pregnancy can increase the norepinephrine, which serves to improve the frequency and strength of uterine muscle contraction, so that postpartum hemorrhage can be reduced [4].

Pregnancy exercise can increase the concentration of estrogen and miometrium perfusion, that can improve the receptors oxytocin and prostaglandin, so it has an adequate quality of uterine contractions, as a result of postpartum hemorrhage can be minimized [2]. Cc

Postpartum hemorrhage is loss of blood through the vagina more than 500 ml after give birth. If the blood loss occurred in the first 24 hours after give birth called primary postpartum hemorrhage. Secondary postpartum hemorrhage refers to excessive vaginal bleeding between 24 hours - 6 minggu postpartum [5-7]. Hermina Hospital Pandanaran is a hospital in Semarang that provide health services to the community, especially for maternal and child health issues. Hermina hospital held a pregnancy exercise program twice a week, led by a certified instructor under the supervision of a specialist in obstetrics and gynecology [8].

METHODS

This research was an explanatory research using cross sectional design. The study population is mothers who was give birth at Hermina Hospital in 2009. Inclusion criteria include: primiparas, aged 20-35 years, practiced twice a week. Exclusion criteria included: Gemelli, history pre eclampsia, injuries to the birth canal. The study and control groups distinguished by routine exercise during pregnancy. The number of samples in each group is 47 mothers give birth, according to the criteria by taking purposive sampling. Infant birth weight were measured immediately after birth up to 24 hours with the baby scale, whereas postpartum hemorrhage is measured based the sanitary pads that are used in a day and blood ejected through the toilet wich equivalent to > 500 ml for 3 days postnatal care in hospital [9-11].

This analysis is used to provide an overview of research data in the form of a frequency distribution. Analysis was conducted to PPH difference test using Independent T Test, being the difference birth weight use Mann Whitney.

RESULT

Characteristic of the sample

Table 1. Characteristic of the samples

Variable	f	%
Education		
Junior high school	17	36,2
Senior high school	1	2,1
Undergraduate	27	57,4
Graduate	2	4,3
children Job		
Housewife	11	23,4
Employee	15	31,9
Private employees	21	44,7
Ante Natal Care		
≥ 4 times	29	61,7
< 4 times	18	38,3

Table 1 showed that most of the samples is education undergraduate, worked as a private employees, and perform antenatal care ≥ 4 times. all samples are classified as middle socio-economic.

Effect of Pregnancy Against exercise ostpartum Hemorrhage

The average PPH group which doing the exercise routinely during pregnancy (194 ± 16 ml), and those who do not exercise during pregnancy ($214 \text{ ml} \pm 20$ ml). Mann-Whitney test showed no significant difference between maternal postpartum hemorrhage who do exerciseduring pregnant and not doing exercise ($p = 0.691$). although not statistically proven no correlation exercise during pregnancy with postpartum hemorrhage, but showed a tendency that if during pregnancy do gymnastics regularly at least 2 times / week, then the PPH can be minimized.

Effect of Pregnancy Gymnastics Against Birthweight Infants

The average birth weight of babies born by those who routinely perform pregnancy exercise routine (3418 ± 200 grams) is greater than the group that did not do exercise pregnant (2643 ± 126 grams). Results of cross-tabulation show the incidence of LBW (Low Birth Weight) that is < 2500 grams not found in women who do exercise during pregnancy.

Table 2. birth Weight Infants

Variable	Birth Weight Infants			
	≥ 2500 g		< 2500 g	
	frequency	%	frequency	%
Pregnant Exercise	47	100,0	0	0,0
Not Pregnant Exercise	33	70,2	14	29,8

Table 2 showed that the incidence of low birth weight is common in women who did exercise during pregnancy, whereas in women who regularly exercise during pregnancy at least 2 times / week was no baby is born with a birth weight < 2500 g. Independent T Test showed the difference in birth weight between mothers who do exercise during pregnant than who do not exercise ($p=0,001$)

DISCUSSIONS

The impact of exercise during pregnancy with postpartum hemorrhagic

Pregnant women who didn't exercise regularly usually have (214 ml \pm 20 ml) and (194 \pm 16 ml) to those who did it on regular basis. Although not proven the existence of statistically significant difference. Only 10 ml bleeding difference between mothers who regularly exercise during pregnancy or not. This is because the measurement of bleeding is based on the number of pads used per day, as well as bleeding issued through the toilet.

Pregnancy exercise can improve the quality of the uterine muscle contraction (amplitude, frequency, duration) in the delivery process. Pregnancy exercise can increase the concentration of estrogen and perfusion myometrium (uterine muscle). It increases oxytocin and prostaglandin receptors and ultimately the quality of adequate uterine contractions, so that PPH can be reduced / prevented. Exercise is known to increase circulating levels of norepinephrine and epinephrine. Norepinephrine has been shown to increase both the strength and the frequency of uterine contractions. In contrast, epinephrine has an inhibiting effect on uterine activity.

The lower of hemoglobin levels, injuries to the birth canal and the placenta remaining in the uterus can also affect postpartum hemorrhage [2,6,7].

Effect of Pregnant Exercise on Birth Weight Infants

The results showed on the mother who did a routine exercise while pregnant will not be found low birth weight. t test showed significant differences in birth weight among mothers who do exercise routine for pregnant and do not do exercise. Some studies suggest a physical and physiological benefits for the baby, if the mother doing exercise during pregnancy.

Pregnant exercise will increase the amount of oxygen in the blood throughout the body of the mother, and therefore the flow of oxygen to the baby through the placenta will also be smooth, so that the growth of fetus during pregnancy run optimally [2]. When the pregnant woman doing exercise, then the blood circulation becomes smooth, so that the supply of oxygen to the baby through the placenta more leverage, the impact is the growth of the fetus will be maximal, and reduce the incidence of low birth weight.

Regular exercise during pregnancy can be affect glucose tolerance, so that the growth fetus become better. According to a Canadian study, pregnant women who exercise regularly better glucose tolerance, so that the risk of giving birth to babies weighing > 4000 grams or low birth weight lower than pregnant women who do not do exercise [11]. Another study showed that pregnant women do exercise routine has an average birth weight of more than 5 ounces of pregnant women who do not do exercise. these results do not correspond with Haakstad research that states that exercise during pregnancy has nothing to do with birth weight infants [3,4,12,13,14,15,16].

Research in Norway has found that mothers who do exercise regularly have a lower risk of having a baby with birth weight > 4000 grams (Macrosemia). Movement during pregnancy exercise affect the fat removal on the baby's body, thus preventing the occurrence macrosemia. [17].

CONCLUSIONS

In conclusion, the exercise during pregnancy has a positive impact on the birth weight of the babies. so the authors suggest to all layananan maternal and child health, can plan a pregnancy exercise program. This study is only based on the number of sanitary pads used per day and the bleeding had been spent on toilet. Next work should include the medical records part of the delivery room, postpartum hemorrhage, especially measuring devices untested validity, because it.

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ICASH-A21

**KNOWLEDGE AS DETERMINANTS INCREASE CLEAN AND
HEALTHY LIVING BEHAVIORS AMONG STUDENTS IN GENERAL
PRIMARY SCHOOL 07
LANDAU-LEBAN SUB DISTRICT MELAWI IN 2015**

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ABSTRACT

Background: Clean and Healthy Lifestyle (CHLB) is an attempt to empower students, teachers and schools to know, understand and be able to practice CHLB and play an active role in creating a healthy behavior in school. The preliminary data survey indicated a needs to improve CHLB behavior among children in General Primary School 07 Landau-Leban Sub District Melawi.

Aims: This study aimed to determine the relationship between gender, age, knowledge, attitudes, beliefs, and also the roles of teachers, parents and the School Health Unit (UKS) to CHLB in SDN 07 Landau-Leban Melawi West Kalimantan in 2015.

Methods: The study design was cross-sectional study. The population in this study was 82 students of class IV, V and VI. The statistical test used Chi Square and Multiple Logistic Regression. During data collection, two teachers assisted the programs to the students.

Results: This study showed that 45 students (54.9%) have low CHLB behavior. This behavior is related to knowledge, attitude and role of the teacher. The most dominant variable related to CHLB is knowledge (OR 5.434)

Conclusion: Students with high knowledge tend to have more than 5 times greater CHLB. The findings suggest a need to increase students' knowledge of CHLB in the form of counseling, provision of facilities and infrastructure (sink, anti-septic, healthy canteen, bins, and promotional media such as posters). Improving CHLB to the students requires school's support to provide training incorporated with relevant health facilities.

Keywords: CHLB, Knowledge, Behavior, Primary School

INTRODUCTION

Behavior Clean and Healthy Lifestyle (CHLB) is an attempt to empower students, teachers and public school environment to know, understand and be able to practice and health behavior, and play an active role in creating a healthy school. CHLB towards elementary school children is indispensable. Keep in mind that the primary school age is the age group prone to health problems. Elementary school period is the golden age for embed values CHLB and potential as agents of change to promote CHLB in the school environment, family and society so as to create quality human resources which will [1]. Estimates of the total Indonesian population by age category 0-14 years of approximately 28% -34% of Indonesia's population in 2015 will reach 235 million. Channels that are suitable to provide socialization and health practices early in children are through school [2].

Implementation Program Clean and Healthy Behavior that is low can result in low quality of the school environment and the high rate of disease affecting school-age children.

In developing countries, children are suffering from diarrhea for more than 12 times per year and this is the cause of death by 15-34% of all-cause mortality [3]. One attempt to reduce diarrhea in children Primary School is a program of washing hands with soap [4,5] Some research shows that the promotion of hand washing, improved water quality and environmental sanitation has been shown to reduce the incidence of gastrointestinal diseases, respiratory illnesses and lower absenteeism students in developing countries [6]. Washing hands associated with the incidence of diarrhea [7]. Wash hands with soap consistently can reduce diarrhea and respiratory diseases. Handwashing (CTPS) can reduce diarrhea by 31% and reduce disease Breath Upper Tract Infection (ARI) 21% [8]. Washing hands with soap can reduce respiratory infections associated with pneumonia more than 50% [9].

Introducing the world of health of children in school, not too difficult because in general each school already has a School Health Unit (UKS) and practical implementation of CHLB can be implemented through the vehicle, thus increasing the ability of healthy life and the health of learners can be planted as early as possible [10]. Based on data from the initial survey, 86% of students do not know about CHLB, 60% do not use soap and running water when washing hands, 80% did not use healthy latrines, 20% do not exercise regularly, 58% of litter. To the writer wanted to know what are the determinant factors related to CHLB in SDN 07 Landau-Leban Melawi West Kalimantan in 2015.

METHOD

The study design is a research plan drafted in such a way, so that researchers can obtain answers to research questions [11]. This research is an analytic survey with cross-sectional study design. Data independent and dependent variables were collected at the same time [12]. The dependent variable of the study is Behavior Clean and Healthy and independent variables include: gender, age, knowledge, attitudes, beliefs, role of teachers, the role of parents and the role of schools. Data collection using the questionnaire. In collecting the data, the author was assisted by two teachers who previously had been briefed. The population in this study were students of class IV, V and VI in SDN 07 Landau Leban, Melawi 2015 that totaled 82 people. The sampling technique was total population. Bivariate analysis, the statistical test used Chi Square and Multiple Logistic Regression fatherly multivariate analysis [13].

RESULTS

The results of the univariate analysis, the majority of 45 students CHLB still low (54.9%) (Table 1). On the results of the bivariate analysis there are three variables related to CHLB are: knowledge, attitude and role of the teacher (Table 2)

Table 1. Univariate Analysis

No	Variable	Result	
1	Clean and healthy living behaviors (CHLB)	Good	37
		Less	45
2	Gender	Male	33
		Female	49
3	Age	11-12 Years	42
		9-10 Years	40
4	Knowledge	High	63
		Low	46
5	Attitude	Positive	35
		Negative	47

6	Conviction	Sure	37
		Not Sure	45
7	The role of teachers	Exist	58
		Nothing	24
8	The role of parents	Exist	71
		Nothing	11
9	The role of school Health Unit	Exist	73
		Nothing	9

Table 2. Bivariate Analysis

NO	Variable	P. Value	OR	Description
1	Sex with a clean and healthy living behaviors (CHLB)	1,000	1,023 (0,421-2,428)	No relationship
2	Age with clean and healthy living behaviors (CHLB)	0,125	0,455 (0,187-1,103)	No relationship
3	Knowledge with clean and healthy living behaviors (CHLB)	0,019	3,248 (1,307-8,072)	a connection
4	Attitude with clean and healthy living behaviors (CHLB)	0,010	3,610 (1,439-9,058)	a connection
5	Confidence with clean and healthy living behaviors (CHLB)	0,211	1,938 (0,801- 4.690)	No relationship
6	The role of teacher with clean and healthy living behaviors (CHLB)	0,035	3,444 (1.195- 9.924)	a connection
7	Role of Parents with a clean and healthy living behaviors (CHLB)	1,000	0,985 (0,275- 3.526)	No relationship
8	Role of UKS with clean and healthy living behaviors (CHLB)	1,000	0,031 (0,256- 5.154)	No relationship

The initial stage of the multivariate analysis is to determine the potential independent variables (multivariate candidate variables) to be included in the multivariate analysis; variables from bivariate analysis results have $p < 0.25$. The test results of independent variables listed in Table 3.

Table 3. Multivariate analysis

NO	Variable	P-Value	OR	95% CI FOR OR	
				Upper	Lower
1	Age	0,027	0,227	0,061	0,842
2	Knowledge	0,003	5,434	1,763	16,752
3	Attitude	0,020	3,704	1,234	11,123
4	Conviction	0,032	3,809	1,120	12,952

Of the four independent variables, knowledge is the dominant variable related to CHLB with OR 5.434. This means that students with high knowledge tends 5.434 times have CHLB on students compared with low knowledge, once controlled by the variable beliefs, attitudes, and age.

DISCUSSION

Gender

In this study there was no significant relationship between gender with CHLB. The results of the chi-square test p-value of 1.000, roomatcs OR = 1.023 (95% CI: 0.421-2.428). The results of this study are consistent with other studies that say that there is no significant relationship between sex with children CHLB (14) [7]. Meanwhile, in another study, male gender dominates the incidence of diarrhea by about 86.8% and the amount is more than about 21% of women in because men are less biased maintain good personal hygiene [15].

Research on the behavior of primary school students said that student activity associated with the object contacts made [16]. Women are more often in contact with the ground in accordance with the type of game that they often do, such as playing rope school does. While male students are more used to playing in the classroom and the school terrace no direct contact with the ground. So that the female students were found to have a 10% higher risk of infection of the worm infection of boys (OR = 1.1). The gender difference shows the difference in activities or habits of students.

Age

In this study, age was not associated with health behavior, because of the age range of respondents adjacent (homogeneous). These results are consistent with research in early childhood CHLB in Koja sub-district, North Jakarta, the results showed no relationship between CHLB in students (p-value > 0.05) (17). Same thing with research in Depok said that there was no significant relationship between age students with the incidence of childhood diarrhea SD [7]

Knowledge

Based on this research can be said that if a student's knowledge is getting better, then in doing CHLB they will be better. And vice versa if a student's knowledge of CHLB low then there is a tendency to do CHLB will also be less. This means that knowledge can improve hygienic behavior and healthy students. To improve hygienic behavior and healthy then the students need to improve knowledge of good hygiene practices and healthy results. If the students' knowledge is getting better, then in doing their CHLB would be better. And vice versa if the students' knowledge of CHLB low then there is a tendency to do CHLB will also be less [18]

Knowledge is a predisposing factor (predisposing factor) for the implementation of CHLB. Thus this factor to trigger the behavior of the basis or motivation for his actions due to the traditions or customs, beliefs, a level of education and socio-economic level [19]. There is a relationship between knowledge in an effort to improve behavior. Thereby increasing knowledge will give significant results to improve behavior. Knowledge is the domain that is essential for the formation of behavior, and behavior based knowledge will last longer than the behavior that is not based on knowledge.

Attitude

The results of the univariate analysis found ATTITUDE dominated by negative attitudes, as many as 47 (57.3%). The results of the bivariate analysis found statistically proven to have a significant relationship between attitude with CHLB (P-value = 0.010) with OR = 3.610 (95% CI: 1.439 to 9.058). There is a significant relationship between attitude and Behavior Clean and Healthy Students in an elementary school in the village of Ramban Puji [20]. There is a significant relationship between attitudes with the incidence of diarrhea. The better the attitude of students to wash hands, the lower the incidence of diarrhea. The attitude of hand washing to do when the school students to give

direction and guidance to the students how to wash hands well, complete the facilities such as water faucets and hand washing posters are an effective way [21,22].

Conviction

The results of the bivariate tests found no significant correlation between trust with CHLB (p-value = 0,211) with OR = 1,938 (95% CI: 0,801-4,690), which means that students who are sure to be 1,938 times better behaved CHLB. CHLB behavior is also based on the belief against the wishes of students, support and examples of teachers in schools [1].

The role of teachers

The results of the bivariate analysis found statistically proven to have a meaningful relationship between the role of the teacher and the student (P-value = 0,035) with OR = 3,444 (95% CI: 1,195-9,924). Behave Clean and Healthy Lifestyle (CHLB) not only knowledge and positive attitude and support infrastructure facilities only, but also required the support and example of the teacher. The tendency of children imitates the behavior of adults and children in addition to parents, teachers at the school are adults closest to them both.

Even today many cases children have more confidence in the teacher than the parents. The information provided is support in the implementation of the program, as well as their policies, rules and sanctions made by the teacher has done or not determinan CHLB programs at educational institutions [1]. An overview of program implementation at SDN CHLB Jatininggor says that only 47% only. Need to provide promotive and providing infrastructures CHLB in school [23].

The role of parents

The results of the bivariate analysis there was no correlation between the parental role with CHLB program (P-value = 1.000) with OR = 0,985 (95% CI: 0,275-3,526). The role of parents in the elementary Landau Related Leban influenced by parents' education level is still low. The average level of education only reaches up to elementary school (SD). This causes a lack of parental knowledge about health behavior, so that they could not give a good example to the children of their own.

The healthy condition can be achieved by changing the behavior of which is not healthy to be healthy behaviors, and create a healthy environment in the household. Therefore, health must be protected, maintained and enhanced by every member of the household as well as fought by all parties as a whole (totality). In the domestic sphere to behave clean and healthy living aspects of public health, in particular the pattern of spread of infectious diseases (such as diarrhea) can be prevented through habit or behavior hygienes one of which is the use of clean water, hand-washing with soap, and use latrines healthy [15]. CHLB program that can be applied at home and can reduce the incidence of diarrhea in children is the utilization of the trash in the home environment. When the house is clean of garbage expected morbidity personal hygiene poor can be overcome [24].

The role of School Health Unit

The results of the bivariate analysis there is no relationship role of the schools that is in place with the CHLB (P-value = 1.000) with OR = 0.031 (95% CI: 0,256-5,154). School Health Unit (UKS), which focuses on promotive and preventive efforts are very important and strategic to improve the health, one effect is on clean and healthy living behaviors (CHLB) students. School as a place to learn not only need to have a clean and healthy environment in support of good teaching and learning process, but it is expected to form the students who have a degree of good health.

The teacher's role in fostering UKS program indicates a positive effect on the implementation of the program at the school CHLB. Elain was UKS schools should be emphasized to encourage the involvement of students, parents and school community including school committees in the management and implementation of the UKS, strengthen the functioning of the partnership with all relevant stakeholders, especially TP-UKS in supporting efforts to improve the health of school children, to raise public awareness, including the business community, the media in supporting the promotion of healthy lifestyles, as well as the provision and utilization of health services for school age children, as one promotive / preventive, supported by their curative / rehabilitation of each individual [25].

Research in SDN 013 North Jakarta municipality in 2008, found that there is a relationship between the implementation of the program with CHLB UKS. The higher the UKS program implementation in schools will encourage students to behave clean and healthy living is higher or better than schools that low UKS program implementation [26].

CONCLUSIONS

In this study, the majority of students showed less CHLB implement programs (54.9%). Variables associated with CHLB include: knowledge, attitude and role of the teacher (P value <0:01). Variable knowledge is the dominant factor affecting CHLB program. Suggestion; CHLB need to increase knowledge about the form of counseling, provision of facilities and infrastructure, among others: the provision sink, anti-septic, healthy canteen, bins, promotional media such as posters and CHLB need training in collaboration with other health-related facilities.

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ICASH-A23

**COST EFFECTIVENESS AND EFFICIENCY ANALYSIS OF
HOSPITAL WASTEWATER TREATMENT PLANT: A SYSTEMATIC
REVIEW**

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ABSTRACT

Backgrounds: Hospital waste management had become an international attention. One of the first meeting by Solid Hazardous Waste was related to domestic waste and medical waste. The previous study showed that nationally hospital solid waste expectedly reach 376.089 ton per day and the volume of wastewater was 48.985,70 ton per day.

Aims: The purpose of this study is to examine the literatures on analysis of the cost effectiveness and efficiency hospital Wastewater Treatment Plant.

Methods: This systematic review was based on Protocol Prisma. Literature searches were conducted using the electronic databases Google Scholar (2011 to present), SpringerLink, and Proquest. Over a total of 3.834 potential articles, 9 met all inclusion criteria.

Results: Cost problems were founded due to there was no good financial planning, maintenance costs, and the wastewater quality supervision. The budget of wastewater treatment only focuses to the cost of damage, but only enough for one time laboratory examination. Moreover, we also highlighted another factors affected to effectiveness and efficiency where there was no regular training for sanitarian, and as the results, sanitarian cannot determine the best effective method, finally the budgets were only for authoritarian system. This paper also reviews methods and applications to reduce the cost in electrical, chemical, and maintenance, by new wastewater treatment alternatives. If compared the two techniques, extended aeration and sequencing batch reactors, evidently, sequencing batch reactor had lower cost than extended aeration.

Conclusions: The cost effectiveness and efficiency of wastewater management can be achieved by good management systems, good knowledge about waste, and different methods result different efficiency too.

Keywords: Cost effectiveness, efficiency, hospital wastewater treatment plan.

INTRODUCTION

The hospital waste management had become an international attention and one of the important International meeting agenda. One of the first meeting in Bangkok by Solid Hazardous Waste that continued about waste that related to domestic waste and medical waste [1]. Indonesia Health Ministry surveyed waste managements in 88 hospitals. Based on World Health Organization (WHO), the especially infectious waste (15% until 25%) from total of waste produced by the hospital. However, in Indonesia reached 23.3% [2].

In the Indonesia health profile based on Indonesia Riskesdas (Basic Health Research), Health Department, 2015, it was said that total of Indonesia hospitals were 2.488 with 121 beds in 1000

peoples [3]. The analysis results for 100 hospitals in Java and Bali showed that the average of waste productions were 3.2 kr for one bed per day. Expected nationally, hospital wastewater were 48.985,70 ton per day. From those descriptions, how big the hospital potential to pollute and for the possibility of incurring accident and transmission of diseases [4].

The wider types of services that are given by hospitals tend to produce more waste in numbers and in diversity because they were more complex than other industries. Hospital wastes consist of some organic materials, hazardous materials, radioactive, even bacteria, or pathogenic microbe can make nosocomial infections. The hospital wastes is like the others have the organic and anorganic materials that the composition levels can be measured by water test, such as BOD, COD, TSS, PO₄, pH, temperature, and free NH₃ or ammoniac as a quality standard based on PERMENLH no.5/2014 [5].

Based on Government Regulation No.101/2014 about Toxic Hazardous Material Waste Management, the hospital in Indonesia must manage the wastes [6]. The solid waste can be managed by incinerator. While, wastewater must be processed first by Wastewater Treatment Plant, so the waste pollute level can't undermine the environment and public health. The wastewater that was resulted by Wastewater Treatment Plant will be flowed to river, to land, or can be recycled again. Hospitals waste management have many problems. The main problems are the high management cost because related to high technology, operational mechanism, and waste monitoring and maintenance [7].

The hospitals are not only producing organic and anorganic waste, but also infectious waste that have Toxic Hazardous Materials. The other economic aspect can be seen also in deciding chemical materials that cheaper but have same function in wastewater management system. Operational unit cost wastewater management in hospitals are estimated based on electric cost need and routine maintenance cost for Wastewater Treatment Management [7]. Accordingly, a systematic review on the cost effectiveness and efficiency hospital Wastewater Treatment Plant become important to be known the extent to which it is implemented. Thus, the purpose of this study was to examine the literatures on analysis of the cost effectiveness and efficiency hospital Wastewater Treatment Plant review the finding systematically, and assess the implementation of this measurement.

METHODS

This systematic review was based on Protocol Prisma. Literature searches were conducted through November 7th 2016 using the electronic databases Google Scholar, springerLink, and Proquest (2011 to present). The author independently evaluated the articles for inclusion. The downloading process was valued independently by author. Restriction was placed on type of language, document type, subject, classification and organization. Additional studies were identified by searching bibliographies from a systematic review.

Using SpringerLink, the keywords "cost effective, advanced wastewater treatment" result 3237 documents. By changing keywords become "cost effective" and "advanced wastewater treatment" result 109 documents. After read all of documents, 1 document appropriate for Systematic Review. By Proquest, the keywords "hospital Wastewater Treatment Plant" result 32 documents. By changing keywords become "hospital Wastewater Treatment Plant" AND "efficiency" result 15 documents. After read all of documents, 1 document appropriate for Systematic Review.

Through Google Scholar, the keywords "hospital Wastewater Treatment Plant" result 357 documents. By changing keywords become "hospital Wastewater Treatment Plant" AND "cost

effectiveness” result 9 documents. After read all of documents, 1 document appropriate for Systematic Review. By changing keywords become “hospital Wastewater Treatment Plant” AND “efficiency” result 208 documents. After read all of documents, 1 document appropriate for Systematic Review. By using Google Scholar, the keywords “*Instalasi Pengolahan Air Limbah Rumahsakit*” result 2 documents. By changing the keywords “*Instalasi Pengolahan Air Limbah Rumahsakit*” AND “*efektivitas biaya*” result 1 document. “*Air Limbah Rumahsakit*” result 2 documents. By changing the keywords “*Instalasi Pengolahan Air Limbah Rumahsakit*” AND “*efisiensi*” result 1 document. For the second keywords “*efektivitas biaya IPAL RS*” result 197 documents. After read all of documents, 1 document appropriate for Systematic Review. Keywords “*efisiensi IPAL RS*” result 310 documents and 2 documents appropriate for Systematic Review.

Included Studies

Criteria of eligibility documents for systematic review, such as the relation with topics, the results related to analysis of the cost effectiveness and efficiency hospital wastewater treatment plant.

Excluded Studies

Because of the systematic review analysis purpose was about analysis of the cost effectiveness and efficiency hospital wastewater treatment plant, so the articles that did not discuss about analysis of the cost effectiveness and efficiency hospital wastewater treatment plant (12 articles) were excluded. Then the articles that were not from journal websites also excluded (10 articles).

RESULTS

The analysis of the cost effectiveness and efficiency hospital wastewater treatment plant from 9 included journals, 4 journals [**Error! Reference source not found.,Error! Reference source not found.,Error! Reference source not found.,Error! Reference source not found.**] research about hospital wastewater cost effectiveness, and 5 journals [**Error! Reference source not found.,Error! Reference source not found.,Error! Reference source not found.,Error! Reference source not found.,Error! Reference source not found.**] research about hospital wastewater efficiency.

From one research, Evaluation Of Solid And Waste Water Management At Rsud Mimika, showed that the high wastewater management cost can be reduced by management systems. Misgiono, Onny Setiani, and Budiyono, 2014 said that by carried on good management functions: planning, organizing, implementation, and supervising can minimize budget for wastewater. The examples of cost problems were founded in Mimika Hospital, with no good financial planning, the budget of wastewater treatment in 2011 IDR 59.346.000, only for the cost of damage. There were not maintenance costs. The wastewater quality supervision budgeting IDR5.500.000 for laboratory examination for 4 times in one year was insufficient because for one time examination was needed IDR 5.420.000. It was caused by not good financial planning and the sanitarian did not get regular training, so that the budgets were only by otoritarian system. The sanitarian leader did not have good knowledge in work program and budget planning [8].

In Meylinda Mulyati and JM Sri Narhadi’s paper, 2014 found one new wastewater treatment technical from wastewater treatment instruments in RK Charitas Hospital, 2014, such as clarifier tank and buffer tank changed by biodetox, whereas polishing tank and treated water tank changed by chlorination tank. Two filtrations in RK Charitas Hospital can be reduced one filtration because of the same functions. The reasine filter in tube that contained salts and fire soda changed by active carbon media. So, in RK Charitas was founded that there were a reduction from IDR 7.120.000 to IDR

6.720.000 in electrical cost, chemical cost from IDR 1.126.000 reduce to IDR535.000, and for maintenance, IDR 400.000 to IDR 300.000 [7].

The other reference also talked about wastewater technical treatment influenced the cost effectiveness [9]. In Iran compared two technical, extended aeration and sequencing batch reactors. Evidently, sequencing batch reactor had lower cost than extended aeration.

Table 1. The comparison of treatment system: extended aeration system and SBR (Adapted from (9))

Treatment system	Operation cost (dollar/m ³ of treated wastewater)	Electric cost (dollar/m ³ of treated wastewater)	Construction cost (dollar/m ³ of treated wastewater)
Extended aeration system	0,25	0,040	667
SBR	0,17	0,013	600

The study in Table 1 supported another study carried out in Amouei *et al.*, 2012 on the quality of hospital wastewater using the extended aeration method, 74.3, 79.6, and 76.5 percent of BOD, COD, and TSS was removed, respectively [10]. The factors that influenced the efficiency of a wastewater treatments consisted of some physics and chemistry parameters, and bacteriology indicators. BOD, COD, TSS, PO₄, pH, temperature, and free NH₃ or ammoniac, the parameters were measured in two sample points and two different times in Abd Gafar research in Haji Makassar Hospital [11]. Based on laboratory results for Haji Makassar Hospital wastewater sample, BOD 50% (efficient enough), COD 50% (efficient enough), and PO₄ (efficient). The average levels for outlet 1,47 mg/L, but inlet PO₄ 7,48 mg/L.

Besides those parameters, Cahyono Eko Prastiyo Research showed that some indicators had been set to assess wastewater management quality. The indicators were *E. coli* and coliform nonfecal such *Enterobacter aerogenes* [12]. The sample was taken in 2 days at 08.00, 09.00, 10.00, 11.00, 12.00, 13.00 and 14.00. The MPN Coliform effluent rate in first day was 17.000, in second day was 17.000. For the wastewater treatment, Panti Wilasa Citarum Hospital used Decentralized Wastewater Treatment Systems.

The other journal, showed that Inlet WWTP Tulehu Hospital, the average levels for BOD₅ are 28,042 mg/l, COD are 56,428 mg/l, pH are 8.10, temperature are 25,92⁰C and MPN Coliform are 4,186,028 colony/100 ml. Outlet of WWTP Tulehu Hospital, for BOD₅ parameter are 21,708 mg/l, COD are 43,842 mg/l, pH are 7.62, temperature are 24,12⁰C, and MPN Coliform are 507,601 colony/100 ml. These results were founded from Tulehu Hospital wastewater treatment by biofilter aerob process [13].

In another research, Iran had offered the utilization of environmentally friendly and eco-safe wastewater treatment plan. In one study, had founded the results revealed that the hybrid constructed wetlands are effective to remove organic matter (BOD₅, COD) and suspended solid, while in terms of nutrient removal such as N and P components, the removal efficiencies were depending to system properties and operational condition. Heidari, et.al in Iran also discussed about sequencing batch reactor was recommended because of better efficiency and lower cost in investment than the other [14].

Shahryar Jafarinejad said that results demonstrated that increase of MLSS decreases the total project construction, material and amortization costs of WWTPs containing EAAS and CAS. These results depicted that the WWTP containing CAS process is cost effective. Besides, increase of MLSS

does not affect costs of WWTP containing SBR, but increase of this value decreases the total project construction, material and amortization costs of WWTPs containing EAAS and CAS. However, this study was in Tehran city, Iran, not hospital as specific [15].

Table 2 Summaries of Parameter Journals

Authors	Title	Methods	Variables	Results
A. Amouei, H. A. Asgharnia, A. A. Mohammadi, H. Fallah, R. Dehghani and M. B. Miranzadeh (2012)	Investigation of Hospital Wastewater Treatment Plant Efficiency in North of Iran During 2010-2011	Cross-sectional Descriptive Study	the influent and effluent of hospital WTP during 2010 to 2011 and Efficiency removal of TSS, BOD, COD and TC	The wastewater treatment system in studied hospitals were activated sludge with extended aeration. The concentration of TSS, BOD, COD and TC in the effluent of the studied hospitals was more than the Iranian reuse standard which indicates inefficient removal of pollutants in mentioned hospital wastewater treatment plant. Thus, for effluent reuse in irrigation more efficient wastewater treatment process is required.
Abd. Gafur (2014)	Efficiency a Wastewater Treatment on The Quality of Liquid Waste Haji Makassar Hospital In 2014	Observational Descriptive Study	Inlet, outlet, sampling times and efficiency of BOD, COD, and PO4	Haji Makassar Hospital used aeration activated sludge system. The efficiency showed wastewater treatment was able to decrease BOD 50% (efficient enough), COD 50% (efficient enough), and PO4 80% (efficient)
Arezoo Heidari, Mahdi Sadeghi, Abotaleb Bay, Jalal Keihanpour, Elham Omid, Khadijeh Bay, Mahmoud Tabatabaei (2011)	Comparison of Technical and Economic Efficiency of Extended Aeration and Sequencing Batch Reactors Processes in Hospital Wastewater Treatment	Descriptive Analytical Study	Extended aeration system, sequencing batch reactor, influent and effluent of BOD, COD, TSS, pH, residual chlorine	This study demonstrates good performances of the extended aeration activated sludge system and the SBR system in terms of reduction of pollution load to its standard limits for agriculture and irrigation purposes. However, due to slightly better efficiency, lower cost of investment, and operation compared to other methods, the SBR system is recommended.
Ali Arsad Kerubun, Makmur Selomo, Ruslan (2014)	Study of Liquid Waste Quality in General Hospital of Tulehu Province of Maluku	Observational Descriptive Study	Sampling times, inlet and outlet of BOD, COD, pH, temperature, MPN Coliform	General Hospital of Tulehu's wastewater system was anaerob-aerob biofilter. Quality of liquid waste of WWTP Hospital of Tulehu from Physical and Chemical parameters meet the requirement, while the bacteriology parameters is below the standars exception in days four and days five after treatment process meet the requirement and standards.
Meylinda Mulyati, JM Sri Narhadi (2014)	Evaluation a Wastewater Treatment in RK Charitas Hospital Palembang	Case Study	New design, old design, chemistry materials, wastewater treatment quality of pH, TSS, BOD, COD, NH3, PO4	From the RK Charitas Hospital wastewater resulted evidently, this wastewater still had NH3 and PO4 which did not fulfill requirements. PO4 2,134-2,213 mg/L were more than requirements 2 mg/L and NH3 0,174-0,186 more than requirements 0,1 mg/L.
Cahyono Eko Prastiyono (2012)	The Effectiveness of Hospital Wastewater Treatment with The DEWATS System in Reduce Coliform Bacteria in Panti Wilasa Citarum Semarang Hospital	Cross Sectional Descriptive Study	Sampling times, influent, effluent, and efficiency of MPN Coliform	Panti Wilasa Citarum Semarang Hospital used DEWATS (Decentralized Wastewater Treatment Systems). There is not significant difference between the degree of MPN Coliform before and after being processed at wastewater processing unit of Panti Wilasa Citarum Semarang Hospital (p=0,618)

Authors	Title	Methods	Variables	Results
M.H. Sayadi, R. Kargar, M.R. Doosti, H. Salehi (2014)	Hybrid Constructed Wetlands for Wastewater Treatment: A Worldwide Review	Worldwide Review	C/N ratio, four hybrids CW, influent and removal efficiency of BOD, COD, N, P	The results revealed that the hybrid constructed wetlands are effective to remove organic matter (BOD ₅ , COD) and suspended solid, while in terms of nutrient removal such as N and P components, the removal efficiencies were depending to system properties and operational condition.
Misgiono, Onny Setiani, Budiyo (2014)	Evaluation of Solid and Wastewater Management at RSUD Mimika	Qualitative Study	Waste management, medical solid wastes, non-medical solid wastes	Mimika Hospital used anaerob biofilter system. The research resulted in as follows: The hospital produced 35.56 m ³ /day of waste water and excessive 9.11 mg/L NH ₃ -free waste water.
Shahryar Jafarinejad (2016)	Cost estimation and economical evaluation of three configurations of activated sludge process for a wastewater treatment plant (WWTP) using simulation	Cross Sectional	Wastewater parameters and values. Depth (m), Coefficient of permeability, Porosity, Particle diameter (cm), Shape factor, Specific gravity and Layer I, Layer II, Layer III, Layer IV	Results demonstrated that increase of MLSS decreases the total project construction, material and amortization costs of WWTPs containing EAAS and CAS.

DISCUSSION

Efficiency hospital wastewater

Hospital wastewater contains pathogenic microorganisms, pharmaceuticals, hazardous chemicals, etc., which may have an impact on the environment and public health. Hospital effluents in the visited facilities are generally discharged towards the urban sewer network, towards septic tanks coupled to wastewater disposal well, or to open drains, tertiary treatment (physical, biological, or chemical processes to remove nutrients such as nitrogen and phosphorus, and carbon adsorption to remove chemicals); chlorine disinfection; sludge treatment (anaerobic digestion, natural drying beds and incineration) [16]. The standard quality of wastewater plant treatment that determined by Indonesia government can be seen in PERMENLH No.5/2014. Many Indonesia hospitals still did not fulfill this standard quality, such as in Mimika Hospital, the hospital produced 35.56 m³/day of waste water and excessive 9.11 mg/L NH₃-free waste water [8].

Cost effectiveness of wastewater treatment

The cost effectiveness can be seen by comparing (ratio) between concentration reduction cost per parameter unit. Cost effectivity ratios were showed by all wastewater treatment cost compared by the benefits. The benefits were lower concentration on every parameters. The lowest ratio showed good cost effectiveness. The ideal concept in cost effectiveness implementation for wastewater management if the hospitals have had a financial planning. The financial planning was influenced by sanitation installation work programs. From RSUD Mimika can be learned if there were not good financial planning and the sanitarian did not get regular training, so that the budgets were only by otoritarian system. The sanitarian leader did not have good knowledge in work program and budget planning [8].

In RK Charitas Hospital, Mulyati M and Nurhadi designed new hospital wastewater treatment plant which using method from the old design, they reduce clarifier tank and buffer tank changed by biodetox, whereas polishing tank and treated water tank changed by chlorination tank. All this time,

the there were 2 filtration in RK Charitas Hospital can be reduced one filtration because of the same functions. So the cost can be reduce too [7].

The cost effectiveness is an ability that must be had by management. Therefore training must be given to sanitation staffs and management regularly, as said Misgiono, Onny Setiani, and Budiyo in their journal that the hospital must have the budgets for waste management training [8]. The factors that influenced hospital wastewater treatment plant performances to result good quality waste, such as: hospital wastewater treatment plant spaces, management fee, water sources, waste recycling, discharging disinfectant, the amount of labors, education, and training.

The hospital wastewater treatment plant performances in wastewater management can be measured from concentration reduction on each parameters. In Shahryar Jafarnejad's study, 2016, there were three configurations containing conventional activated sludge (CAS), extended aeration activated sludge (EAAS), and sequencing batch reactor (SBR) processes for a wastewater treatment plant in Tehran city were proposed and the total project construction, operation labor, maintenance, material, chemical, energy and amortization costs. In addition, increase of this value increases the total operation, maintenance and energy costs, but does not affect chemical cost of WWTPs containing EAAS and CAS [15].

These studies can explain that in Indonesia, the wastewater cost problem can be varied depend on the type hospitals and the abilities hospital management in wastewater treatment. Moreover, if it was compared by another country, like Iran, this study can compile information in a variation. However, included studies that have reported cost effectiveness and efficiency did not have same standards. All influenced the management competencies, the methods, and regulations for wastewater treatment plants. Besides, the research methodology also influenced because one study gave the redesigning wastewater plant solution, but others only observed existing plant. Therefore, it could not be studied what best methods that can influenced the most effective cost.

Further research is needed to inform strategies for cost effectiveness and efficiency wastewater achievement by considering research methodology. Those strategies covers management system functions, the best effective waste water treatment methods, and how to make economic benefits from recycling to help the government preserve environment.

CONCLUSIONS

The cost effectiveness and efficiency of wastewater management can be achieved by good management systems: planning, organizing, leading, and controlling. Planning how to identify and explain the problems. The example problems are no incinerator operators, no training for waste workers, no Standard Operational Procedures, operational technical did not fulfill requirements, and incomplete infrastructures. Remember to make problem priorities, from the problems above choose one as the most priority. Make purposes success indicators, for example: wastewater already fulfill the requirements. Then review problems, for example: the number of human resources, training, and infrastructure problems. Finally, create operational work plans. Organizing is about an organization structure can make a delegation mechanism from installation leader to staffs based on job descriptions. Leading is about the success of management function development. It is influenced by sanitation installation leader gives motivations to staffs.

For controlling how to assess the gaps, analyze cause factors, and plan and give solutions to problems, it needs the abilities to analyze the steps of wastewater treatment effectively so that can choose the good wastewater treatment technical which are effective and efficient. If more effectively the cost, then the concentration reduction cost ratio will be less and vice versa. It can show that cost

effectiveness will influence good quality waste. The hospital management need to train hospital sanitarian regularly, set unit daily cost and utilization of wastewater to reduce pollution and economic benefit. The government is suggested make Extended Producer Responsibility (EPR) policy about wastes recycling.

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ICASH-A24

EFFECT OF HEAT STRESS AND NUTRITION STATUS ON WORKER FATIGUE AT TRADITIONAL MUSIC GAMELAN INDUSTRY

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ABSTRACT

Background: Industry of gamelan production is informal industry from motherhood heritage of Java. Making gamelan worker direct heat exposure and consume large man power, thus need good physic stamina especially in heating process.

Aims: This study aim to know the effect of heating stress and nutrition status on worker fatigue.

Method: This study conducted by observation, questionare, documentation and measurement. Respondents were 30 gamelan-producing workers at forging process dan finishing process from 105 population with purposive sampling in Wirunvillage Sukoharjo Central Java Indonesia. Measurement of heating stress using area heat stress tool. Status of nutrition was measured by body weight weighing, while the fatigue was measured by timer reaction tool. Statistic analysis with linear regression.

Results: Results showed that heating stress in forging process part has Wet Bulb Globe Temperature (WBGT) average 31°C (>threshold value) and at finishing process part has WBGT average 27,9 °C (≤threshold value), that means in heating process was more fatigue compared to in finishing process. Linear regression statistical test with p -value 0.008 ($\leq 0,05$) showed there is effect of heat stress on worker fatigue. There was relationship between nutrition status and work fatigue, where worker with good status of nutrition have no fatigue of 6.67 %, low fatigue of 50%, and medium fatigue of 6.67 %. All of worker with low status of nutrition getting fatigue, whereas worker with excessive nutrition status also getting fatigue by medium fatigue of 20 % and high fatigue of 6.67%. Linear regression statistical test with p -value 0.04 ($\leq 0,05$) showed there is effect of nutrition status on worker fatigue.

Conclusion: Workers in forging site more likely to experience work fatigue than workers in finishing site. There is effect of heat stress on worker fatigue. There is significant association between nutritional status and work fatigue.

Keywords : Gamelan Industry, heating stress, nutrition status and fatigue.

INTRODUCTION

Industry of gamelan production in Wirun Village, Sukoharjo, is a home industry that processing raw materials such as tin and brass into gamelan musical instruments. The process of gamelan making is started with mixing the raw materials such as copper and tin within ratio 3: 1 for bonang and 10:3 for gong as the part of gamelan, heated in the mold, and then mixing it together to form a slab. And then that mixed material burned on fire and forged by workers using heavy hammer that have various weight started from 8 kg-10kg, so that workers need powerful energy to do that job. If the metal temperature decreasing, it should be burned again and forged repeatedly while

occasionally heated to obtain the desired shape. After forging process, there is finishing process such as grinding and sanding.

The heat is generated due to metal forging stage. In this industry, workers work in hot environments derived from the waiting warming on the ignition process before forging metal plates into the desired shaped gong, the heat which was felt by workers was generated by blast furnaces and the closed place. First survey that heating stress in forging process part has Wet Bulb Globe Temperature (WBGT) 29.6°C (>threshold value) WBGT is allowed for 75% of working time and 25% of resting with high workload is 25.9 °C, duration 8 hours everyday, time entry start from 08.00 until 16.00 WIB. That heating stress is >threshold value. Workers in hot environments, including around furnacing, smelting, boilers, ovens, stove can suffer heat stress, impacting body to lose heat to maintain the balance between environmental and body, and finally lead to fatigue [9]. Thermal stress (heat stress) is the climatical work load accepted by human body [4]. Factors that affecting heat stress is air temperature, air humidity, air movement velocity, heat radiation [8]. Workers endurance against heat stress is determined by physiological adaptation acclimatization, worker's age, sex and nutritional status [6]. Heat stress can lead to fatigue, dehydration, prickly heat, muscle cramps, impaired blood flow to the brain, dry mouth, very thirsty, weak, and very tired [9].

There was a significant relationship / significant between nutritional status and fatigue [3]. Fatigue can be determined using an indicator that showed fatigue caused by work [9]. One of affecting factor of work fatigue is age. The increasing age will be followed by the decreasing of strength and muscle endurance [9]. Work period also affected fatigue. Work fatigue associated with the pressure that occurs while working can be derived from the work task, physical conditions, chemical conditions, and social in workplace. Constant pressure occurred with the increasing of work period together with workers process adaptation in the workplace [10].

METHOD

This research was using observational analytic study with cross sectional approach, applied in area forging site and finishing site of industry of gamelan production in Wirun Sukoharjo. Respondents were 30 workers in gamelan producer at forging process dan finising process from 105 population with purposive sampling. Data collection techniques were using observation, interview, documentation and measurement of heating area using area heat stress too, weight and height are used to determine the nutritional status and fatigue. Nutritional status is worker's weight divided by the square of worker's height. Good nutritional status is if the BMI (Body Mass Index) in the category of normal (18.5 to 25.0) kg / m². Nutritional status is if the BMI (Body Mass Index) in the category of more than > 25.0 kg / m². Malnutrition status is if the BMI (Body Mass Index) in the category of less than < 18.5 kg / m². Measuring Instruments that being used are scales and gauges. Work fatigue is a feeling of weary experienced by workers in gamelan industry after work which is measured by reaction timer with 240.0 milliseconds of reaction time. Not tired

Normal is indicated if worker's reaction time workers in between 150.0 to 240.0 milliseconds. Low Fatigue Work is indicated if worker's reaction time in between 240.0 - <410.0 milliseconds. Medium Work fatigue Medium is indicated if the reaction time worker in between > 410.0 - <580.0 milliseconds. High Work fatigue is indicated if the reaction time workers in between > 580.0 milliseconds, as measured by Lakassidaya Reaction Timer Lakassidaya. The results will be compared by standard measurement of fatigue namely: 1) Normal: reaction time 150.0 to 240.0 milliseconds, 2) Low Work Fatigue reaction time > 240.0 - <410.0 milliseconds, 3) Medium Work fatigue Medium (KKS): reaction time > 410.0 - <580.0 milliseconds, 4) High Work fatigue :reaction time > 580.0 milliseconds. Statistic analysis was linear regression.

RESULTS

Based on the research that has been done in the industry of gamelan production in Wirun Sukoharjo obtained that the data of respondent's aged of 25 to 50 years old.

Table 1. Characteristics of age and work period of workers in Gamelan Industry of Wirun Sukoharjo.

No	Age		Work period	
	(Year)	(%)	(Year)	(%)
1	25 – 30	10,0%	5 – 10	56,6
2	31 – 35	23,3%	11 – 15	30,0
3	36 – 40	20,0%	16 – 20	6,7
4	41 – 45	20,0%	21 – 25	6,7
5	46 – 50	26,7%		

Tabel 2. Heat stress condition in Gamelan Industry of Wirun Sukoharjo

No.	Time Measurement	WBGT*			
		Forging site		Finishing site	
		Point 1	Point 2	Point 1	Point 2
				(°C)	
1.	09.00	30,8	29,2	27,2	27,7
2.	10.00	32,5	30,5	27,9	27,2
3.	11.00	32,9	30,1	27,9	27,7
	Average	32,1	29,9	27,7	27,5

*WBGT: Wet Bulb Globe Time

From the results of heat stress measurement in the workplace WBGT in forging points 1 and point 2 is 31 °C (> TLV) and in finishing site point 1 and 2 are 27.6°C (<TLV).



Figure 1. Workers in forging site while working 75%



Figure 2. Workers in forging site while resting 25%



Figure 3. Workers in finishing site

In the forging site category of high work load because work in door and workers exposed to heat more than the Threshold Limit Value (TLV) is allowed. Sources heat exposure from burner. In the finishing category of medium work load because work out doors only do the sanding and grinding gamelan has been forged and worked in the shade so it is not exposed to direct heat sources

According to Indonesian National Standard SNI 16-7063-2004 about Threshold Limit Values Work Climate (Heat), Noise, Vibration and Arm Radiation and Ultra Violet rays at Work, WBGT is allowed for 75% of working time and 25% of resting with high workload is 25.9 °C and medium workload is 28°C. From the results of heat stress measurement in the workplace WBGT in forging

points 1 and point 2 is 31 °C (> TLV) and in finishing site point 1 and 2 are 27.6°C (<TLV), which are not in accordance with NAB were allowed to work with heavy workloads and working hours and rest periods 75% to 25%.

By using the linear regression analysis test, the value of p is 0.008 (≤ 0.05), which means that there is a significant relationship between heat stress and work fatigue.

The results of measurement and calculation showed that 6,67% of workers have malnutrition status, 6,67% of workers have is in good nutrition status and 63,33% of workers have over nutrition status.

The measurements of fatigue conducted after work (before resting time) are provided by table 4.

Table. 4. The percentage rate of fatigue due to work fatigue, poor nutrition status and good nutritional status

Work Fatigue Scale	Good Nutrition Status Frequency	Poor Nutrition Status Frequency	Work Fatigue Frequency ^x	Work Fatigue in Forging Site ^y	Fatigue in Finishing Site ^y
Normal	6,67	0	6,67	53,8	50
Low	50	3,33	56,67	15,4	50
Medium	6,67	3,33	30	30,8	0
High	0	0	6,67	0	0

Note ^x: all workers; ^y: all workers in forging site and finishing site affected by heat stress.

By using the linear regression analysis test, the value of p is 0.04 (≤ 0.05), which means that there is a significant relationship between nutrition status and work fatigue.

DISCUSSION

According to Indonesian National Standard SNI 16-7063-2004 about Threshold Limit Values Work Climate (Heat), Noise, Vibration and Arm Radiation and Ultra Violet rays at Work, WBGT is allowed for 75% of working time and 25% of resting with high workload is 25.9 °C and medium workload is 28°C. From the results of heat stress measurement in the workplace WBGT in forging points 1 and point 2 is 31 °C (> TLV) and in finishing site point 1 and 2 are 27.6°C (<TLV), which are not in accordance with NAB were allowed to work with heavy workloads and working hours and rest periods 75% to 25%. This condition should be controlled by providing an exhaust fan, wearing work clothes made from cotton T-shirts which can absorb sweat easily, provide adequate ventilation for air circulation smoothly, decreasing work load factor, decreasing radiant work load, and providing adequate resting time.

The finishing site is categorizing as average work load category because workers doing the sanding task and grinding task in a shady place, they are not exposed to heat sources directly. In forging site, workers exposed to heat more than the allowed Threshold Limit Value (TLV). Based on linear regression statistical test, p-value ≤ 0.01 showed there is effect of heat stress on worker fatigue. It goes the same with another research about difference reaction time with light stimuli (fatigue) among workers in forging and molding site PT. Ingenyst Semarang before and after hot place exposure (10). Heat stress also has significant correlation with fatigue among workers in drilling site (7).

Worker's nutritional status condition shows that workers with food nutritional status have the largest percentage by 63.33%. Workers with low work fatigue level have the highest percentage by 56.67%. Sometimes workers who experience low work fatigue have a rest and consume drinks or food in their working time. The percentage of workers not experienced work fatigue (normal) is 6.67%. Another several workers experiencing medium work fatigue (30%) and low work fatigue (6.67%) All of workers with poor nutritional status is experiencing work fatigue whether it is low or medium. It is caused by the worker with the malnutrition status is consuming fewer food, so the amount of nutrients that enter the body is less than the amount of energy expended while working [5].

Many workers with good nutritional status experiencing low work fatigue and few of them experiencing medium work fatigue. There also workers who not experiencing work fatigue due to the intake of nutrients in the body is proportional to the amount of produced energy [2]. All of workers with over nutritional status experiencing low, medium and high work fatigue. It is caused by due to their over nutritional status nutritional status, they require greater energy to move along with their weight body. Although they get a much amount of nutrients intake, the process of energy combustion in the body consume its energy according to their body surface area, but also their activities in the workplace [3].

By using the linear regression analysis test, the value of p is 0.04 (≤ 0.05), which means that there is a significant relationship between nutritional status and work fatigue. The strength of weak correlation in the relationship between nutritional status and fatigue likely caused by internal factors and external work environment. This is consistent with the theory that the nutritional status is one of the elements that determine the physical quality and quantity of physical labor and therefore contributes to fatigue [11].

Almost all of gamelan industry worker in Wirun Sukoharjo Village have been work more than 5 years, so workers have been well adapted to the job and work environment. Work fatigue associated with the pressure that occurs at work could be derived from the work task, physical conditions, chemical conditions, and social work. Constant pressure occurs along with the increasing work period and adaptation process of workers in the workplace [9].

CONCLUSION

The average rate of heat stress WBGT in forging site is 31°C ($> TLV$) and in finishing site is 27,6 °C ($\leq TLV$), causing workers in forging site more likely to experience work fatigue than workers in finishing site. There is significant association between nutritional status and work fatigue on gamelan industry workers in Wirun Village Sukoharjo. Controlling heat stress in forging site by installing ventilation for air circulation and installing fan for cooling down workers's body temperature in resting time. Placing drinking water supply inside forging site for workers and workers should drink much water while working in workplace with high heat stress.

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ICASH-A25

**POTENTIAL CHEMOPREVENTIVE AGENT: STUDY OF APOPTOSIS
IN THE EXTRACTS OF SPONGE-ASSOCIATED FUNGI FROM
YOGYAKARTA AGAINST CERVICAL CANCER *HeLa* CELL LINE**

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ABSTRACT

Background: Cervical cancer is one of the leading-cancers affecting women. Cancer drugs that do not originate from natural ingredient, chemotherapy drugs, have side and resistant effects. Thus study about the natural products treating cancer cells is needed. Secondary metabolites isolated from sponge-associated fungi are expected to have a potency to fight cancer cells. In addition, the production of anticancer compounds from microorganisms has several advantages, including rapid growth and can be manipulated to increase productivity. The isolation and testing cytotoxicity against 3 fungal isolates from Yogyakarta have been done on the previous research. All three isolates have a potential candidate as anticancer drug.

Aims: The purpose of this advanced study was studying bioactive compounds induced apoptosis pathway of sponge-associated fungi against cervical cancer *HeLa* cells.

Methods: This study has been carried out for approximately 5 months. The method conducted in this research including the sponge cultivation (covers growth and isolation of secondary metabolites), the mycelium extraction of fungi, the cytotoxicity assay against *HeLa* cells using MTT Assay and Apoptosis Staining was to see the induction of apoptosis pathway.

Results: Based on the research showed that ethyl acetate extract from mycelium is 0.22 grams. The cytotoxicity assay from mycelium extract showed IC₅₀ value of 164 µg/mL against *HeLa* cell line.

Conclusion: The findings is carrying to a possibility to develop the extracts of sponge-associated fungi as candidate of anti-cancer compound. By apoptosis staining, showed the cells coloured green are still alive, and cells undergoing apoptosis have nucleus that appears orange to red. We assuming that the apoptosis was caused by the possibility of peptide compounds that induce apoptosis through the mitochondrial pathway, by increasing the activity of the protein expression of apoptosis, which are *Bcl-2* and *Bcl-xl*.

INTRODUCTION

Cancer problems is a health problem with case rate and death increasing each year. Cancer cells can continue to divide, not sensitive to the anti-proliferation signals and avoid programmed cell death (apoptosis) due to mutations in growth factor receptor gene [1]. Kind of cancer in Indonesia with the largest case rate is cervix. Cervix (cervical) cancer is a cancer that often affects both women after breast cancer. This cancer usually affects women who are married and aged 30 years and over. Besides the age factor risk factor for cervical cancer include sexual intercourse at a very young age, often with multiple partners, and Human papillomavirus (HPV), and carcinogenic compounds.

Women who smoke will be more easily infected with HPV because of a decrease in immune system to fight the virus. HPV 16 causes most cervical cancer is over 50%, though followed by 9% HPV 18 and HPV 31, 6% [2].

In a variety of biomedical research on cervical cancer HeLa cell line used a continuous cell line that has been used for thousands of studies on cervical cancer. Generally, cancer drugs that does not originate from natural ingredient have side effects and cause resistant effect [3].

Sponge is a primitive multicellular animal known produces secondary metabolites to self defence against predators [4]. Alkaloids, terpenes, acetogenin, nitrogen compounds, halides cyclic and cyclic peptides are several kinds of bioactive compounds has been isolated from sponges [5]. The bioactive compounds potentially as antimicrobial, antiviral and anticancer [6]. [7] has observed that the bioactive compounds extracted from the sponge was taken in the intertidal zone Wediombo Beach, Gunung Kidul, Daerah Istimewa Yogyakarta potentially to inhibit the growth of HeLa cells. [8] do cytotoxicity test against isolates of fungi associated with sponge and has potential as anticancer.

Sponge life forming symbiosis with microorganisms, archaea, bacteria, cyanobacteria, fungi and microalgae. Microorganisms that growing in surface or in the body of the sponge live in environmental with high competition to acquire place and nutrients. Microorganisms are mainly bacteria and fungi produce more secondary metabolites than free life microorganisms. The identified bioactive compounds from sponges have similar secondary metabolites produced by microorganisms associated with the sponge [4,9].

Sponge-associated fungi produce secondary metabolites that have antibacterial and anticancer activity that is not produced by fungi of the same species that live in terrestrial environments. Filamentous Ascomycetes are fungi that are generally found associated with the sponge, in particular the order Eurotiales, Capnodiales, Pleosporales and Hypocorales. Trichoharzin, compounds isolated from *Trichoderma harzianum* associated with sponge *Mycale cecilia* was first discovered metabolites, while gymnastatin A, B and C are metabolites that are cytotoxic first isolated from fungi associated with sponge [10]. Microorganism's potential as bioactive compounds was concern now. This anticancer compound hopefully has potency and high specificity to against cancer cells. The anticancer compounds are expected to spur induction pathway of apoptosis that can be used as a chemopreventive agent on cancer cells treatment.

METHODS

Extraction Fungi

A total of 300 mL Erlenmeyer flask cultures of fungi were filtered using *Vacuum Buchner* in order to obtain the mycelium and the supernatant. Then mycelium macerated with ethyl acetate and destroyed by ultraturax. Ethyl acetate phase evaporated to obtain ethyl acetate extract of condensed phase.

MTT Assay

Cytotoxicity test from various extracts concentrations tested using 3-(4,5-dimethyliazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) using incubation time for 72 hours. Plate assay was read using a spectrophotometer at $\lambda = 520\text{nm}$. The data obtained is used for the calculation of the dose indicated by calculating the concentration of extract that kills 50% of the cells population (IC_{50}).

Double Staining Apoptosis Test by Acridine Orange/Ethidium Bromide (AO/EB)

Apoptosis test performed after MTT Assay. Steps being taken were as much 5×10^4 cells / 200 mL planted into a 24 wells plate that has previously planted with a *cover slip*. Then do the incubation at 37° C for 24 hours in a 5% CO₂ incubator. Furthermore, medium in wells containing the cells is replaced with RPMI 1640 medium and added a complete new test solution with reference to the levels of IC₅₀ obtained and incubation again for 24 hours. The culture medium was taken and the cells were washed with PBS. After washing, the cover slip is lifted from the wells and placed upside down on a glass object that has been poured with acridine orange/ethidium bromide before. Morphological observation of cells that have been stained with a fluorescence microscope with 100x magnification using a wavelength of 515-565 nm to see and detect the presence of HeLa cells that undergo apoptosis or HeLa cells are still alive.

Table 1. IC₅₀ values based on Pertiwi et al. (2014)

Solvent	Extract	IC ₅₀ (µg/MI)	
Etil Acetate	SAF KU4	383.88	958.00
	SAF KR4	414.54	100.19
	SAF KU3A	163.68	125.34
H2O	SAF KU4	3353.01	8109
	SAF KR4	261.06	539.03
	SAF KU3A	0	1054.69

RESULTS

Based on the test results of anti-bacterial activity, the research carried out at this stage in vitro cytotoxicity assay using HeLa cell line to see the anti-cancer activity, and vero cells were used as controls. In Table 1. it can be seen from the crude extract IC₅₀ Ethyl Acetate (EtOAc) mycelia and media of the three Sponge-Associated Fungi isolates KU4, KR4, and KU3A. Based on IC₅₀ values obtained, it can be seen that the crude extract KU4 EtOAc isolates can be developed to serve as an anti-cancer compound. In the next stage, the stages do further research on KU4 isolates of fermentation in Wickerham medium with long fermentation time for 21 days based on study of (10).

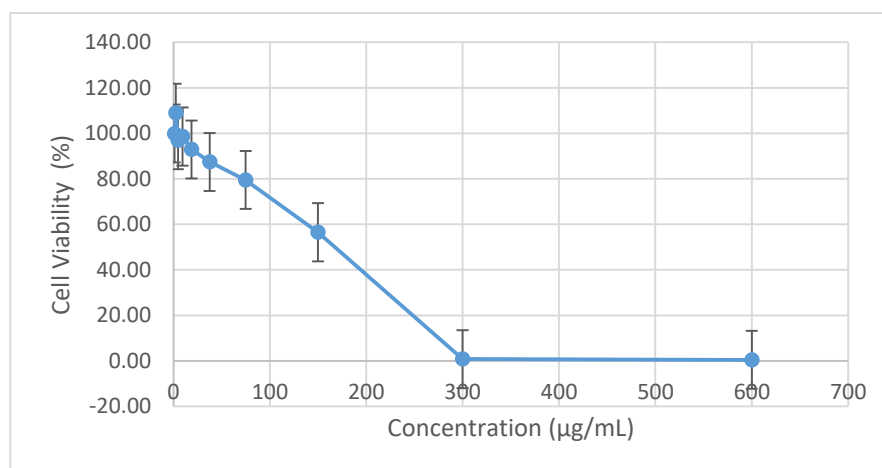


Figure 1. The relationship of mycelium extract concentration against the viability of Hela cell line.

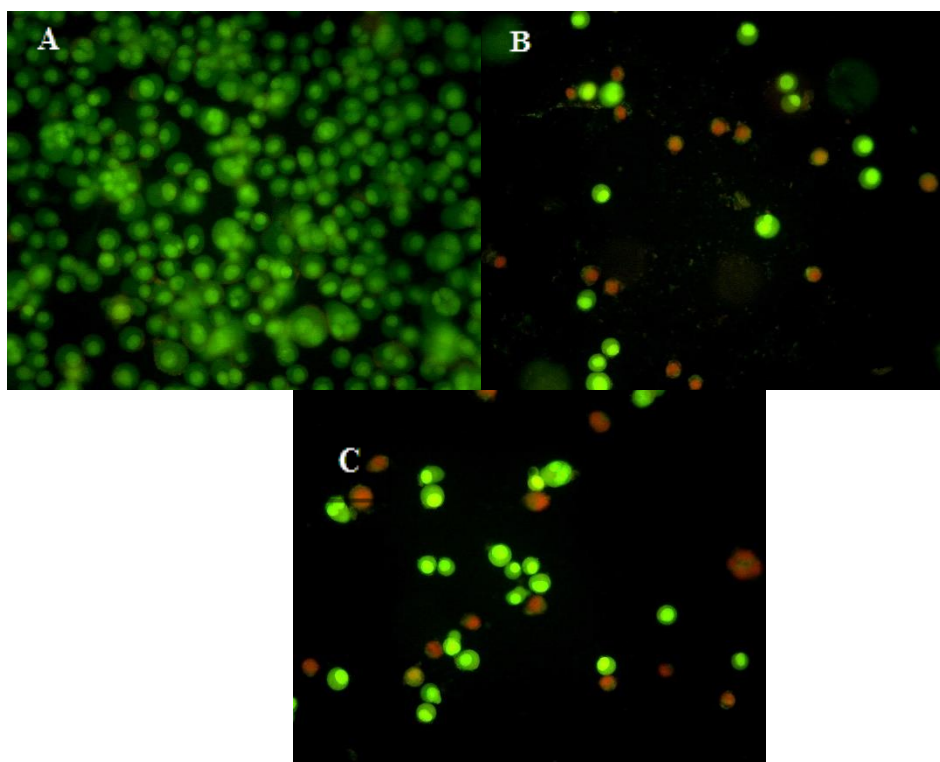


Figure 2. Results of apoptosis staining, A) control cells, B) concentration of 164 mg/mL, and C) the concentration of 82 mg/mL. The cells which are still alive appears green, and cells undergoing apoptosis will have the nucleus of the cell that appears orange to red.

Cytotoxicity assay of KU4 isolates mycelium crude extract were calculated using MTT assay. Based on the assay that was done, the results obtained in the form of graphs cytotoxicity assay concentration and cell viability are presented in Figure 1. After obtaining the IC_{50} values then continued in the stages of apoptosis staining using acridine orange/ethidium bromide (EtBr) as Figure 2.

DISCUSSION

This study is a follow-up research conducted by [8] who successfully isolated 16 strains Sponge-Associated Fungi obtained from *Ancorina* sp. This genus has been studied by [11], its ethanolic extracts has good ability as anti-virus and anti-cancer. In the study of [8], from 16 isolates of strains obtained, conducted testing of the anti-bacterial by using test bacteria from a strain of *Streptococcus aureus* and *Salmonella typhii*. At the stage of testing an anti-bacterial, as many as three isolates with isolates code of KU4, KU3A, and KR4, has anti-bacterial activity with inhibition zone values generated sequentially, is 5.54 cm; 2.5 cm; and 1.58 cm. Based on the test results of anti-bacterial activity, the research carried out at this stage in vitro cytotoxicity assay using HeLa cell line to see the anti-cancer activity, and vero cells were used as controls. Cytotoxicity assay were performed using MTT Assay method. At this stage, as many as three isolates strain which has been obtained then, do the stages of fermentation using a medium Malt Extract (saline) for 10 days, to obtain secondary metabolites, and then extraction at medium and mycelia (mixture) of the three

fungal isolates using solvent Ethyl Acetate (EtOAc). After the crude extract is obtained, then the stages of MTT Assay.

In further research, will be tested against crude extract of mycelia isolates KU4. The stages that have been made as:

Subcultures of KU4 isolate

At this stage, isolates were grown back on medium KU4 Malt Extract Agar (MEA) using sea water obtained from coastal areas in the southern region of Yogyakarta. Isolates of KU4 incubated at room temperature with a temperature range of $\pm 27^{\circ}\text{C}$. During the incubation period, can be seen that isolates of KU4 growth well, and had a white hypha. After subculture stage is done, isolates of KU4 then entered the stage of cultivation in Wickerham medium using sea water solution.

Cultivation Isolates KU4

Stages of cultivation is a stage of fermentation in KU4 isolates. At this stage, KU4 isolates were grown in saline water Wickerham media. Then continued by incubation at room temperature, with conduct a shaker on media. This is done so that the aeration process is going well, and all parts of fungal mycelia may well hit by the medium. The incubation process is carried out for 21 days based on research of [10]. The incubation process is determined on the type of fungus is cultivated fungus growth. In general, mushroom cultivation to obtain a secondary metabolite can be carried out in the period 7-28 days. At this stage, 1 ose of subculture KU4 isolates were taken and inoculated on Wickerham saline water media. Furthermore, the observation of KU4 isolates growth in this medium. During the observation process, can be seen, that the KU4 isolates culture can grow well, with the formation of globular mycelium on the media.

Secondary metabolites extraction of KU4 isolate

After the cultivation process conducted over 21 days, KU4 culture contained in Wickerham saline water media enters the extraction stage of secondary metabolites. This stage using maceration method that draws on research of [10] and [12] with modifications according to Figure 3.

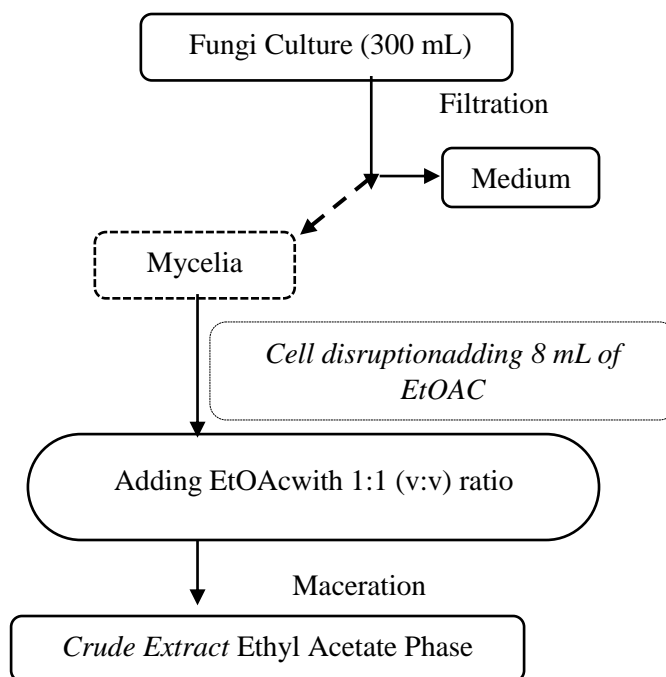


Figure 3. The secondary metabolite extraction method of KU4 isolates from EtOAc phase of the mycelium based on research of (10) and (12) with modifications.

At this stage, KU4 culture that has been aged 21 days, then filtered to separate the medium and KU4 mycelia. Then, mycelia which has been separated from the media added by 8 mL ethyl acetate then carried out using an Ultra Turax cell destruction. After that, macerated mycelia which have been destroyed by adding about 300 mL EtOAc and performed an extraction process using maceration method. Maceration process is used because it is still unknown properties of secondary metabolites produced. [11] explains that the nature of the crude ethanolic extract compounds from *Ancorina* sp. sponge have thermolabile nature, so it is also possible to isolate the compounds produced by KU4, which are fungi associated with this sponge, also possess thermolabile. After this stage, crude extract obtained from mycelium of KU4 isolate is crude extract with character is green and not smelling of 0.22 grams.

The cytotoxicity assay of crude extract from KU4 isolates mycelia

At this stage, mycelium crude extract obtained is dissolved using DMSO. A total of 6 mg of crude extract was weighed and dissolved in 20 μL DMSO. Then as many as 2 μL dissolved in 998 μL RPMI Complete Medium thus obtained will be tested as concentration of 600 $\mu\text{g}/\text{mL}$. Then proceed to the stage of dilution doses up to 1.17 $\mu\text{g}/\text{mL}$. Determines the concentration of the tested extract was based on IC_{50} values in previous studies that 383.88 $\mu\text{g}/\text{mL}$, resulting in advanced research of this concentration given above IC_{50} values in the previous study continued in serial dilution to a concentration of 1.17 $\mu\text{g}/\text{mL}$. A total of 20.000 cells were grown in 96 well plates, then in each well given tested extract concentration.

Cytotoxicity assay of KU4 isolates mycelium crude extract were calculated using MTT assay. In this method, living cells will reduce the compound MTT (3-(4,5-dimethylthiazol-2-yl)2,5-diphenyltetrazolium) with has colour of yellow to formazan crystalline compound with the colour of

purple after a given of stop solution. The amount of formazan crystals formed equivalent to the number of living cells.

In Figure 1. it can be seen that the IC_{50} values obtained from the extract crude of KU4 isolates mycelium against cervical cancer HeLa cell line amounted to 164 $\mu\text{g/mL}$. Based on IC_{50} values obtained, will be followed at this stage of Apoptosis Staining. [13] explains that the extracts that have IC_{50} values of less than 125 $\mu\text{g/mL}$ are potential candidates for cancer therapies agents, while extracts which have IC_{50} values in the range of 125 $\mu\text{g/mL}$ to 5000 $\mu\text{g/mL}$ had a category of moderate to be developed into a drug for cancer therapy, and extracts that have IC_{50} values of more than 5000 $\mu\text{g/mL}$ were less likely to be developed as a cancer therapeutic agent. In this case, crude extract of KU4 isolates mycelium can be developed further to become a candidate anti-cancer compounds, but required further processing such as crude extract fractionation and purification of compounds.

Apoptosis staining

Having obtained the IC_{50} values then continued in the stages of apoptosis staining using acridine orange/ethidium bromide. This will cause the staining of the cells are still alive appears green, and cells undergoing apoptosis will have the nucleus of the cell that appears orange to red. Concentrations given at this stage is the IC_{50} concentration and a half of IC_{50} concentration. At this stage the result as in Figure 2.

The surviving cells will be permeable to acridine orange so it will be green, whereas in cells undergoing apoptosis, cell membrane damage caused by a disruption of metabolism cause ethidium bromide can sign that will color the cell nucleus and thus appears orange to red. Based on the staining that has been done, it can be seen that the mycelium crude extract with EtOAc phase of SAF KU4 Isolates can induce apoptosis in HeLa cell line. In some literatures were described the possibility of peptide compounds that induce apoptosis through the mitochondrial pathway, by increasing the activity of the protein expression of apoptosis, which are Bcl-2 and Bcl-xl.

CONCLUSION

Based on the research that has been done shows IC_{50} value of mycelium crude extract at 164 $\mu\text{g/mL}$ and were able to induce apoptosis in HeLa cell line.

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ICASH-A26

THE BENEFITS OF AUTOMATED DISPENSING MACHINE AS SOLUTIONS FOR HOSPITAL PHARMACY IN INDONESIA: A SYSTEMATIC REVIEW

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ABSTRACT

Background: Pharmacy as the main core of hospital is responsible for the quality and safety of medicines. Yet the numbers of medication errors are still high. Automated Dispensing Machine (ADM) is one of the solutions to reduce the dispensing errors in pharmacy. Many countries had studied and proved that the use of ADM gives more benefit than liability. However, ADM is considered as something new, a "nice to have" product.

Aims: This study will explain the benefits of ADM especially in Indonesian hospital pharmacy.

Methods: Systemic Review with PRISMA method uses 5 databases as Scopus, Springerlink, Google Scholar, Science Direct and ProQuest, with keywords Automated Dispensing Machine, Automated Dispensing Device, Automated Dispensing System, Automated Drug Dispensing System, or Robotic Dispensing System. The inclusion criteria are all the studies that showed any impact in minimum of one aspect of ADM in hospital.

Results: There are 13 studies that explained ADM benefits such as increase staff satisfaction for the nurse and pharmacist, reduce dispensing errors about 35% or up to reducing all dispensing errors, time saving until 50% in peak hours and cost analysis and effectiveness. The cost analysis such as inventory stock reduction, increases the cost saving.

Conclusion: In Indonesia, it needs many considerations to implement ADM but it had already installed in 1 Indonesia Hospital. This hospital had proved that ADM can reduce dispensing errors and can solve some pharmacy problem such as the human resources problems and the long waiting time. With the proven benefits of ADM, it is justified for Indonesian hospital to implement ADM and information system in their pharmacy. The effectiveness will perceive the pharmacy and positively affect to all related departments in hospital.

Keywords: Automated dispensing machine, automated dispensing system, automated dispensing device, robotic dispensing system, automated drug dispensing system

INTRODUCTION

Pharmacy is a hospital's main core which products are widely used, such as medicines, medical devices, films and reagents. Thus pharmacy becomes the revenue centre in hospital [1]. In Indonesia, most of hospitals pharmacies in Indonesia are still using man-power to do their daily activities. According to Indonesia Ministry of Health regulation (Undang-undang No. 35 tahun 2014), the pharmacy is responsible for the quality and safety of all medicines in hospital, this includes inventory planning, purchasing, receiving, distributing and evaluating the drug usage by the patient. In the ideal workflow, the pharmacy must get a prescription from the doctor, then continues to verification process, dispensing to hand over or administering the drug and educate the patient also evaluates the

drug usage. These processes are not easy to do and error-prone, especially when using only man power; the risk of errors might harm the patient and in some cases it leads to death [2].

Presently, Pharmacy dispenses many drugs to the patients, meaning that dispensing is one of the main and most complex processes. Dispensing includes picking and labelling the drugs. When it is manually done, dispensing error can happen any time, without anyone noticing until the patient is experiencing the harmful effect [2,3]. There were 134,431 dispensing errors cases annually in England and Wales [3]. Another study showed there were 24% dispensing errors in community pharmacy and 12.5% in hospital outpatient pharmacy [2]. According to Anacleto, Perini, Rosa, & César, 2007 the dispensing errors are responsible for 11% from 50% of medication errors. The most common dispensing errors are wrong drug, wrong dose, wrong label, and wrong quantity [3].

Hospitals are now focusing to improve patient safety and dispensing errors is one of the main concerns. There are some technologies to reduce the dispensing errors such as software, barcoding, automated dispensing machine (ADM). ADM is one of the ultimate solutions for pharmacy to help dispensing automatically and it will become the long-term care solution. ADM uses barcode to identify the drugs, hence, it greatly reduces dispensing errors [5]. ADM use barcode as the drugs identification and must be integrated with hospital software.

ADM is relatively new in Indonesia, even though some hospitals have already used it. Many studies said that ADM could give positive impacts to the pharmacy even just make the pharmacy focus on caring the patient. But there was a study told that ADM can reduce medication errors especially for dispensing errors, reduce the number of staff and make the services faster than before [6].

Most of countries have been used and proved that ADM was their main solution to give more benefits for their pharmacy. So this study will explain and give some images of the impact of ADM especially for Indonesia hospital pharmacy.

METHODS

There are many types of ADM such as the box dispensing machine, cabinet dispensing machine, and unit dose dispensing machine. Each machine has its own function for example cabinet system that can be used in emergency, or intensive care unit. The types of machine will be chosen, depends on where the place is pharmacy want to increase the quality services (*see figure 1 to understand the pharmacy flow*). This *Systematic Review* (SR) will not analyze the difference of the machines otherwise discuss the effect of the machine in all departments with some types of machines.

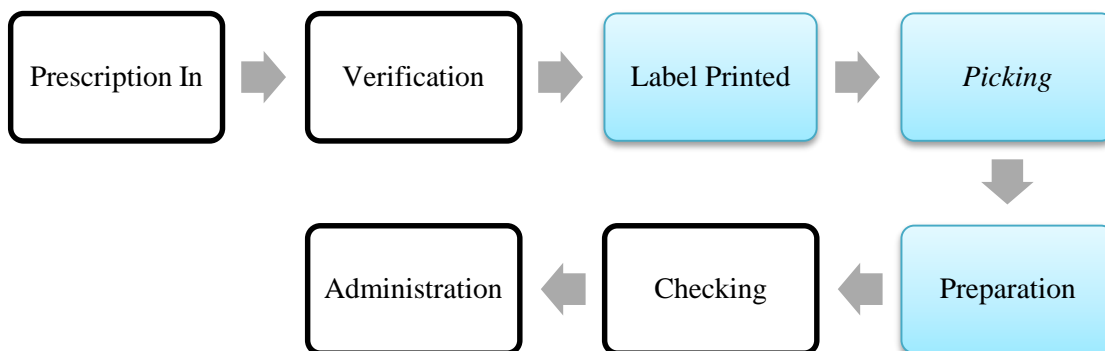


Figure 1 Indonesia Pharmacy Workflow

Searching

This SR used PRISMA to make readers more understand with the most simple methods of ADM. The sources of the journals are searched via online from Scopus, SpringerLink, ScienceDirect, Google Scholar and ProQuest. The keywords are Automated Dispensing Machine (ADM), Automated Dispensing Device, Automated Dispensing System, Automated Drug Dispensing System (ADDS), or Robotic Dispensing System. Others keywords used to find the local journal and used the synonym to get more variation of the journals. The limitation for this study is free journals that published from 2010 - now. As the result, all journals that fulfilled the criteria are used even only the abstract is available. This study used 2 level filters are the title and abstract.

Inclusion and Exclusion Criteria

The eligible journals parameter is all the studies that showed any impact of ADM in hospital minimum one aspect such as the financial aspects, workflow efficiency, investment, services speed, etc. All the journals without any impact of the ADM in the hospital explained had excluded. As the final, this study reviewed 13 journals (*see figure 2*).

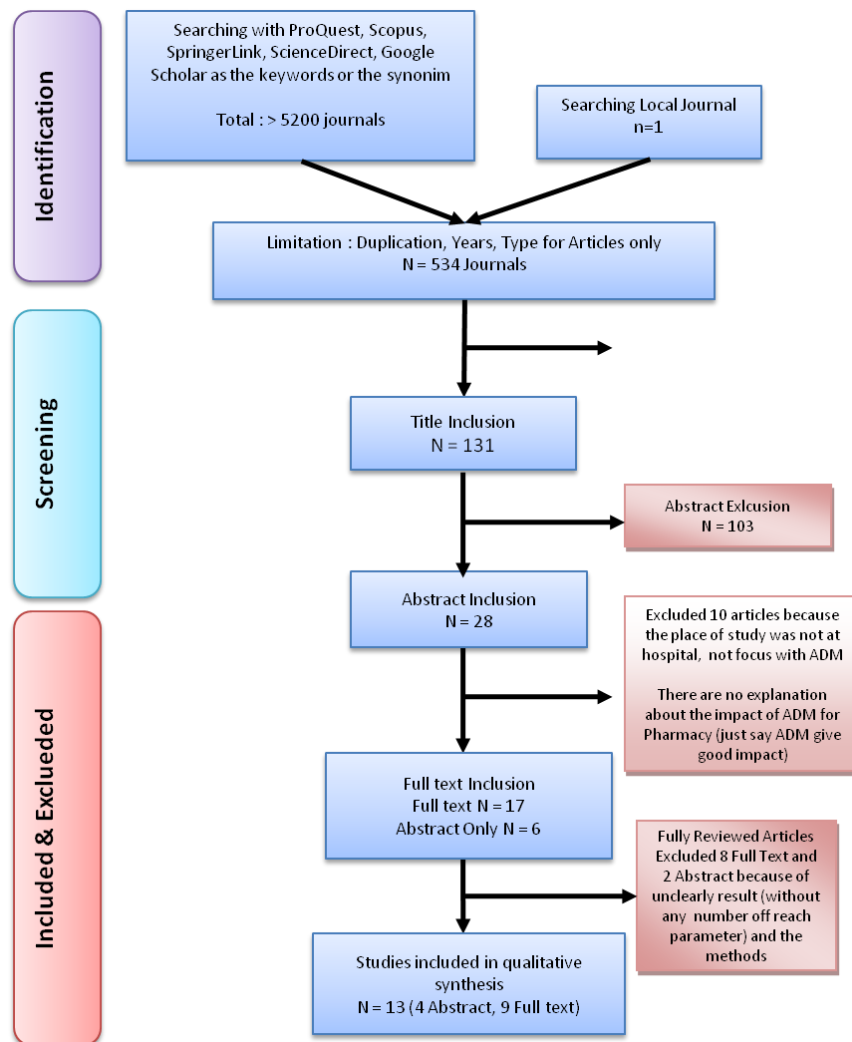


Figure 2. PRISMA Methods of the Study

RESULTS

There are 13 reviewed articles. There are 5 from 13 (2 abstract only) explained ADM for outpatient pharmacy and 8 (2 abstract only) of 13 explained about ADDS (Automated Drug Dispensing System) for intensive care, emergency or wards. Most of those studies, 12 of 14, used observational study such as longitudinal (2 studies), case control (1 study), cross sectional (3 studies), 2 analysis study such as financial perspective. One from 14 used semi experimental study and another 1 study is a systematic review. They compared between before and after implementation of ADM for many perspective in big hospitals (4 studies at more than 1000 beds hospitals, 4 studies at teaching hospital).

ADDS is types of ADM which mostly use for automated dispensing in ward. It doesn't matter about the name even ADDS and ADM used only to represent the inpatient and outpatient department. The result is ADM will give the efficiency effect such as the cost saving, reducing error, reduced time services and smooth workflow for inpatient (including intensive and emergency unit) and outpatient department. Another positive impact is especially for the nurse satisfaction and reduced total inventory control cost. One of study showed ADM didn't give any impacts to increase the time

for the service because their internal regulation put limited access for only some staff and another staff must wait those staff to use ADM. On the other side, 1 studies also showed that ADM need skilled staff to operate and the pharmacy have to choose kinds of medicines that ADM can dispensed (*see appendix*). Therefore, to maximize ADM hospitals need to integrate with hospital information system and manage all the process including how to make the accurate filling and preparation process and also training the staff about the machine and how to through access to the machine.

Staff Satisfaction

From 2 journals which used ADDS as their solutions, all the nurses had satisfied and want to use ADDS as their dispensing system in wards. Totally 91% nurses were very satisfied with ADDS. One journal gives the result that ADM in outpatient, the average of the Pharmacist satisfaction is $8,63 \pm 0,744$ and for the nurse satisfaction is 7.78 ± 0.667 . According to Gonzalez et al., 2016, his study divided 3 kinds of satisfaction based on the process and the results of ADM (*see table 1*). The greatest result was in patient safety factor from pharmacy (9.75 ± 0.463), it means the pharmacy was satisfied with the ADM because ADM increase the safety [7].

Table 1 The result of satisfaction types for the nurse and pharmacist (7)

Satisfaction of	Pharmacist	Nurse
Patient Safety	9.75 ± 0.463	8.00 ± 0.7077
Ease of Use	9.13 ± 0.641	8.2 ± 0.667
Dispensing Speed	7.75 ± 0.886	6.33 ± 0.50
Inventory Control, Integration	> 8.5	7.75 ± 0.707
Average	8.63 ± 0.744	7.78 ± 0.667

Most of nurses and pharmacists actually aware, that they need ADM as their solutions in their job. With the good operational and ease to use, ADM can increase the patient safety, increase the inventory control quality and it had been approve by most nurses and pharmacists.

Reducing Incidents or Errors

ADM can increase patient safety by reducing dispensing errors and medication errors as final impact. Five studies showed ADDS can reducing the errors, the administration errors by 57% and reduce dispensing errors by 6% [8–12]. For ADM, there are 3 studies that showed ADM has the effect to reduce errors. Even 1 journal only showed the staff satisfaction about the patient safety, but it means the staff approved the ADM reduced the errors and it made them satisfy [7,13,14]. Sujatno 2016 showed that in his hospital, ADM could reduce dispensing errors more than 35% (50.33 ± 34.77 to 15.67 ± 6.282). But Beard & Smith, 2013 and Ong et al., 2014 had showed that ADM can make all the dispensing process without any mistakes.

Time-Saving

As the result from the staff satisfaction parameter, they agree that ADM and ADDS help them to serve faster. ADDS can reduce the time in emergency case, peak hour and for preparation process. ADDS also can increase the service-speed and can spare more work-time about 2 hours a day [9,16,17]. But Roman et al., 2016 has another opinion, in emergency case ADM could service faster than the normal situation. Beard & Smith, 2013 mention that ADM can reduce 50% of the time with almost zero errors. As the saving-time effect from ADM, the pharmacist and the nurse have more time to spend it with patients.

Cost Analysis and Effectiveness

There are 6 studies about the effectiveness of ADM or ADDS which showed as saving the total number of staff, space and total number of stock. ADM compared by manual process, ADM can save up to US\$ 1,894,429 (for 10 years) if reach 75% dispensed volumes from ADM [18]. The more medicines dispense from the ADM, the more effective the pharmacy will be [14]. Beard & Smith, 2013 explained that ADM can reduced 4 staff, reduced the inventory stock about £250,000, increase the saving cost £500,000.

ADDS can save approximately US\$ 148,229 for 5 years [19]. Another study showed also the cost-effectiveness about US\$ 80,000 annually. Mostly in US, the ADDS are rented for the hospitals, with the rent cost about US\$27,000 annually [9]. However one study showed that ADDS can give the impact for the patient cost. The patient cost reduced 20.3% and can increase number of drugs for stocked about 11.4% with the less needed [16].

DISCUSSION

Situation in Indonesia

In Indonesia, there is only one hospital already reported use ADM, outpatient pharmacy of Bethesda Hospital Yogyakarta [13]. The ADM need to integrated with the hospital software system to maximize its potential as what Beard & Smith, 2013 results. The integration between ADM and Hospital Information System (HIS) can make the zero result of errors. There are some challenges for Indonesia to implement ADM: the low cost of labour with the big population and the low economic rate. All the ADM are made from foreign country such as Italy, Germany, Japan, etc so the prices usually expensive. Nowadays, it is very difficult to get the well-trained staff even easier to recruit any new staff. As long as pharmacy still using human power, the errors incidents will be higher than use technology [14]. So the human resource problem for hospitals is still high and ADM can solve the problem with its benefits.

ADM can reduce the total staff needed in pharmacy, increase the inventory control, reduce the errors, increase the time service and increase the staff satisfaction. All the benefits can calculate as the money or cost savings or cost-effectiveness. With those benefits, Indonesian hospitals must considere to implement ADM as their solutions in their pharmacy departments. Claire Chapuis et al., 2015 said that it is very profitable and improve efficiency with the ADM. The only one barrier is the resistance of staff to changing.

Indonesia Hospital Implementation

Bethesda hospital has implemented ADM in outpatient department since 2014. Bethesda faced three main problems, the human resource problem, medication errors and very long waiting time before implemented ADM. They had tried many ways to solve the errors problem such as human training, organising the stocks, using information system and barcode system, but in reality, it just reduced some errors while dispensing errors were still high and the staff workload still very high. After ADM installed, the staff were very satisfy and the dispensing errors incidents had reduced drastically. Bethesda hospital used 20% and 80% role, to make the priority system for ADM stocked medicines. Most of Indonesia medicines are finished as strips (aluminium foil) or blisters and packaged into 1 box with lot of number (e.g 10 strips in 1 box), so Bethesda Hospital need to repackaged and put into the box and they called *smart pack*. Those *smart pack* containing certain number of medicine. It will be possible if there will be 3 smart packs with the same medicine but different number.

They also promoted ADM to the physicians as the prescriber. They put any options of the medicines with different number that stocked in ADM in electronic prescribing, so the physicians can choose the kinds and number of medicines to prescribed, which will be dispense with ADM. As the result they got the dispensing errors reduction about 35%. With the combination between ADM and electronic prescribing, they got 69.78% reduction of dispensing errors, but the reduction not as much as the Beard & Smith, 2013; Ong et al., 2014 studies. It because they still printed the label outside the machine.

According to Bethesda Hospital experience, the biggest issue for hospital pharmacy is the variation of total medicines requested from the physician. Sometimes, the patient also does not want to take hall the total number of medicines in prescription, they would like to buy half from the total amount of medicines. From that reason, the pharmacist should make priority, which medicines will be save inside ADM. They can do a research to find the 3 top of total number from each medicines that the physicians often prescribed as the priority to keep inside the machine. The more medicines are going out from the ADM, the less error will be happen.

Another problem pharmacy faced is about the software system and barcode system. Some hospitals just have simple software just for logistic system, but ADM need more complete software such as electronic prescribing and barcode system for each medicines. As the leaders who would like to implement ADM, software and barcode is the first preparation of hospital must have. The leader also must to create the working climate into the technology based to all staffs because some staff could resists for the new technology and do not want to exit from their comfort zone.

Type of Data for Feasibility Study (FS)

The implementation of ADM need more management consideration as the financial prospective become the main part to take any decision. The benefits of using ADM should be calculated as the money, but it is not easy to convert all aspects as money value for example the staff satisfaction and the workflow efficient.

First of all the hospitals should think about the standarization of the pharmacy procedure, to keeps the process and the result in good quality and safety as the requirement of accreditation. ADM will record all the dispensing process by computerize and it will make stream-lining the processes. This benefit is the sample of the intangible aspect. Another example is the nurse and pharmacist satisfaction when using ADM. According to the result, the average for both satisfaction is more than eight, it means they are happy when implementing ADM in their department. It should give any positive impact to their work when they are happy. The workload might be reducing and could give impact to their job quality for example incident errors less happen or the service time is faster for their job.

Second, ADM could reduce the dispensing errors incidents. It should become the first priority as ADM implementation consideration. Reducing errors will saving-cost to the hospitals. Hospitals will spend much money to prevent the errors or to solve the impact of errors. The amount of money that they spend for errors can be use for the FS calculation.

Third, the improvement of service time. ADM could saving the time about 2 hours even in inpatient or in peak hour time of outpatient department. The time saving can be converted to the cost-saving and can be use for FS calculation. The converted time-saving become cost-saving can use the human power or staff cost/hour.

The last one is the effectiveness of ADM. From the human resource aspect, ADM can reduced 4 people according to Beard & Smith, 2013. The reduction can be calculated as the cost-

saving by using the total cost/month. For the stock efficiency, the average of cost-saving from ADM is about US\$ 189,442/year (1 USD = 13,200 IDR, 2,500,634,400,- IDR), or from another study said ADM increase the saving cost about £500,000(1 GBP = 16,800 IDR, 8,400,000,000,- IDR). ADM can give any extra saving money if using ADM in inpatient department, from the result ADM can save US\$ 29,645/year (1 USD = 13,200 IDR, 39,324,560,- IDR). Tsao et al., 2014 also said its profitable when rent ADM while using manual (US\$ 80,000 saving vs US\$ 27,000 cost). If the hospitals use ADM for inpatient, they can save about IDR 699,600,000 annually.

Now, all the benefits can be calculate, accumulate and must be comparing with the ADM selling price or another additional activity when ADM had implemented. ADM implementation is also very depending on the leader strategic plan. If the leader didn't put technology as the strategic way to make any improvement for his hospital, it's very difficult to push that hospital to install the ADM otherwise the FS calculation is ready for them, it might be change his mind.

Limitation and Strenght

It is very good news for Bethesda hospital that had started to used ADM in Indonesia even just in outpatient pharmacy. Indonesia need another ADM for the inpatient pharmacy (ADDS) to become the sample and as the evidence that ADDS improve the pharmacy process. It's not just for the pharmacy, but for all staff. It can help the nurse workload and their service care to patient. With the ADDS the nurse can safely administrate the medicine and as the result, the total incidents of medication error will reduce.

ADM as the solution is very depends on the leadership, management skill and all the departments support. ADM need some consideration from the leader to make it as the priority for the pharmacy. They need to calculate some analysis to make the the real Feasibility Study (FS) of the ADM investment. In this study, the benefits had written so it can help the leader for their FS. In fact, there will be more benefits of ADM rather than the listed in this study, such as the saving space or the opportunities of revenue rising. With the ADM benefit, increase the speed of pharmacy services and reduce the waiting time, can make the patients who do not like to wait, to buy the medicines in hospital.

This study need more the data such as dispensing errors calculation as the money saving, another improvement in cost calculation. To maximize the function of ADM, it needs trained staff, good managerial concept to review periodically the consumption of medicines inside ADM.

CONCLUSION

Some studies showed ADM could reduce medication errors, increase the staff satisfaction, increase the saving cost and reduce the inventory stock, saving time and make some efficiency such as the reduce the total number of staff and patient cost. With the benefits of ADM, it's very feasible for Indonesian hospital to implement ADM and information system in their pharmacy. The effectiveness not just for the pharmacy, but it would positively change for all related departments in hospital.

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ICASH-A27

SCOURING-RUSH HORSETAIL'S (*Equisetum hyemale*) CAPABILITY TO REDUCE DETERGENT, COD AND PHOSPHAT (PO₄) LEVELS OF LAUNDRY WASTEWATER IN PURWOKERTO IN 2016

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ABSTRACT

Background: There will be an increasing demand for goods and services as a result of rapid economic growth and development, increasing activities in the society, and also with the establishment of universities. This has caused the emergence of some laundry business that aims to alleviate the burden on society. The emergence of the laundry business may cause environmental pollution, especially in the levels of detergent, if the waste generated is not treated before it is discharged. Therefore, it is necessary to find a method to treat waste efficiently. One of the ways is to employ phytoremediation using scouring-rush horsetail (*Equisetum hyemale*).

Aims: The purpose of this study is to analyze the scouring-rush horsetail media's ability in decreasing the levels of detergent, Phosphate (PO₄), and COD of laundry waste.

Methods: This type of research is called true experiment with design randomized control group pretest-posttest. The data is analyzed using Analysis of Covariance (ANCOVA) statistical test.

Results: The results of the analysis showed that there are influences from the residence time, the scouring-rush horsetail's (*Equisetum hyemale*) ability and the continuous process by reducing the levels of detergent (88.9%), COD (99.5%), and PO₄ (63.4%). Scouring-rush horsetail media has an average efficiency of COD reduction (90%), PO₄ (51%), and Detergents (86%). The value of Detergents, COD, and PO₄ level in laundry wastewater after treatment by using scouring-rush horsetail (*Equisetum hyemale*) with a residence time (0 day, 1 day, 3 days and 7 days) based on Government Regulation No. 82 of 2001 on the Management of Water Quality and Water Pollution Control has been under NAB.

Conclusion: It is necessary to make additional acclimatization time in the study using a scouring-rush horsetail to reduce the levels of COD, phosphate and detergent. It is advisable to plant the scouring-rush horsetail in the tub as high as 30 cm, thus the water can be pooled.

Keywords: scouring-rush horsetail (*Equisetum hyemale*), laundry wastewater, detergents, Phosphate (PO₄), and COD.

INTRODUCTION

There will be an increasing demand for goods and services as a result of rapid economic growth and development, increasing activities in the society, and also with the establishment of universities. For instance, in Purwokerto and in other cities, this has caused the emergence of some laundry business that aims to alleviate society's burden in terms of housekeeping, such as laundry business (washing clothes).

These large numbers of laundry services will worsen the quality of the surrounding water because this business is not equipped with waste treatment; instead they discharged it directly into

sewers or nearby water bodies. The result of this continuous discharged of laundry wastewater into water bodies without being processed may cause water pollution problems (water bodies).

Laundry wastewater contains chemicals with high concentration; it includes phosphates, surfactants, ammonia and nitrogen as well as levels of dissolved solids, turbidity, BOD and high COD [1]. These chemicals become a problem of pollution in the water bodies caused by the use of detergents as washing materials. Detergents is used because it has good washing power and is unaffected by water hardness, but it also has a phosphate content that is quite high because phosphate is the main precursor in detergent [2].

The emergence of these laundry business in addition to providing benefits and a solution in terms of housekeeping, also provide new jobs for the people of the surrounding area. However, the advantage gained is inversely proportional to the quality of the resulting environment. These large number of laundry services will worsen the quality of the surrounding water because this business is not equipped with waste treatment processes; instead it is discharged directly into sewers or water bodies nearby. The result of this continuous discharged of laundry wastewater into water bodies without being processed may cause water and soil pollution problems. One of laundry wastewater treatment is using decorative plants media, specifically scouring-rush horsetail (*Equisetum hyemale*) which has a fairly good performance in wastewater treatment with artificial wetlands subsurface flow (SSF-Wetlands) processing system. According to the measurement results of one domestic waste parameter, scouring-rush horsetail have an efficiency of average BOD levels reduction on 86% and 84% COD. The advantage of using this method is due to a narrow field requirement, efficient in reducing heavy metal compounds, cheap and easily available scouring-rush horsetail.

Laundry services in Purwokerto mostly do not treat its wastewater, instead they discharged it directly into sewers and ended in the water body and have not been monitored and examined the pollutant parameters by the relevant authorities and the existence of Laundry services in Purwokerto has never been monitored and the pollutant parameter has never been examined by relevant authorities. In connection with this, to prevent water body in Purwokerto polluted like in big cities a method is required; that is with efficient waste treatment called phytoremediation. This method uses scouring-rush horsetail (*Equisetum hyemale*) by examining the ability of the plant (*Equisetum hyemale*) in reducing the detergent, COD, and PO₄ levels of laundry wastewater in Purwokerto.

METHODS

This research is true experiment with randomized control group pretest-posttest design. Laundry wastewater samples were taken from 5 location points that are close to a college in Purwokerto, which is then chosen one by random sampling. Laundry wastewater was taken with jerry cans. It was filled to the brim from washing machine's exhaust outlet as much as 200 liters; both for the intervention and control group, inserted into the container vessel. Each laundry service industry have their own detergent dose according to the weight of the laundry and how much clean water is used, so it is possible that the levels of detergent, COD, and phosphate are different. This design consists of interventions in the treatment and control unit. The treatment group with residence time 0, 1, 3, and 7 days have an average reason to wash laundry services 1-3 days and 7 days a week. The amounts of scouring-rush horsetail needed are 12 packs; with one pack consists of 10 plants. The scouring-rush horsetail's acclimation process is carried out in advance in research media for 10 days with flowing water. Then for the next 7 days, it is gradually replaced by laundry wastewater until the sampling is implemented. The intake of effluent samples on the SSF-Wetlands vessel outlet at 0 days is the first time water flowed on the Subsurface Flow Wetlands (SSF-Wetlands) vessel, followed by taking sample on the residence time of 1, 3 and 7 days (the flow is continuous) and to control without

a scouring-rush horsetail. Calculate the mean for each group. The variables studied were dependent variable (levels of detergent, COD and PO₄), the independent variable (biomass type of scouring-rush horsetail) and covariate variable (residence time, 0 day, 1 day, 3 days, and 7 days), replication as much as 5 repetitions. The data were analyzed using Analysis of Covariate (ANCOVA) with SPSS software series 20 [12].

RESULTS

The decrease in detergents, PO₄, and COD Level

Table 1 Measurement Result of Detergents, PO₄, and COD Levels

Residence time (hari)	COD (mg/l)					PO ₄ (mg/l)					Detergents Levels (mg/l)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
0	56	85	77	96	52	0,15	0,54	0,84	0,13	0,64	0,11	0,45	0,10	0,09	0,07
1	17	50	40	42	49	0,45	0,64	0,68	0,8	0,89	0,00	0,00	0,01	0,01	0,03
3	40	33	74	36	46	0,27	0,44	0,34	0,39	0,3	0,00	0,00	0,01	0,01	0,01
7	4	5	5	8	2	0,29	0,43	0,7	0,4	0,49	0,00	0,00	0,00	0,00	0,00

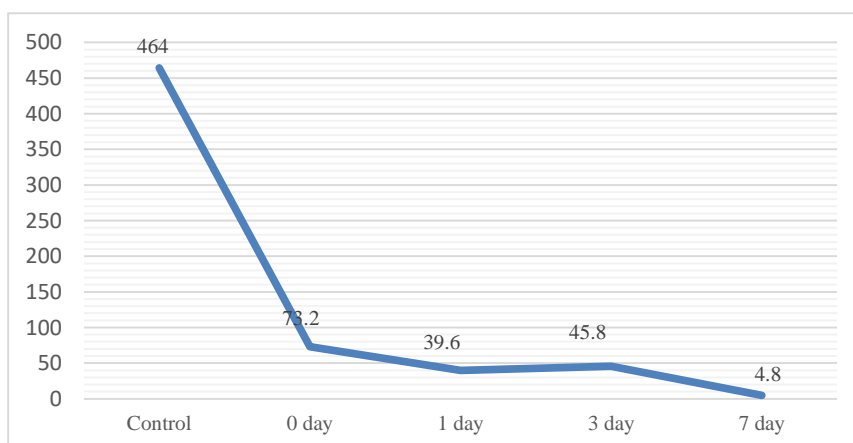


Figure 1. COD level in different residence time

Table 1 and Figure 1 show a decrease in COD. The COD before it goes through the medium of a scouring-rush horsetail (*Equisetum hyemale*) or as control shows the number of 464 mg/ lt, which means that the results of these controls exceeds the quality standards established at 25 mg/ lt [3]. The result of the decline in COD at residence time of 7 days is the average of the highest decrease in the amount of 4.8 mg/ lt.

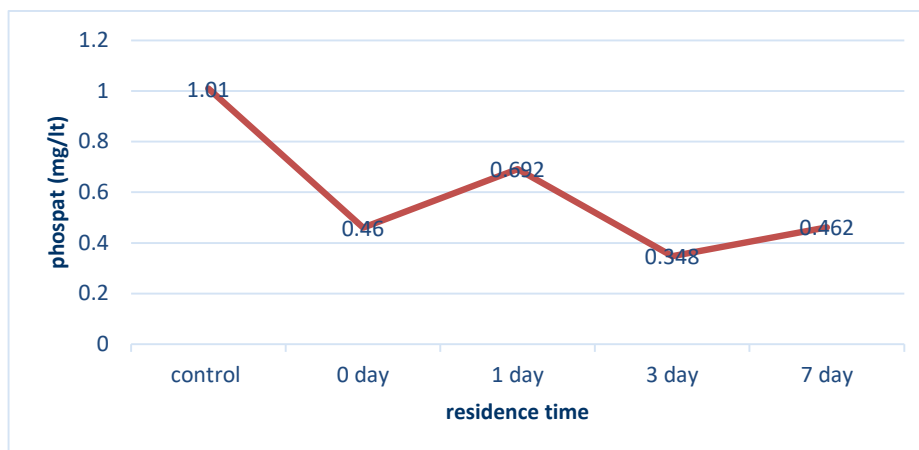


Figure 2. Phosphate level in different residence time

Based on Table 1 and Figure 2, the decrease in Phosphate (PO₄) levels has fluctuated. It is shown in the contact time 1 day 0,692 mg/ Lt then it decreases and the figure climbed back to 0,462 mg/ Lt in the contact time of 7 days.

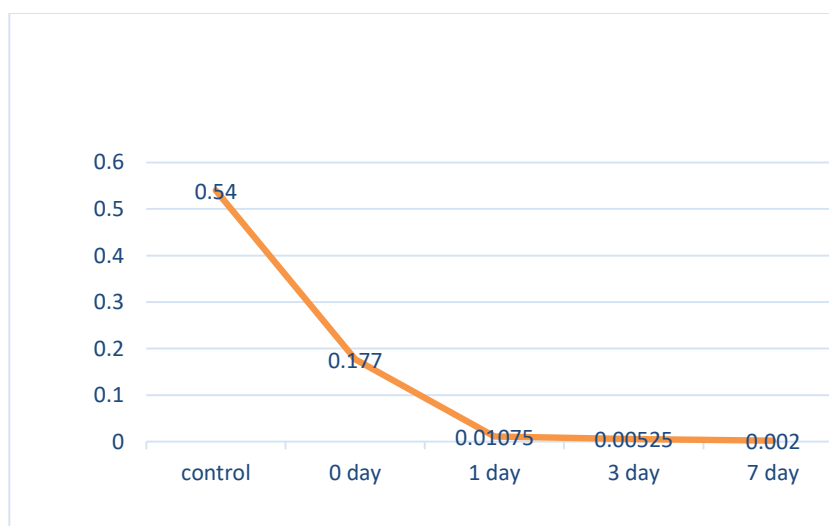


Figure 3 Detergents levels in different residence time

According to Table 1 and Figure 3, detergents levels as the control shows the results of 0.54 mg/ Lt, which means the detergent concentration exceeds the quality standards established i.e. 0.2 mg/ Lt, average decrease in detergent levels at the residence time of 7 days is the highest decrease in detergent levels of 0.002 mg/ Lt. The lowest decline occurred in the residence time of 0 day, which is 0.177 mg/ Lt.

Efficiency of the decrease in COD, phosphate, and detergents levels

Figure 4 summarizes the decrease's efficiency based on the average decline of the three parameters for a residence time of 7 days, for COD, phosphate, and Detergents levels showed that the scouring-rush horsetail plant is most optimal in the process of COD at about 90%, followed by the decrease in detergent levels that is equal to 86% and the lowest average efficiency is a decrease in phosphate levels that is equal to 51%.

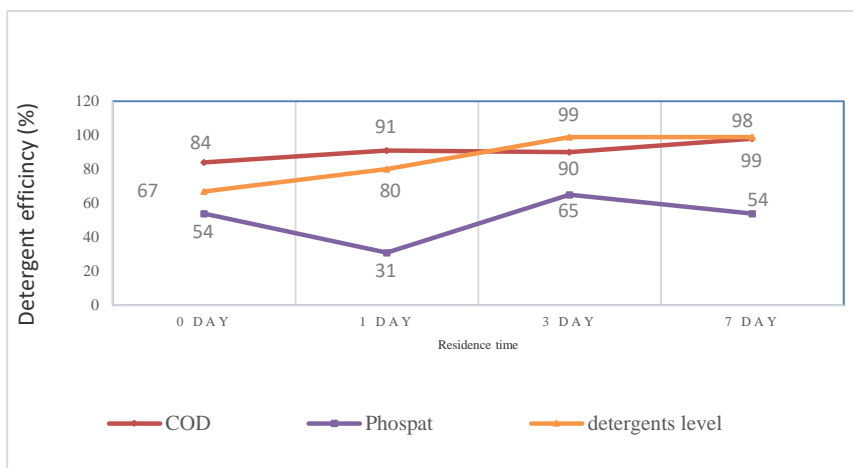


Figure 4. COD, phosphate, and detergent efficiency in different residence time

(i) Detergent

The result of processing shows that the number of significance for scouring-rush horsetail variable is 0,000. Because the value is far below 0.05, then H_0 is rejected. Thus, it can be concluded that at a rate of 95% confidence level, there is an influence of residence time differences toward the decrease in Detergent levels. To determine the effect of residence time and the presence of scouring-rush horsetail on phosphate levels can be seen simultaneously from the figures of significance in the Corrected Model. It is shown that the significance figure is 0,000. Because the significant value is far below 0.05, then H_0 is rejected. Thus, at the 95% confidence level, it can be concluded that simultaneously, residence time and scouring-rush horsetail affect the decreased in detergent levels.

R square figure or coefficient of determination is 0.679; meaning 67.9% reduction in detergent is caused scouring-rush horsetail (independent variable), while 32.1% is caused by other factors. Based on the F test value, it is obtained that F count is 20.384 with a significance level of 0.000. The probability (0.000) is much greater than 0.05, thus the regression model can be used to predict a decrease in the detergent levels, or it can be said that the scouring-rush horsetail does affect the decrease in detergent levels.

(ii) Phosphate

The result of processing shows that the number of significance for scouring-rush horsetail variable is 0.065. Because the value is far above 0.05, then H_0 is accepted. Thus, it can be concluded that the influence of the residence time, at a rate of 95% confidence level, the influence of residence time differences toward the decrease in Phosphate levels is nonexistent. To determine the effect of residence time and the presence of scouring-rush horsetail on phosphate levels can be seen simultaneously from the figures of significance in the Corrected Model.

It can be seen that the figure of significance is 0.083. Because the significant value is far above 0.05, then H_0 is accepted. Thus, at the 95% confidence level it can be concluded that simultaneously, residence time and scouring-rush horsetail does not affect the reduction in phosphate levels. R square figure or coefficient of determination is 0.242; meaning 24.2% reduction in phosphate is caused by scouring-rush horsetail (independent variable), while 75.8% is caused by other factors. Based on the F test value, it is obtained that F count is 3.874 with a significance level of 0.065. The probability (0.065) is much greater than 0.05, causing the regression model cannot be used to predict a

decrease in the phosphate levels, or it can be said that the scouring-rush horsetail does not affect the decrease in phosphate levels.

(iii) COD

The result of processing shows that the number of significance for scouring-rush horsetail variable is 0,000. Because the value is far below 0.05, then H_0 is rejected. Thus, it can be concluded that at a rate of 95% confidence level, there is an influence of residence time differences toward the decrease in COD levels. To determine the effect of residence time and the presence of scouring-rush horsetail on phosphate levels can be seen simultaneously from the figures of significance in the Corrected Model.

R square figure or coefficient of determination is 0,972, meaning 97,2% reduction in detergent is caused scouring-rush horsetail (independent variable), while 0,28% is caused by other factors. Based on the F test value, it is obtained that F count is 470,235 with a significance level of 0.000. The probability (0.000) is less greater than 0.05, thus the regression model can be used to predict a decrease in the COD levels, or it can be said that the scouring-rush horsetail does affect the decrease in COD levels.

DISCUSSION

The efficiency value of the decrease in phosphate levels is the lowest value compared to the efficiency of the decrease in other parameters. However, the results of the analysis showed the presence of a process that reduces the phosphate level in the effluent after it is passed to the processing system. Orthophosphate is a form of phosphate that can be used directly by aquatic plants for photosynthesis, respiration, transfer and energy storage, thus enabling the absorption of phosphate [4].

The decrease in levels of COD is not influenced by environmental factors such as temperature, pH, toxic substances and microorganism's activity. The decrease in COD concentration showed that was decreasing of organic load in the effluent so that the amount of oxygen was used for oxidation also decreased [3].

The decrease in detergent levels occurs because of the surfactant compound is reformed. The surfactant reforming process by microbes occur in three stages: the oxidation process of alkyl cluster that is located at the end of the alkyl chain forms intermediate in the form of alcohol, and this oxidation process occurs until the alkyl chain only has 4-5 carbon atoms [5].

Organic substances contained in waste water will be overhauled by microorganisms into simpler compounds and will be used by plants as a nutrient, while the root system of water plants will produce oxygen that can be used as a source of energy/ catalyst to a series of metabolic processes for the life of microorganisms [6].

Scouring-rush horsetail medium capability in lowering the levels of detergents and COD has already met the threshold value. The decrease in COD and detergent levels is stable, while the scouring-rush horsetail's ability to decrease PO_4 experienced fluctuating and the results have not met the quality standards that have been set. Ion PO_4 is a source of Phosphorous (P) for plants which is taken by plants' roots as nutrients for the plants, so the longer the plant life in the waste medium, the smaller the concentration of PO_4 in the waste [7]. A number of plants from many families are proven to be hypertolerance that are able to accumulate metals with high concentrations in root and stem, thus it is hyperaccumulator in nature. Hyperaccumulator means it can accumulate a certain metallic element with a high concentration in the stem and can be used for phytoextraction [8]. It can be said that every part of the scouring-rush horsetail plants such as roots, stems and leaves play a role in the

process of absorption and adsorption of the heavy metals in the laundry wastewater. The advantage of scouring-rush horsetail is that the bamboo plant has a strong and hard stem structure so that it has resilience in absorbing, and it is also a type of plant which roots are suspended in the soil. The process of wastewater treatment in the wetland system with the physics, chemistry and biology are caused by the interaction of microorganisms, plants and substrate [9].

The processes in wetland system are consists of the physics, physics-chemistry and biochemistry. Physical process consists of sedimentation and filtration processes. Physical-chemical process consists of process adsorbs pollutants by aquatic plants, sediments and organic substrate. While the biochemical processes consists of the decomposition of contaminants by bacteria that attached to surfaces substrate or media, plant roots, as well as the absorption of nutrients and the other contaminants by plants [10]. Roots has an important part in supporting the growth of the plant because the roots absorb water and nutrients. To get the nutrients in the growth environment, the growth of plant roots has a great influence. Good roots (roots like yarn, a lot of hair roots) will be able to absorb nutrients. While Rooting is not good, will obstruct the absorption of nutrients [13].

The cost required to construct a wetland system may be cheaper 50-90% of the cost required to build a conventional waste water treatment systems. Likewise, the cost of the necessary investment is much cheaper because the system bogs artificial does not require high-tech equipment, does not require the input electrical energy, and chemicals (coagulants, flocculants, fertilizers), and does not require personnel trained operator [11].

CONCLUSION

There is a decrease in the levels of COD, Phosphate and detergent after the treatment using scouring-rush horsetail (*Equisetum hyemale*). There is a decrease in the COD, phosphate, and Detergent levels after the treatment using scouring-rush horsetail (*Equisetum hyemale*) toward the residence time of 0, 1, 3, and 7 days. Scouring-rush horsetail plants' efficiency in reducing the levels of COD 90%, levels of detergent 86% and phosphate (PO₄) 51%. There is a significant difference between the residence time and COD levels ($p < 0.05$). There is a significant difference between the residence time and detergent levels ($p < 0.05$). There are significant differences between the residence time and the decreased levels of PO₄ ($p < 0.05$), but the decreased levels of PO₄ appears to fluctuate. There is a decrease in detergents, PO₄ and COD levels after it is treated by scouring-rush horsetail medium. This occurs because the selection of a good stem will be able to remediate pollutants if the plant had reached adulthood. Treatment using scouring-rush horsetail with residence time influences the decrease in COD and detergents levels, but it has less effect on PO₄ decline. The addition of acclimation time in the study using a scouring-rush horsetail to reduce the levels of COD, phosphate and detergent. Planting of scouring-rush horsetail into a tub of water preferably with space for stagnant water can be as high as 30 cm.

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ICASH-A28

**FACTORS RELATED WITH HOSPITAL INFORMATION SYSTEM
(HIMS) POOR PERFORMANCE FROM USER'S EVALUATIONS
THOROUGH MALCOLM BALDRIGE CONCEPT IN KERTHA USADA
HOSPITAL SINGARAJA-BALI**

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ABSTRACT

Background: Hospital is developing not only as social entity also for business. As business entity the hospital must gain the profit. To have profit the hospital must increase the productivity and keep the level of patients visit. The hospital should keep the patients and employees satisfaction, with the efficiency within. Use hospital information management system (HIMS) will be helping. HIMS must have good performance to make satisfy the users, either internal or external. Factors related are: strategic planning which is involve all of the stakeholders, practice and accompaniment while implementation, benefit for business process (quality control, integration, monitoring & evaluation, with full support from the hospital management. This study wants to see the entire factor by qualitative study associated with Malcom Baldrige Concept.

Aims: This study is aimed to find out factors related with HIMS poor performance from Malcom Baldrige concept including leadership, strategic planning, focuses on patients-customer and markets, measurement-analyze and knowledge management, work-force focus, process management, and result.

Methods: This study was done by a qualitative study to find out entire factors related with Kertha Usada HIMS poor performance thorough Malcom Baldrige Concept.

Results: The key informant reveals the factors related with Kertha Usada HIMS poor performance are: difficult to operate, inadequate training and accompaniment, couldn't integrated, didn't gave benefit on works, no incentive, and less support from the management.

Conclusion: The hospital should have good hospital governance in the used of Hospital Information Management System.

Keywords: Hospital Management Information System (HMIS), Malcolm Baldrige, hospital good governance, Kertha Usada Hospital Singaraja-Bali.

BACKGROUND

The era of globalization and free markets encourage the development of business, including those engaged in the hospital [1,2]. Today the hospital has grown not only as a social entity but also as a business entity [2]. As the business entities, hospitals are required to not lose money [1]. The hospital is known as a business with capital intensive, labor-intensive, as well as the risks, and by itself, if not managed properly then it has great potential for loss [1-7]. In order not to lose, the hospital should increase productivity and maintain the level of patient visits [2]. Everything will be achieved if it is able to realize the factors - related factors, namely: to maintain and employee satisfaction, and efficiency of service [3,6,8,10].

To realize the factors related to productivity and the level of patient visits required support facilities for hospital services. Consists the use of hospital management information system (HMIS). HMIS used should be able to satisfy users [1,4]. The user in question not only in internal (employees, medical staff, and management) but also external (patients, health authorities, local government) [1]. This is because the hospital is located in the health system along with other hospitals and government / health authority as a regulator [5,9].

HMIS user satisfaction will have a positive effect on the success of the use of HMIS. Factors associated with HMIS using satisfaction are: ease of operation, the output provides benefits in employment, capable of integrating services to improve productivity, incentives in the use, and the full support of the hospital management [3,5,11].

Kertha Usada is private hospital which is located in Singaraja-North Bali-Indonesia. It has 120 beds and 300 staff (medic, paramedic and other supporting staff). The hospital has been using the hospital management information system (HIMS) since 2012. Starts from registration unit, inpatient-outpatient unit, and accounting. By using HIMS, Kertha Usada hospital should have positive impact such as: increase efficiency and effectiveness in work process as the HIMS can produce accurate-real time and integrated data report, on line monitoring and evaluation process. It will reduce the labour needed, as the HIS can improve efficiency on human resources. HIMS must satisfy both internally and externally. In fact, after almost 4 years running, HIMS performance in Kertha Usada Hospital is still poor and inadequate. This can be seen from many problems and user complaints were found as showed from survey result on internal staff satisfaction in Kertha Usada HIS implementation. The main problem is HIMS doesn't give positive results as the hospital expected.

This study tried to look factors related with HIMS poor performance from users evaluations qualitatively adapted from Malcom Baldrige Concept [12]. This concept chosen because its capability to find problems on six criteria of management information system in Kertha Usada public hospital (leadership, strategic planning, customer focus, measurement-analyze-knowledge management, human resource focus, process management, and result) that cause worse outcome in management information system in Kertha Usada public hospital. Furthermore, it also shows many factors which lead to successful application of information system in Kertha Usada public hospital.

METHODS

This research use qualitative assessment of factors that related to worse performance of management information system in Kertha Usada public hospital, user will be evaluate according to Malcolm Baldrige concept. The key informant selected from inclusion criteria: top level management who involved in the development of the HIMS since it begins on 2012. It is include commissioner, director, internal affair supervisor, head of medical department, head of nursery department, head of operational department, head of financial department, head of accounting department, head of quality improvement unit, and head of registration unit with total 9 person informant (2 men, 8 women). Each of the informants was asked regarding Malcolm Baldrige criteria in HIMS implementation.

In this study there are two types of data; primary and secondary. Primary data collected from: in-depth individual interview, and focus group discussion. Secondary data comes from observation; see the HIMS implementation in Kertha Usada Hospital and policy documents related with HIMS, which are:

- a. Vision and mission of the Kertha Usada Hospital;
- b. Organization structure of the Kertha Usada Hospital;

- c. Standard procedure operational related to the HIMS implementation, includes: input, process, output, and outcome;
- d. Rewards and punishment to the employees regarding The HIMS implementation;

Both of data types are collected from October until November 2016. Data analyzes by using Miles and Huberman methods, includes 3 main steps; reduction, presentation, and conclusion.

Data collected were validated by using triangulation method, to ensuring the actual condition. All information from each of the informant is checked again by; compare the data result between interview and observation, compare between individual interview and focus group discussion, and compare between interview and observation result with document related.

RESULTS

Table 1. Subject Characteristic

No.	Department	Duty	Age (yrs)	Sex	Education	Length of work (years)
1	Commissioner	Commisioner	33	Female	Bachelor of Business	10
2	Management	Director	33	Male	General Practitioner	7
3	Management	Head of medical department	31	Female	General Practitioner	4
4	Management	Head of nursing department	38	Female	Bachelor of nurse	19
5	Management	Head of accounting	37	Female	Bachelor of acc	10
6	Management	Head of financial	41	Male	Bachelor of economy	30
7	Management	Head of operational department	37	Female	Bachelor of accounting	19
8	Management	Internal chief supervisor	51	Female	Ners	30
9	Quality Assurance	Head of QA	39	Female	Bachelor of Public Health	4
10	Management	Head of registration unit	33	Female	Bachelor of language	5

Characteristic of the subject there are 8 females (80%) and 2 males (20%) as the key informant. They have wor, with permanent status, in Kertha Usada Hospital as a heads in the unit. Each of the informants is minimum S1 graduate, with minimum 3 years' experience.

Table 2. Initial assessment on Kertha Usada HIMS

No.	MB category	Point	Point (max)
1.	Leadership	42	120
2.	Strategic planning	21,25	85
3.	Customer focus	4,25	85
4.	Measurement, Analysis, and Knowledge	4,5	90
5.	Workforce focus	29,75	85
6.	Operation focus	42,5	85
7	Result	202,5	450
Total		346,75	1000

According Malcolm Baldrige Assessment Criteria, Kertha Usada HIS performance is in poor performance. There are 3 from 4 policy document related HIS were found (75%). There are 2 document from 3 policy document found (66%) were incomplete (not 100% appropriate based on the document require).

Table 3. Policy Document Related Hospital Information System

No.	Document	(Yes/No)	Explanation
1.	Vision and mission of the Kertha Usada Hospital;	Yes	Incomplete (HIS not include)
2.	Organization structure of the Kertha Usada Hospital;	Yes	Incomplete (HIS not include)
3.	Standard procedure operational (SOP) related to the HIS implementation, includes: input, process, output, and outcome;	Yes	Incomplete (only input process)
4.	Rewards and punishment to the employees regarding HIS implementation;	No	Incomplete (only input process)

Leadership

There are no policy regarding HIS. Relation between hospital vision and value with HIS implementation are not known. Therefore, senior leader didn't have any focus to use HIS and never communicate with the entire workforce and key customer regarding the importance of HIS. The impacts of HIS use for hospital governance are not understood.

Strategic Planning

Since the HIS values and mission are not well known even in senior leader, the importance of HIS in hospital strategic planning are not understood. The hospital strategic planning never involve the HIS participation on it, such as: collect data from the hospital service as input or measures the actual hospital performance as benchmark.

Customer and Market Focus

HIS is implemented without obtain any single information from the user. Customer's engagements are very important in hospital development in the future. HIS never build how to engage the customer (their satisfaction or dissatisfaction) and building relationship as well as determine product offerings, market segments, and reduce the customer complaint.

Measurement, analysis, and knowledge management

HIS couldn't measure, analyze, and improve the hospital performance. It doesn't produce appropriate data to assess, analyze, and understanding actual and future hospital performance. Hardware and software HIS didn't guarantee if it reliable, secure, and user-friendly.

Workforces

HIS couldn't asses, workforce capability and capacity needs. There are no engage with the staff, inadequate incentives in the use of HIS to improve motivation. It is also lack of HIS preparation (socialization, education and training) and minimum accompaniment during implementation.

Operations

No adequate impact of HIS in hospital service. It can't determine key process and work process requirement, integration process (internal or external), monitoring and evaluation (daily-monthly-yearly report), and cost with quality control.

Business Results

There are poor results from the HIS for the hospital service process (leadership, strategic planning, and focus on customer-markets, measurement-analyze-knowledge management, work-force focus, and process management).

DISCUSSION

Evaluation from the key informant as users of Kertha Usada HIMS shows it's in poor performance. HIMS who exist for almost 4 years in Kertha Usada Hospital, early result stage is not acceptable. Immediate evaluations needed by HIS. Factors related with its poor performance can explained thorough Malcolm Baldrige. Since the leadership is not shown on HIMS, it's made negative impact to the others criteria. From the observation on the document related with HIMS, there are in adequate quantity and quality of it. Easy to understand that the combination between HIS poor level by Malcolm Baldrige Criteria, and inappropriate HIMS document than its needed make the Kertha Usada HIMS has poor and inadequate performance.

How is Kertha Usada HIMS can be improve?. The key informant reveal quality improvement in Kertha Usada Hospital Information starts from improving leadership regarding HIMS than continued in improve strategic planning, focuses on patients-customer and markets, measurement-analyze and knowledge management, work-force focus, and process management. With knowing the strength from each of the criteria, we can use for OFI (opportunity for improvement), with specific timeline (goal, action plan, time, and person in charge). At the end it will give expected result, which is good Hospital Information System. Therefore the key informant believes the hospital should change the HIMS vendor with the other ones who can meet all of the criteria in Malcolm Baldrige, complete with adequate HIMS document: policy, regulation, and standard procedure operational.

CONCLUSIONS

Baldrige assessment established guidelines or framework for improvement. It's not only for the overall organization improvement also for one of the organization program. In Kertha Usada Hospital Information Sytem by using Malcolm Baldrige Assesment Criteria show is in poor level. By using Malcolm Baldrige Self Analysis Assesment Worksheet there are many opportunities for HMIS improvement suggest from the key informant. Kertha Usada Hospital Information System should redesign by involving using seven of Malcolm Baldrige criteria. Change the HIMS vendor by choosing the ones who can meet the criteria suggest as initial step. Further study needed to see Kertha Usada Hospital Information System quality improvement after redesign.

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ICASH-A29

POSTPARTUM CARE IN CENTRAL JAVA TRADITION

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ABSTRACT

Background: The puerperal period is a critical period. 60% of maternal deaths occur after delivery and 50% of them occur in the first 24 hours. The high rate of maternal and child mortality in Indonesia is closely related to social and cultural factors, particularly the Java community. During the postpartum, Abstinence / or postnatal care suggestion is usually associated with the physical condition of the recovery process.

Aims: This study aims to determine postpartum care is based on the tradition of Central Java.

Methods: This study is a combination of quantitative and qualitative study (Mixed Methods). The samples is 81 postpartum mothers. Data collection instrument was a structured questionnaire and in-depth interview guidelines. Quantitative data with a frequency distribution. The results of qualitative data in narrative form.

Results: Postpartum care based on the traditions of Central Java obtained: (1) 96.3% Capital postpartum do massage after delivery, when the foot bed to be straightened out, and not allowed to leave the house for 40 days, (2) 95.1% Capital postpartum Wearing pilis, (3) Wear stagen (88.9%), (4) There should be a nap (84%), (5) Do not eat eggs, meat, shrimp, fish (82.7%), (6) When the morning shower should be shampoo (60.5%), and (7) Always drink herbal medicine (59.3%).

Conclusion: The majority of postpartum care is based on the tradition of Central Java is still detrimental to the health of postpartum mothers so that they can affect the recovery process in the post-partum period.

Keywords: Postpartum care; Tradition

INTRODUCTION

Puerperal period is a critical time for both mother and baby. 60% of maternal deaths occur after delivery and 50% of them occur in the first 24 hours. While two-thirds of infant deaths occur within four weeks after delivery and 60% of them occur in time after birth [1]. Based on the Indonesian Demographic and Health Survey (IDHS) in 2012, Maternal Mortality Rate (relating to pregnancy, childbirth, and postpartum) amounted to 359 per 100,000 live births. The figure is still quite high compared to neighboring countries in the ASEAN region. In 2007, when the maternal mortality rate in Indonesia reached 228, Maternal Mortality Rate in Singapore only 6 per 100,000 live births, Brunei 33 per 100,000 live births, Philippines 112 per 100,000 live births, as well as Malaysia and Vietnam are both reached 160 per 100,000 live births. Maternal mortality in Indonesia is still dominated by the three main causes of death are hemorrhage, hypertension in pregnancy (HDK), and infections [2].

While, according to Ditjen Nutrition and Health of Mother and Child, Ministry Health Republic of Indonesia (2010), the causes of maternal mortality in Indonesia in 2010 that hypertension in pregnancy (32%), complications during childbirth (31%), Post Partum Hemorrhage (20%), others -

others (7%), abortion (4%), antepartum hemorrhage (3%), amniotic disorder (2%), and long labor (1%) [3].

Maternal Mortality Central Java province in 2015 based on reports from county or city of 111.16 / 100,000 live births, decreased when compared with Maternal Mortality Rate in 2014 amounted to 126.55 / 100,000 live births in Central Java Province. Genesis is the most maternal postpartum period amounted to 49.12%. Infant Mortality Trend of Central Java province in 2015 based on reports from county / city of 10 / 1,000 live births, decreased when compared with IMR in 2014 amounted to 10.08 / 1000 live births in Central Java Province. Where, in 2015 Grobogan has the highest maternal mortality in the ranking of 4 in the province of Central Java, 33 cases and Infant Mortality Rate (IMR) is the highest in the province of Central Java, 384 cases of the total cases of infant mortality in Central Java as many as 5.571 cases [4].

The high rate of maternal and child mortality in Indonesia is closely related to socio-cultural factors of society, such as the level of education of the population, especially mature women who still low, socio-economic are not adequate, the level of public trust in the health care and health care workers are still low and distant location health services of houses habits and customs and behavior of the people who lack support and so forth [2].

Evidence from developing countries worldwide suggests that a simple package of interventions, such as providing advice on postnatal danger signs, advice on self-care, and iron folate supplementation, as well as early detection and referral of postnatal maternal complications, are effective in reducing maternal mortality [5,6].

Besides during pregnancy, taboos or suggestions they were enforced during the postpartum. Abstinence / or suggestion is usually associated with the physical condition of the recovery process, for example, there are certain foods that should be consumed to augment milk production, there are also certain foods that are prohibited because they can affect the health of the baby. Traditionally, for example abdominal massage which aims to restore the uterus to its original position, the herb-herb such as leaves into the vagina with the intent to cleanse the blood and fluid that comes out because of childbirth or give certain herbs to strengthen the body [7].

Myth during childbirth myth has become a tradition that is passed down from our parents earlier, became a regular thing and so they believe. Not a bit of a myth that only a myth, not even feasible to simply believed. But apparently a lot of people that can be illogical, accepted by reasonable and there was a fact. So it never hurts to review the myths about the community as well know the facts (8). Postnatal care from birth the placenta begins to avoid the possibilities of post partum bleeding and infection. Postnatal care includes: Mobilization, diet/food, urination, defecation, fever, contraction, Lactation [9].

Postnatal care such as massages after giving birth have a negative impact if the massage one so dangerous because it can damage the content, not allowed out of the house for 40 days because of puerperal require postpartum visits at visit 6 days and 2 weeks, using a concoction of leaves attached to the forehead can damage the skin for those who are not strong / cause allergies, not allowed to sleep during the negative impact due to puerperal period should be enough rest, reduce the heavy labor because labor is very beneficial for the health of the mother, do not eat eggs, meat, shrimp, fish have a negative impact due to puerperal require food nutritionally balanced so that healthy mothers [10].

Results of research Suryawati (2007), in which case care practice during the postpartum (after the mother gave birth up to about 35-40 days) in the District Bangsri of Jepara regency, some data can

be presented: Drinking herbal medicine which is a habit most people Javanese also be done by almost all respondents after childbirth. Only one person (1.7%) were honestly expressing sexual intercourse after childbirth, although this is not recommended by health and religion. During postnatal majority of respondents (41.7%) abstain from eating meat and fish. Body massages for back in shape after childbirth is done by 83.3% of respondents [11].

Results of research Baihaqi (2013), obtained the culture of East Java in puerperal include: (1) personal hygiene, consisting of: bath obligatory post-partum, irrigation vagina using boiled water betel leaves, and and put the herb in the stomach until the vagina using the betel leaf , (2) care to maintain the health of the body, consisting of: treatment with the use a concoction of leaves attached to the forehead a concoction of leaves attached to the forehead, massage and changing the position of the mother's abdomen, (3) care to maintain the beauty of the body, consisting of: treatment with the use of scrubs, sitting with his back touching the seating position, sleep with a half-sitting position, use octopus, and a herbal drink packaging, and (4) special treatment, consisting of: coffee and drinking water herbal medicine [12].

Data shows many mothers who do abstain from food during parturition in Indonesia from puerperal women as much as 4,406,437 5,123,764 (86%) of mothers have postpartum abstinence from food habits such as not eating fish, eggs, vegetables, and spicy foods. Other data showed that as many as 36 025 (80%) of the amount of postpartum mothers do abstinence from food. The number of puerperal women who abstain from eating based on existing data which are caused by a lack of knowledge was 26.5%, cultural factors or suggestion family party 37.6%, 25.4% economic and parity of 10.5%. Abstinence from food that occur include meat, eggs, and chicken (53.5%), fish (27.8%), vegetables (12.4%), and spicy food (6.3%) [14].

Based on preliminary studies in February 2016 in the District Godong Grobogan Purwodadi number of puerperal women in the region as much as 99 for women. Of the 10 post partum mothers who do care post partum, after the interviews are 8 people puerperal women still do care post partum like massage after childbirth, should not be out of the house for 40 days, wear gird, wear pilis, bed legs should be straight, should not nap, forbidden to eat eggs, meat, shrimp, fish. And 2 postpartum mothers do not seek post-partum treatment. The purpose of this research is to explain postpartum care in Central Java tradition (Study in District Godong Grobogan Purwodadi)

METHODS

This study is a combination of quantitative and qualitative study (Mixed Methods). The research location is Purwodadi district which is one of five districts in Central Java program defined as the area Expanding Maternal and Neonatal Survival (EMAS). Sub district Godong selected as an area of research which has the characteristics of people who adhere to the local culture.

Population in quantitative research is 122 postpartum, samples taken by purposive sampling with criteria inclusion: (1) postpartum mothers who embrace the tradition of central java, (2) willing to become respondents, and (3) postpartum mothers 2nd day up to six weeks. The sample in this study is as much as 81 postpartum mothers. The variables in this study include massage after childbirth, curfew for 40 days, morning shower with shampoo, wearing stagen, prohibition daylight sleep, while sleeping, legs straight, wearing scrubs shake, wearing a concoction of leaves attached to the forehead, fixed consuming eggs,meat, shrimp, sea fish, and drinking herbal medicine. Data collection instrument was a structured questionnaire. Quantitative data is processed with SPSS and presented in the form of a frequency distribution.

Informant in qualitative research is six health workers at district and village levels (1 doctor, 1 midwife clinic, and 2 midwives) and 3 public figure and 1 religious leaders. Data collection instrument was in-depth interview guidelines. To get the data description of the socio-cultural background of the behavior of postpartum care in the traditions of Central Java. The results of qualitative data analysis which is based on in-depth interviews are presented in narrative form.

RESULTS

Table 1.Characteristics of respondents

Characteristics of respondents	N = 81	%
Age		
< 20 year	9	11,11
20 – 35 year	54	66,67
> 35 year	18	22,22
Education		
No school	10	12,35
Primary school	27	33,33
Junior high school	23	28,40
Senior High School	16	19,75
College	5	6,17
Occupation		
Housewife	44	54,32
Trader	21	25,93
Private employees	14	17,28
Government employees	2	2,47
Family income		
Less	61	75,31
Enough	11	13,58
Big	9	11,11

As shown in Table 1, the majority of mothers with postnatal care practices in the age group 20-35 years, no school, housewives and family income is less. Other than that, research also shows postpartum care based on traditional Central Java include: 96.3% of postpartum maternal perform a massage after delivery, when the foot bed to be straightened out, and not allowed to leave the house for 40 days, 95.1% of postpartum mothers, and wearing “pilis”, Wear cloth wrapped around the mother's belly after giving birth or “stagen”(88.9%), not allowed to take a nap (84%), not eating eggs, meat, shrimp, fish (82.7%), while bathing in the morning should wash (60.5%), and always drink herbal (59.3%) (see Table 2).

Informants from community leaders, religious leaders and health workers at the district and village explains that cultural factors developing in society districts Purwodadi detrimental postpartum mothers that their mother's perception about the foods that become taboo for postpartum mothers include fried foods, chili with most reason family is to inhibit wound healing after childbirth. A mother giving a reason when asked why should not eat salted fish or other fishy food, according to the mother after giving birth should not eat fishy-fishy, fishy milk becomes later. It concluded that most people in the district Purwodadi still refrain from foods such as eggs, meat, shrimp, and fish.

Table 2 Postpartum Care Based on Tradition Central Java

Postpartum Care	N = 81	%
Massage after childbirth		
No	1	1,2
Sometimes	2	2,5
Yes	78	96,3
Curfew for 40 days		
No	3	3,7
Yes	78	96,3
Morning shower with shampoo		
No	32	39,5
Yes	49	60,5
Wearing <i>stagen</i>		
No	6	7,4
Sometimes	3	3,7
Always	72	88,9
Prohibition daylight sleep		
No	13	16
Yes	68	84
While sleeping, legs straight		
No	3	3,7
Yes	78	96,3
Wearing scrubs shake		
No	69	85,2
Sometimes	4	4,9
Always	8	9,9
Wearing a concoction of leaves attached to the forehead "pilis"		
No	1	1,2
Sometimes	3	3,7
Always	77	95,1
Fixed Consuming eggs, meat, shrimp, sea fish		
No	10	12,3
Sometimes	4	5
Yes		
Drinking herbal medicine		
No	10	12,3
Sometimes	23	28,4
Always	48	59,3

Additional information is obtained about the behavior of restrictions on postpartum mother, a mother after giving birth should not be sleeping on your back, will cause stomachache kemata. Legs bent and hard labor is not recommended in puerperal women, picking on maternal health. Recommended practices when postpartum mother is sitting legs straight for 40 days, wear pilis (traditional medicine in the form of solid or paste is used in a way mencoletkan on the forehead), should not be a lot of motion, "stagen" (long cloth which is approximately 2-4 meters wide and 20-30 cm in the manner of wrapped around the waist several times until the end of the fabric runs) to above the knee. This is done to restore the condition of the mother as before giving birth. There are still many people in the research sites that use the service called "paraji" when they give a birth. According

to respondents, the "paraji" is able to provide complete services ranging from assisting childbirth, presided at the birth until the postpartum and infant care. In addition to the tradition in Purwodadi district also runs the positive things that are taught by Islam, namely aqiqah at day 7 or 40 days after birth. In the event aqiqah parents slaughtered two goats when his sons and 1 daughter when the goats.

DISCUSSION

Form the result, 96.3% of postpartum mothers do massage after delivery. Massage treatments are performed on the entire body aims for recovery after childbirth, and massage on the stomach aims to improve the womb before pregnancy. Society in Purwodadi district strongly believe that post partum massage is very important, because during the nine months of pregnancy, your body experiencing tremendous changes. After the baby is born, your body will experience a recovery process such as the return of the size of the uterus, vaginal discharge and fatigue after undergoing the process of childbirth. In addition, experience stress and emotional lability associated with hormonal changes that occur after childbirth. Thus, the massage after delivery may provide some benefits and effectively help the recovery of mother during childbirth, such as relieving some of the point of exhaustion in the body, releasing tension in the muscles, improve circulation, and increase joint mobility and body rejuvenation.

Massage during childbirth is a heritage to be done by "paraji" (shaman who helps baby care), but often to the detriment of the health of the mother, because it is done to restore the physical condition and health of the mother by way of massaging the abdomen which aims to restore the uterus to its original position.

The results are consistent with the results of research Suryawati (2007) in terms of treatment for postnatal massage body after giving birth to a fitness restore body after childbirth is done by 83.3% of respondents [12].

Most postpartum mothers straightened legs during sleep, should not nap (84%), and should not be out of the house for 40 days (96.3%), because people assume that it may cause a negative impact on the recovery of puerperal. According to health that is true but the reason is to increase blood flow causes of maternal postpartum slow blood flow caused by the increase in platelets. Legs bent and lying flat disrupt blood flow circulation, heavy work adds to the workload of the heart, the postpartum mother this is not recommended. Although, early mobilization is required during childbirth but it should be done gradually. Starting from the tilted to the right and left. On the second day the mother was able to sit up, then on the third day the mother was able to move the legs that is by roads and adequate rest. In addition, in puerperal require postpartum visits at visit 6 days and 2 weeks [1].

The majority of postpartum mother wearing a concoction of leaves attached to the forehead "pilis" (95.1%), where used by the way rub elongated forehead. The benefits "pilis" are to eliminate dizziness, maintaining eye health, treat headaches, and prevent the increase in white blood to the head., whereas according Choirina (2013), the benefits pilis used on the face and hands in order to feel the cold, but for sensitive skin will cause allergies. Likewise, wear stagen (88.9%), according to the theory Karmila (2012) can make the spine stops growing because they do not get enough support. The decrease in abdominal muscles, shift and disruption of the abdominal wall, intestine could be pressured [13,15].

Abstinence from food during parturition can reduce maternal nutritional intake that will affect the mother's health and milk production. So that the adequacy of infant nutrition will also be influential. Behavior of abstinence from food does not comply with the recommendation to consume

foods that contain carbohydrates, vegetables, fruits, vegetable protein and drink plenty every day [16]. But in this study, obtained 82.7% did not consume eggs, meat, shrimp, and fish. Research shows that abstinence behavior associated specific food with between baby lying down so Breastmilk not among others smells fishy meat and marine fish.

Always drink herbal respondents (59.3%), because the herbal drink made her feel fresh, milk production becomes more smoothly [17]. The results are consistent with the results of research Suryawati (2007) herbal drink is a habit most of the tribal people of Java, carried out by almost all respondents after childbirth [12]. Because, maternity herbal medicine can help make the process of parturition lasted timely, namely less more 40 days. Other benefits between lay tighten the muscles of the abdomen sagging, restores stamina, improving the mother's milk, cleaning dirty blood in the uterus, helping recovery wounds, and to help process the contraction of the uterus to its original size. Maternity herbal medicine usually divided become part 3, which is taken 10 first day, 10 the second day and 10-day Third.

Postnatal care also provides a unique opportunity to connect women to other health interventions within the continuum of care and to promote healthy behaviours. Evidence from Latin America suggests that contraceptive uptake is higher when women receive immediate postpartum contraception (18,19), and a randomised controlled study from Syria showed that exclusive breastfeeding was higher for women who received postnatal visits [20].

CONCLUSION

The majority of postpartum care is based on the tradition of Central Java is still detrimental to the health of postpartum mothers so that they can affect the recovery process in the post-partum period. Based on the results as follows majority of capital postpartum do massage after delivery, when the foot bed to be straightened out, and not allowed to leave the house for 40 days. The results also showed that education and family income plays an important role in the practice of postnatal care. Where the post partum mothers who have higher education do a majority of postnatal care that is not detrimental to health. Likewise, with a large family income has an important role in the practice of proper postnatal care. Thus, the expected health workers, especially midwives can form a companion during childbirth from families who have been trained to conduct proper postnatal care.

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ICASH-A30

BODY WEIGHT EFFECT ON JOINT SPACE WIDTH AND TIBIO FEMORAL ANGLE OF KNEE JOINT MEASUREMENT FOR OSTEOARTHRITIS DETECTION USING IMAGEJ

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ABSTRACT

Background: Radiograph of knee joint with Kellgren and Lawrence classification system is the gold standard for assessing knee osteoarthritis. However, these grades are still obstacles. It is sometimes not appropriate to assess the progress of osteoarthritis and very long time to see the results of such progress. Osteoarthritis diagnosis and classification have been relying on qualitative visual interpretation by a radiologist. Probably difficult to determine whether there OA in the knee or not. Image quantification of digital radiography is done by measuring the joint space width and tibio femoral angle of the knee joint using the ImageJ software, with body weight variance as one factor that could affect it.

Aims: This research aims to get information of body weight effect on the measurement of the joint space width and tibio femoral angle of knee joint in OA detection.

Methods: This is a cross-sectional study. Subjects were digital images of the knee joint anteroposterior (AP) projection using Computed Radiography (CR) from 21 respondents with specific criteria. Image is then quantified using ImageJ software to measure the joint space width and tibio femoral angle. Print out of examination visually evaluated by one radiologist to confirm the diagnosis of OA of the knee joint.

Results: The value of the right knee joint space width lateral and medial (3.81 ± 1.18 and 2.42 ± 0.77), while the left lateral and medial (3.49 ± 1.11 and 2.69 ± 0.83). Tibio femoral angle range 168.44 to 178.39 with the average tibiofemoral angle right knee 175.18 ± 2.04 and 173.80 ± 2.44 left knee. Body weight has a significant correlation to the tibiofemoral angle of knee joint (p value < 0,03).

Conclusion: The joint space width values that taken from digital quantification can be baseline data of respondents, especially for those respondents who had grade 2 or indicated osteoarthritis, to be observed or compared in the next examination. The tibio femoral angle can be addition information in relation with knee pain to detect osteoarthritis.

Keywords: joint space width, tibiofemoral angle, quantification

INTRODUCTION

Osteoarthritis according to the Academic College of Rheumatoid (ACR), a cluster of conditions that affect the joints with signs and symptoms associated with damage to the integrity of the cartilage articular [1]. According to WHO, 10% of the world population with age ≥ 60 years suffered osteoma arthritis. Osteoarthritis commonly affects the hands, feet, spine (spine), and the

joints that hold heavy weight, such as the hips and knees. Most cases of osteoarthritis have no known cause and are referred to as primary osteoarthritis. When the cause of osteoarthritis is known, the condition is referred to as secondary osteoarthritis. Osteoarthritis is sometimes abbreviated as OA.

Primary osteoarthritis mostly associated to aging. With aging, the water content of the cartilage increases, and protein composition of cartilage degenerate. Cartilage degeneration started by peeling or forming tiny crevasses. In the advanced cases, there is a total loss of the cartilage cushion between the bones of the joints. Repeated use of joints can irritate and inflame the cartilage, causing pain and swelling of joints. Loss of cartilage cushion causes friction between the bones, leading to pain and limitation of joint mobility. Inflammation of the cartilage can also stimulate new bone growths (spurs, also referred to as osteophytes) that form around the joints. Osteoarthritis occasionally can be found in many members of the same family, implying a base derived (genetic) for this condition [2-4].

Secondary osteoarthritis is caused by diseases or other conditions. Conditions that can lead to secondary osteoarthritis include obesity, repeated trauma or surgery to the joint structures, abnormal joints at birth (congenital abnormalities), gout, diabetes, and other hormone disorders [3,4].

Obesity causes osteoarthritis by increasing the mechanical stress on the cartilage. Obesity is the most powerful risk factor for osteoarthritis of the knees after aging factor. Early development of osteoarthritis of the knees among athletes' weightlifter believed was partly due to their heavy weight. Repeated trauma in the tissues of the joints (ligaments, bones and cartilage) is believed to lead to early osteoarthritis of the knees on the football players [5,6].

Radiography is used as the gold standard in the evaluation of the diagnosis of OA, based on the Kellgren and Lawrence (KL) with a grading system based on two radiographic features, the presence or osteophytes and Joint Space Narrowing (JSN). Osteoarthritis diagnose in patient with KL grade same or more than 2, while 0 and 1 is normal. Grade 2 is visually definite margin of osteophytes, grade 3 is visible JSN, grade 4 = bone on bone contact [7].

Kellgren and Lawrence (KL) has limited the low sensitivity to changes in the joints, JSN evaluated with grading based on the ordinal scale [8], but also another feature like osteophytes, and bone density should be assessed separately. Altman atlas offers the use of a different grade to see the separate structures, using a scale of 0-3, but the grade is ordinal is also insensitive to changes in joint structure and is rarely used in clinical [9].

In addition, in evaluating radiographs highly dependent ability and experience, in addition to other factors such as lighting conditions are used, as well as illuminators used. Radiograph evaluation results could differ from one person to another. It required a tool that can measure and produce a radiograph evaluation more objective and more sensitive. The sensitivity of the radiographic examination in evaluating disease progression and treatment would be better if done in a more detailed and quantitative measurements [10,11].

Therefore, it is necessary to use image processing program that can be used to quantify osteoarthritis of knee joint. Advantages of quantitative evaluation are the result will be more objective, relatively faster, and can overcome the limitations of human resources in evaluating osteoarthritis of the knee. In addition to quantifying the grading digital image will produce continuous values unlike the analog image which uses ordinal scale. This digital evaluation is possible given that most of radiology services now have been using digital radiography, in which a digital image that can be observed directly on the computer, or analyzed with image processing software. ImageJ is a free image processing software. ImageJ provides a wide array of image processing operations that can be

applied to 2-D and 3-D images. In addition to basic image processing (filtering, edge detection, resampling). ImageJ provides some higher level image analysis algorithms. ImageJ is written in Java. ImageJ can open many common 2-D image files, as well as DICOM format medical imaging data [12]. Aim of the study is to get information about the effect of body weight on the measurement joint space width and tibio femoral angle in help detecting osteoarthritis of the knee joint with the quantification of digital radiography images using ImageJ software.

METHODS

Design of this research is cross-sectional study. Subjects were digital images of knee joints antero-posterior (AP) projection using Computed Radiography (CR) from respondents with body weight variations. Digital image of the knee joint anteroposterior (AP) is then quantified using ImageJ software. Quantification done with measure joint space width (JSW) and tibio femoral angle (TFA) of the right and left knee joint.

The samples have inclusion criteria: a) Respondents aged 40-60 years; b) Respondents suspected has osteoarthritis signs or symptom when examined in Semarang Health Polytechnic Clinic's; c) Respondents agreed the examination and follow the research.

The samples have exclusion criteria: a) The respondent is suffering from rheumatism, gout or uric acid; b) The respondent is suffering from a knee ligament injury; c) The respondents are not willing to participate in research.

The independent variables in this study is a variation of the respondents' body weight. The dependent variable in this study are:

- 1) Joint space width (JSW) on digital radiographic image of the knee joint anteroposterior (AP) projection, measured with ImageJ.
- 2) Tibio femoral angle (TFA) on digital radiographic image of the knee joint anteroposterior (AP) measured with ImageJ.

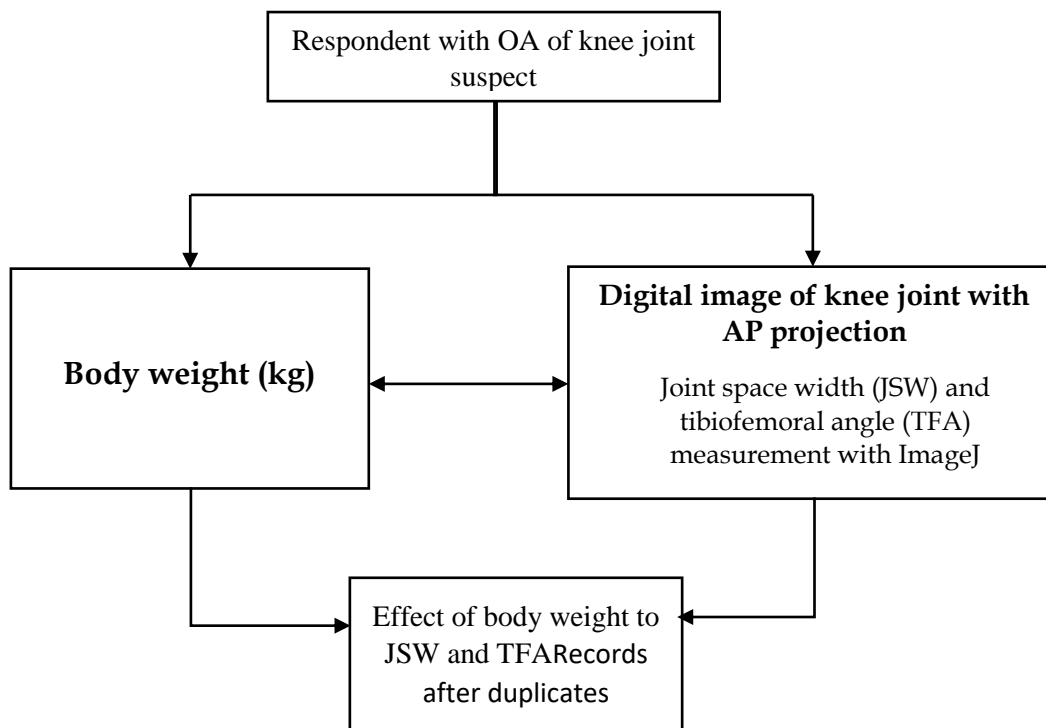


Figure 1. Conceptual framework

Body weight is ratio scale, measure with body weight scale, in kg unit. Joint space width is ratio scale, measure in digital images of knee joint with Antero-posterior projection that quantified using ImageJ, in mm unit. Tibio femoral angle is ratio scale, measure in digital images of knee joint with Antero-posterior projection that quantified using ImageJ, in degree unit.

The first step in this research is produce knee joint radiograph of respondents who met the criteria. Radiographs were made in radiography laboratory of Radio diagnostic and Radiotherapy Department Health Polytechnic of Semarang. Image captured with imaging plate and displayed in Computed Radiography. The list of image who meets the criteria, is transferred to a workstation for filming process.

The raw data image stored in DICOM format to the compact disc media to be processed using ImageJ software that is already installed in the researcher's laptop. As for the radiologist assessment, the image of the knee joint of the respondents printed in the film with one film format size 35x43 cm to 3 (three) image of the right and left knee joint.

Radiograph of the knee joint from each respondent is processed by software ImageJ to obtain the minimum value of joint space width. Before this, is needed to make scale calibration of the distance on the ImageJ display with the real distance, that known from step-wedge that include at collimation area when exposed with X-ray. The result is distance convert from pixel into mm (see figure 2).

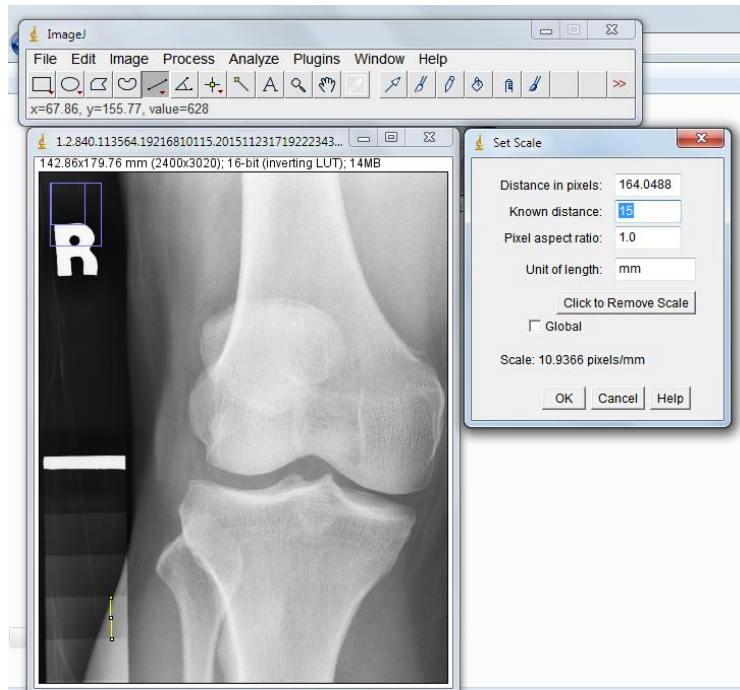


Figure 2. Scale calibration

Method to obtain joint space width, as displayed in figure 3, and tibio femoral angle measurement as displayed in figure 4.

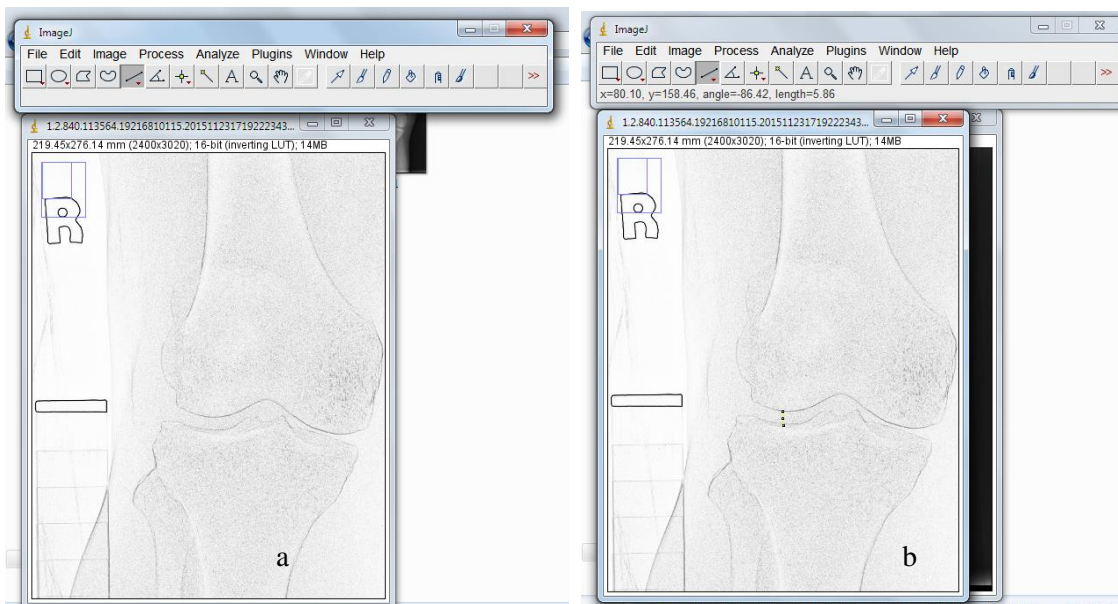


Figure 3. Measuring joint space width (a) Perform “find edge”. (b) Measure of joint space width (right knee, lateral side)

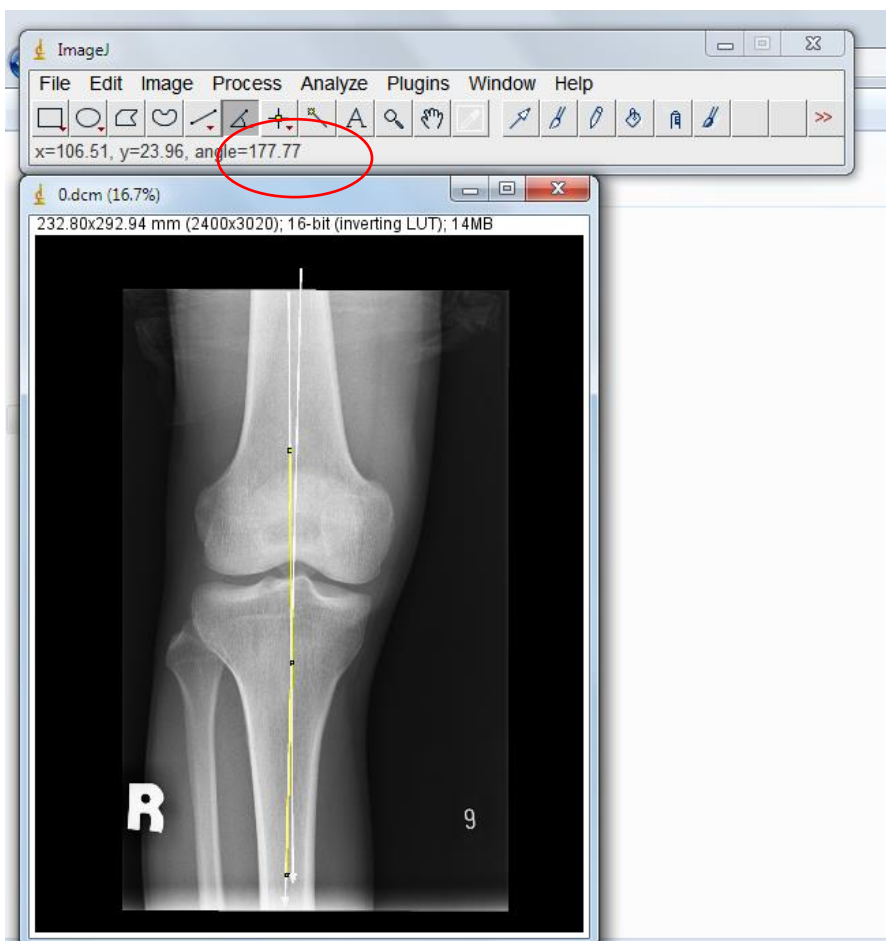


Figure 4. Tibio femoral angle measurement

Radiograph of the knee joint each respondent is processed by software ImageJ to obtain tibio femoral angle value. Tibio femoral angle is measured by pulling axis of the middle of the femoral bone and the middle of tibia bone on the image, which forms an obtuse angle (see figure 4).

Quantification of JSW and TFA can't perform with conventional x-ray films. Using digital images from Computed radiography, we can measure the size and angle. Data analyzed with linear regression test, between body weight and JSW, and between body weight with TFA measurement. The next step, qualitative confirmation with KL grade that classified visually by radiologist.

RESULTS

Has been done radiographic examination to right and left knee joint with weight bearing anteroposterior projection of 21 (twenty-one) respondents.

Table 2. Result of JSW and TFA measurement

No.	Data	JSW (mm)				TFA (o)	
		R		L		R	L
		Lat	Med	Med	Lat		
1	Max	6.72	4.36	4.00	5.34	178.39	178.05
2	Min	1.96	1.36	1.37	1.30	169.37	168.44
3	Mean	3.81	2.42	2.69	3.49	175.18	173.80
4	SD	1.18	0.77	0.83	1.11	2.04	2.44

One radiologist as observer had judged the image of the knee joints of 21 (twenty-one) of respondents Grading classification of osteoarthritis based on Kellgren and Lawrence grade as follows:

Table 3. Respondents osteoarthritis grade

No	Resp. code	Criteria				Grade
		JSN	O	BS	C	
1.	X-02	-	+	-	-	1
2.	X-03	-	+	-	-	1
3.	X-04	-	+	-	-	1
4.	X-05	+	+	-	-	2
5.	X-06	-	+	-	-	1
6.	X-07	+	+	-	-	2
7.	X-08	-	+	-	-	1
8.	X-09	-	-	-	-	0
9.	X-10	-	+	-	-	1
10.	X-11	-	+	-	-	1
11.	X-12	-	+	-	-	1
12.	X-13	-	+	-	-	1
13.	X-14	-	+	-	-	1
14.	X-15	+	+	-	-	2
15.	X-16	+	+	-	-	2
16.	X-17	-	-	-	-	0
17.	X-18	-	+	-	-	1
18.	X-19	-	+	-	-	1
19.	X-20	-	+	-	-	1
20.	X-21	-	+	-	-	1
21.	X-22	-	+	-	-	1

JSN: Joint space narrowing, O=osteophyte, BS= bone sclerotic, C=cysts

Body weight of respondents is 64.71 ± 6.23 . The value of joint space width lateral and medial of right knee (3.81 ± 1.18 and 2.42 ± 0.77). The value of joint space width lateral and medial of left knee (3.49 ± 1.11 and 2.69 ± 0.83). The size of the joint space width of on the medial side is smaller than lateral, since the medial side closer to the body axis and receive a heavier load than the lateral side.

Table 4. Pearson correlation between body weight and JSW

No	Correlation	r value	p value
1	R_JSW_lat	0,159	0,492
2	L_JSW_lat	0,061	0,792
3	R_JSW_med	0,041	0,861
4	L_JSW_med	0,110	0,634

Pearson correlation between weight and the joint space width of the knee joint (Table 4) it is seen to have a weak correlation and insignificant. The results possible because the sample size is not adequate to give significant information. And, samples were taken mostly still a category 0 and 1 on a scale of Kellgren and Lawrence (normal category or not OA). There are only four people who entered grade 2 or indicated OA, so the size of the joint space width still vary within normal values.

Narrowing of joint space can be an indicator showing abnormalities progress of OA. Those narrowing is the result of observation for at least 1 year in patients suspected of OA [13]. Data obtained in this research can be a baseline measurement joint space width of the respondents stated grade 2 for the further measurement of the joint space.

Joint space width is successfully quantified with ImageJ, could be a valuable tool in determining the scale of OA, as the classification Ahlback, where the size of the joint slit width of less than 3mm can be grouped in Grade I OA [14]. However, still need to look at other markers of OA in people suspected OA, by looking at other indicators such as pain, subchondral bone thickening and formation of marginal osteophytes, as well as changes in molecular composition and structure of the bone.

The joint space width resulted in this study could be a baseline data of respondents, especially for those respondents who had grade 2 or indicated OA, to be observed or compared in the subsequent examination.

The results of this research is tibio femoral angle range of 168.44 to 178.39 with the average tibio femoral angle of right knee 175.18 ± 2.04 and 173.80 ± 2.44 on left knee. Body weight has a significant correlation to the angle of the tibio femoral knee joint. The magnitude of the correlation of weight towards the corner tibio femoral joint right knee and left at 0.471 and 0.465. This means that the weight has enough correlation to the tibio femoral angle. Beside of the body weight factor, value of tibio femoral angle is also influenced by age, ethnicity and gender [15].

Table 5. Correlation between body weight and tibio femoral angle of knee joint

No	Correlation	r value	p value
1	R_TFA	0,471	0,031
2	L_TFA	0,465	0,034

To determine the effect or impact of weight gain on the size of the JSW and TFA, regression tests were conducted with the results in Table 6. The regression coefficient (b) of this research show that a tendency to weight gain will decrease the width of the joint space, though is small and insignificant. The value is not significant, could be because respondents who observed his knee joint is still much normal category, and there are only four (4) were rated grade 2 by a radiologist.

Table 6. Effect of body weight to JSW and TFA of knee joint

No.	Effect to	b	SE	t value	p value
1	R_JSW_lat	-0,010	0,015	-0,701	0,492
2	L_JSW_lat	0,003	0,011	0,268	0,792
3	R_JSW_med	-0,002	0,010	-0,177	0,861
4	L_JSW_med	-0,007	0,014	-0,483	0,634
5	R_TFA	-0,053	0,023	-2,329	0,031
6	L_TFA	-0,063	0,028	-2,288	0,034

b = regression coefficient

SE = standard of error

Resulted the effect of body weight to tibio femoral angle (right and left knee joint), considerable significance, and the regression coefficient is negative. This means that the increase in weight will lower tibio femoral angle. To our knowledge, there has been no normal range tibio femoral angle on the Indonesian people. Normal size tibio femoral angle in Japanese people according to Toda at 175°-180°. Tibio femoral angle <175° cause tibio femoral varus and angle > 180° cause valgus [15]. Research obtain mean tibiofemoral angle of left knee is 173.80 ± 2.44 , which means outside the normal range according to Toda, but not necessarily the value of the tibiofemoral angle indicates OA. However, tibiofemoral angle has a significant positive correlation to the knee pain, as described by Tulaar [15].

Utilization of X-rays of the knee joint is only one criterion for OA, also need a physical examination, laboratory and patient history⁹. However, X-rays of the knee joint can be the initial modality for the detection of OA, due to the quick, easy and inexpensive relative. Plus, in order to minimize bias between the radiologist assess a radiograph of the knee joint, the quantification is done by the ImageJ software could be one solution to get the joint space and tibio femoral angle measurement results more objectively.

CONCLUSION

This works noted that there were no influence and significant correlation between the body weight and the joint space width of the knee joint in osteoarthritis suspected person. The joint space width values that taken from digital quantification can be baseline data of respondents, especially for those respondents who had grade 2 or indicated osteoarthritis, to be observed or compared in the next examination. However, we found a significant relationship between the body weight and the tibio femoral angle of the knee joint in osteoarthritis suspected person. The finding is carrying an expectation that the tibio femoral angle can be addition information in relation with knee pain to help detect osteoarthritis. The ImageJ software could be used in the radiology service center for the quantification of joint space width and the tibiofemoral angle of knee joint, so that the diagnosis of osteoarthritis would be more objective. Research can be developed to utilize ImageJ software for the early detection of OA based on tibio femoral angle criteria and knee pain.

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ICASH-A31

OPTIMIZATION OF R-FACTOR AT GRAPPA PARALLEL ACQUISITION TECHNIQUE ON THE IMAGE INFORMATION T2 AXIAL BRAIN MRI

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ABSTRACT

Background: GRAPPA or Generalized Auto-calibrating Partially Parallel Acquisitions is a parallel acquisition technique which can reduce the scan time in MRI examination.

Aims: This study aims to investigate the effect of the R-factor variation of GRAPPA on image anatomical information quality and to determine the optimization value of GRAPPA e-factor to fasten the scan time with acceptable image information quality.

Methods: Eight respondents will perform T2 axial Brain MRI examination with various values of GRAPPA R-factor (1 to 7), evaluation was conducted with questionnaire which was given to 3 radiologists to assess the anatomical structure of the lateral ventricle, thalamus, caudate nucleus, lentiform nucleus, internal capsule and background area. Data from respondents were then tested with Spearman test and Friedman test.

Results: Statistics test showed that there was significant effect of GRAPPA parallel acquisition technique on the anatomical image information quality of T2 axial Brain MRI (p value of $0,001 < 0,05$) and the correlation direction was negative, in which the higher the value of r-factor GRAPPA used, the lower the quality of anatomical image information. Based on the result of mean rank, image with optimal image anatomical information quality was image with GRAPPA R-factor of 1 (mean rank = 6.01), but image anatomical information quality with GRAPPA R-factor of 3 was acceptable with fast scan time (opinion of 75 % of all radiologists).

Conclusion: R-factor at GRAPPA parallel acquisition technique could reduce scan time, but the higher the value of r-factor GRAPPA used, the lower the quality of image anatomical information.

Keywords: r-factor, GRAPPA, T2 Axial Brain MRI.

INTRODUCTION

Magnetic resonance imaging or MRI is a medical diagnostic examination on medicine especially radiology with the use of high magnetic field and radiofrequency to analyze and visualize the soft tissues, blood flow, and function of the body's metabolism [1]. The application is high magnetic field of 0.064 Tesla - 1.5 Tesla (1 tesla=1000 Gauss) and resonance to hydrogen nuclei [2]. In addition to image quality, scan time is also a very important thing to be considered in MRI examination. MRI Scanner has limitation in the speed of scan time due to technical issues and functions related to the magnetic field gradient [3]. With parallel MRI, reduction in acquisition time can be achieved without the need to increase the performance of a magnetic field gradient [4].

Parallel magnetic resonance imaging (pMRI) is an advanced technique to improve MRI data acquisition speed by crossing some phase-encoding lines in the k-space while the encoding frequency direction is retained in full [5]. The idea of parallel MRI was introduced in the end of the 1980s,

however, in the 1990s it began to be used in MRI scanning. This technique has been used in many clinical settings since 2000 and the development has been being conducted by experts. Parallel reconstruction technique can be used to improve image quality by increasing the signal to noise ratio, spatial resolution, reduced artifacts and temporal resolution of MRI scans [3].

Parallel imaging has the basic functions of a reduction in scan time and maintain image contrast without requiring a higher gradient performance system [6]. Due to faster image acquisition, parallel imaging in some cases can even significantly improve the image quality [4]. GRAPPA (Generalized Auto-calibrating Partially Parallel Acquisitions) is one method used to reconstruct the data by speeding up scan time by using a parallel MRI. The technique is based by finding correlations in the data obtained from a multi-coil MRI machine [7]. GRAPPA concept was introduced by Griswold in 2002 as a more general view of VD-SMASH AUTO and produced better image quality overall because of the increased artifacts suppression [8].

GRAPPA is a more general implementation compared to VD-AUTO-SMASH. Although approach [9]. Even though those two techniques have the same acquisition, but there is a significant difference in the reconstruction of how to eliminate the k-space lines. The fundamental difference lies in the coil signal components which only have a single auto calibration signal and not the signal components thus lowering the linear weight to eliminate the k-space line in each coil component [4].

During preliminary study in Telogorejo Hospital, Semarang, the authors often found an TSE Brain Axial T2 MRI examination which used parallel acquisition technique of GRAPPA mode with R-factor of 2, while R-factor in GRAPPA parallel acquisition technique contained in MRI machine of Siemens MAGNETOM Avanto 1.5 Tesla is 1-7. From the above problems, the authors would like to find out the optimal use of GRAPPA application in order to obtain optimal image quality with fast scan time. This study is expected to be able to determine the effect of changes in GRAPPA R-factor on image anatomical information quality of Brain MRI of T2 TSE Axial sequence, as well as to determine the value of GRAPPA R-factor that can display the most optimal MRI image anatomical information.

METHODS

The type of research is a quasi-experimental employed posttest only control group design. This study was conducted with the following phases:

Preparation phase

Five respondents were chosen by non-randomization, with criteria: health respondent, man or woman in range 25-30 age, non claustrophobia, and agree to participant at research with signature on Informed Consent. Brain MRI examination of Axial slice with T2 TSE sequence was performed by using 1.5 Tesla MRI equipment at Telogorejo Hospital Semarang.

Implementation phase

Performed Brain MRI imaging of Axial slice with T2 TSE sequence. Respondents were in supine position, head first, used an array head coil and isocentre in the nation. Created T2 Axial slice with the changes in the variation of GRAPPA R-factor value of 1-7 with other parameters is fixed. Prepared and printed out the MRI image that would be observed by the radiologist, in the form of a single sheet of film that contained Axial slice Brain MRI image of T2 TSE sequence with R-factor variation of 1-7. From the image slice results, one image was selected to show the lateral ventricle, thalamus, caudate nucleus, the lentiform nucleus, and the internal capsule in one image, namely axial slice in the height of corpus callosum.

Assessment phase

A qualitative assessment has evaluated by 3 radiologist to evaluate in the form of general image contrast and observed the clarity of diagnostic information (the lateral ventricle, thalamus, caudate nucleus, lentiform nucleus, and internal capsule), and selected the image of the best (the most optimal) R-Factor variation. The radiologists have twenty-year experience evaluate MR image, especially Brain Imaging.

Data analysis

Data was analyzed by using Spearman correlation test in SPSS to determinethe effect of GRAPPA R-factor on theimage qualityof lateral ventricle, thalamus, caudate nucleus, the lentiform nucleus, and the internal capsule in one image, namely axial slice in the height of corpus callosum, to determine the effective value of R-factor to produce an optimal image (acceptable image quality with fast time scanning), Friedman test was conducted by looking at the highest mean rank value of each variation of R-factor used, as well as to determine the effective R-factor value to produce optimal images.

RESULTS

The effect of GRAPPA R-factor on the Brain MRI image anatomical information quality of Axial Slice of T2 TSE sequence

The effect of GRAPPA R-factor variation on anatomy above can be explained in the following table.

Table 1. Result of Spearman Correlation Test to explaineffect of GRAPPA R-factor variation on Brain MR image anatomical information

Tissue	R value	P value
Lateral ventricle	-0,854	< 0,001
Thalamus	-0,757	< 0,001
Caudate nucleus	-0,874	< 0,001
Lentiform nucleus	-0,835	< 0,001
Internal capsule	-0,851	< 0,001
Background	-0,83	< 0,001

The correlation test results obtained p value of each anatomy of 0.001 ($p=0.001 < 0.05$), it can be concluded that H_0 was rejected, then H_a was accepted. So in can be concluded that there was a significant relationship between the changes in the GRAPPA R-factor variation on the quality of Brain MRI image anatomical information of axial slice of T2 TSE sequence.

GRAPPA R-factor which can display the optimal quality of image anatomical information Based on the results of questionnaires from three observers (radiologists), all had the same opinion that the most optimal quality of Brain MRI image anatomical information of Axial slice of T2 TSE sequence contained in GRAPPA of 1 with a mean of 6.01, it was also supported by the statistical test results in the mean rank values as follow:

Table 2. Result of mean rank on Friedman Test to Optimization of GRAPPA R-factor on Brain MR image anatomical information

Variance R-Factor	Mean Rank	P value
R-factor of 1	6,01	<0,001
R-factor of 2	5,57	
R-factor of 3	5,21	
R-factor of 4	4,47	
R-factor of 5	2,80	
R-factor of 6	2,24	
R-factor of 7	1,70	

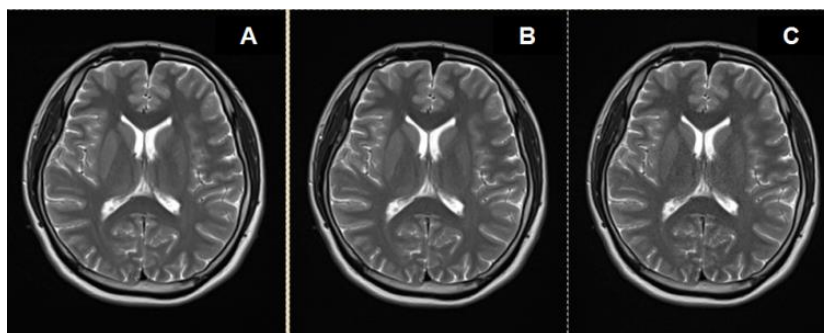


Figure 1. Brain MRI Image with GRAPPA R-factor of A = 1, B = 2, C = 3.

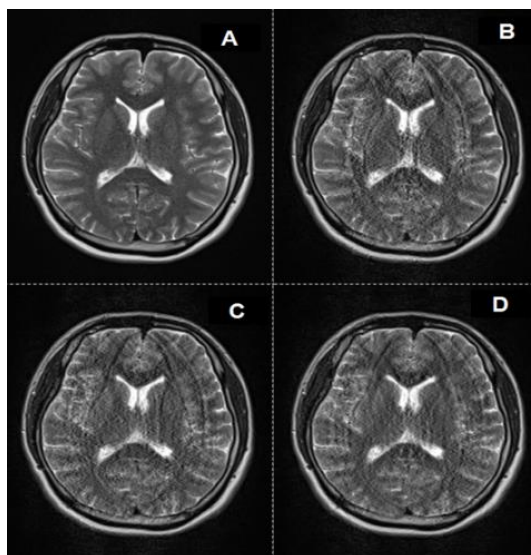
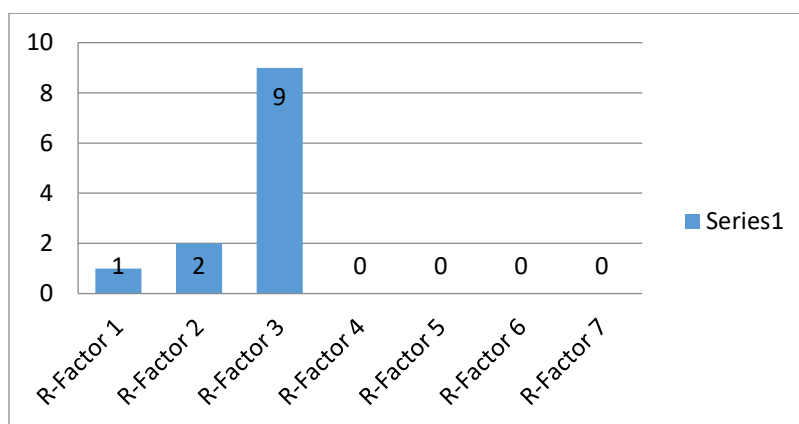


Figure 2. Brain MRI Image with GRAPPA R-factor of A = 4, B = 5, C = 6, D = 7

Based on the results of the questionnaire all observers tended to choose the image of A code in the image by using GRAPPA R-factor of 1, it is also supported by the total score on the Friedman test results with the highest mean rank in GRAPPA 1 of 6.01.

Based on the questions asked by the researchers to the observer it was stated that the use of GRAPPA R-factor of 3 could still display the optimal image anatomy quality with faster scan time so that the duration of MRI examination could also be reduced and would be efficient to time either on the patient or MRI operator. This is consistent with the results of the percentage of 4 (four) images with assessment from 3 (three) observers which indicated that 75% gave opinion that the use of GRAPPA R-factor 3 could still display the optimal image anatomy quality with faster scan time of just 2 minutes. The opinion of GRAPPA Observers with the acceptable image quality with faster time scanning can be explained in the following graph:



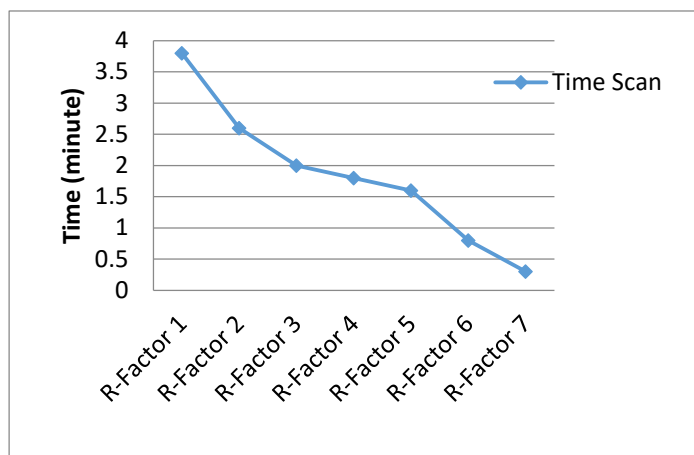
Graph 1. R-factor with optimal image quality with fast time (based opinion observer)

Based on the above explanation, the authors can conclude that using GRAPPA R-factor of 1 would get very good image quality with very fine detail, but with a longer scan time. MRI in patients with non-cooperative condition should reduce noise and artifacts due to the movement of the patients due to the scanning length of time it takes, so it can be fastened by using GRAPPA R-factor of 2 or 3 with similar results as by using GRAPPA R-factor of 1 but with faster scan time.

DISCUSSION

In GRAPPA parallel acquisition techniques there are special parameter called R-factor. This stated the number of coil elements of phased array coils that will affect the scan time [4]. Variations acceleration factor depends on the number of coil elements are used on each plane MRI. This study uses the MRI Siemens Magnetom Avanto 1.5 Tesla with 7 variations R-factor.

If the R-factor rise then the image quality will decline. This was due to the image obtained from the image in the under sampling acquisition by exploiting existing coil channel. So by increasing the R-factor, phase encoding step will be accelerated corresponding R-factor used for sampling are not full fill all of K-space. When the k-space is not fully charged then it will garner little spin echo encoding phase, there will be a reduction in linear data recorded in the image acquisition time, because time image acquisition and data collection is comparable with the number echo of phase encoding [12]. From the display on the monitor, it can be seen directly change the R-factors may affect the scan time. The larger the value of R-factor is used, then the scanning time will be reduced.



Graph 2. Influence R-factor changes to time scanning

In the research, it was found that the effect of R-factor on the quality of the image anatomical information was highly significant (p value = 0.001 < 0.05) in each organ. Increased R-factor to the image anatomical information quality is negative, it is because the final image obtained is the result of a merger of the image in the acquisition of under sampling by exploiting existing coil channel. So by increasing the R-factor of then phase encoding steps will be accelerated according R-factor that is used for sampling that was not full fill all K-space (K-space under sampling). When the k-space is not fully filled then it would garner little spin echo encoding phase, there will be a reduction in linear data recorded in the image acquisition time, because time image acquisition and data collection is comparable with the number echo of phase encoding.

CONCLUSION

Statistical test result of the study received H_a which showed that there was a significant relationship between changes in the GRAPPA R-factor variation on the quality of Brain MRI image anatomical information of Axial slice of TSE T2 sequence ($p=0.001 < 0.05$) with r square in the lateral ventricle, thalamus, caudate nucleus, the lentiform nucleus, internal capsule and background of -0.854; -0.757; -0.874; -0.835; -0.851; -0.863, respectively; which mean that the quality of the anatomical information was caused by the GRAPPA R-factor. The correlation direction of the increase in GRAPPA R- factor on the quality of MRI image anatomical information was negative, which meant that the higher the value of r-factor GRAPPA used, the lower the quality of image anatomical information.

The friedman test results obtained the highest mean rank on the GRAPPA R-factor 1 of 6.01, indicated that the quality of anatomical information the most optimal image was by using GRAPPA R-factor of 1 but with a long scan time. Based on the questions from the researcher, the observers stated that GRAPPA R-factor of 3 could still display the optimal image anatomy quality with faster scan time so that the scan time could be reduced and might also be efficient towards time either on the patient or MRI operator.

The use of GRAPPA R-factor in MRI examination should still maintain optimal image quality and fast scan time. The use of GRAPPA R - factor of 3 can be applied in patients with non-cooperative conditions to reduce noise and artifacts due to the movement of the patients due to the scanning length of time it takes with similar results as by using GRAPPA R-factor of 1 but with faster scan time. This study can be developed by increasing the number of samples so that the results can be more objective.

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ICASH-A32

RELATIONSHIP BETWEEN EARLY MOBILIZATION AND FIRST URINARY ELIMINATION ON MOTHER POSTPARTUM

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ABSTRACT

Background: Early mobilization presents the ability to move freely on postpartum woman less than 4 hours postpartum with the motion of sitting, standing, and then get up to bed. However, in fact generally, postpartum mothers tend to hold urine to avoid pain in wounds on birth canal. Meanwhile, the first urine can be done with early mobilization

Aims: This is to analyse the relationship between early mobilization with the first elimination urine on mothers postpartum.

Methods: This was a cross-sectional study that involved 48 respondents, selected through a purposive sampling method. Data collection was done using observation sheet and fisher's exact test for statistical analyse.

Result: Of the 29 puerperal women who show early mobilization less than 4 hours postpartum, there were 23 puerperal women (53.5%) with normal urinary elimination (≤ 6 hours postpartum). While from 14 postpartum mothers who did early mobilization ≥ 4 hours postpartum mothers there are 10 (23.25%) with abnormal urinary elimination (≥ 6 hours postpartum). By fisher's exact test we found a relationship between early mobilizations with first urinary elimination on mothers postpartum (p value = 0.002)

Conclusion: It can conclude the faster the first postpartum mothers mobilise, the faster the mothers can do urinary elimination. Otherwise, the longer postpartum mothers did early mobilization lasts longer than the first urinary elimination.

Keywords: Early mobilization, first elimination urine, postpartum

INTRODUCTION

Postpartum (puerperal) is started after delivery of the placenta and ends when the reproductive organs back in such a state before pregnancy [1]. The puerperal period lasts approximately 6-8 weeks, and it is very necessary for light exercises to facilitate healing of muscles, especially the uterine muscle that has been stretched during pregnancy [2].

Elimination is an essential human need no exception to the postpartum mother, emptying the bladder on postpartum mother will minimise the risk of problems such as bleeding or infection of the uterus changes [3]. But in fact generally, postpartum mother to hold urine for fear of the pain in wounds on birth canal. Meanwhile, the first urine can be done with early mobilization [4], due to lack of early mobilization or due to lying down too long resulting in difficult urination, constipation (elimination pattern), and the muscles are so weak that the healing process interrupted. But in fact present in the community is still a lot of postpartum mothers who have not do early mobilization, this is because the mother is still experiencing pain in the stitches that can lead to maternal fear of doing early mobilization.

In the data of BPS (Badan Pusat Statistik) Surabaya in 2009 showed that 60% of postpartum mothers experience urinary disorders (difficulty urinating) during postpartum. While based on the initial data collection in one of private hospitals in Surabaya Jawa Timur Indonesia, the number of postpartum mothers from January to April 2011 there are 374 normal postpartum mothers, within two weeks of 47 physiological puerperal women, 57.45% of mothers experience postpartum urinary disorders.

Urination will increase the first 24-48 hours until about the 5th day of birth, this occurs because of increased blood volume during pregnancy is no longer needed after childbirth. In the first 6 hours postpartum, the patient should be able to urinate. Urinary incontinence will cause dam urine and impaired contraction of the uterus so that the lochia is not smooth, the longer the urine retained in the bladder can lead to difficulties in urinary organs, for example, infections. By doing early mobilization as soon as possible, micturition difficulties can be overcome [5].

Early mobilization of mother postpartum performed immediately after delivery and done gradually will make the mother feel healthier and stronger because of the circulation of blood in his body to be smooth. Besides that early mobilization may also reduce the incidence of complications of the bladder, venous thrombosis puerperal, and pulmonary embolism as well as improving blood circulation, which will accelerate recovery and reduce suffering constipation hemorrhoids for fear of defecation, as well as many fewer complaints about the urinary system [6].

Lack of early mobilization, then the wound healing process and discharge or blood clot gross take effect from the mother's womb [7]. Even mother could receive unexpected side effects like scars, surgical wound in the abdomen that is not aesthetically pleasing, postpartum infection and fistula. Moreover, due to lying down too long resulting in difficult defecation, constipation (elimination pattern), and the muscles are so weak that the healing process interrupted [8].

From the description above should do a study to determine whether there is a relationship early mobilization with the first elimination postpartum mothers, so the results of this research can provide input to the midwives provide care in the mothers postpartum.

METHODS

This is a cross-sectional study. The population in this study is entire postpartum mothers within 2 hours postpartum were treated for a month in a private hospital in Surabaya Jawa Timur Indonesia, sampling by way of non-probability sampling and purposive sampling technique. Samples used in this study is 43 of 48 mothers postpartum in hospital. The inclusion criteria for this study is the mother postpartum primi and multigravida, Postpartum mothers with stitches grade 1 and 2, postpartum mothers with a history of physiological childbirth, Postpartum mothers are willing to become respondents. Exclusion criteria in this study are the postpartum mother with a history of labour with action, postpartum mother with stitches grade 3 and 4. The independent variable is early mobilization and the dependent variable is urinary elimination.

In this research instrument used is the Observation Sheet on ≤ 6 hours postpartum mothers who have the criteria for inclusion in hospital. The observed component is a general data such as age, educational stage, work and parity. On early mobilization variable is asking time start doing early mobilization, ranging from right oblique, left oblique until walk. In variable urinary elimination is spending time there urine elimination, whether ≤ 6 hours or > 6 hours. Data were analyzed using software (SPSS, version 16.0), for the type of research is an analytic using statistical tests of correlation, and both variables are nominal data were performed using fisher's exact test. For all test, a P value < 0.05 indicated statistical significance.

RESULT

Characteristics of mothers postpartum

Table 1. Distribution of mothers postpartum's characteristic

Parameters	Number of respondents (N)	Percentage (%)
Age		
17 – 19 y	3	7
20 – 22 y	10	23
23 – 25 y	7	16
26 – 28 y	13	30
29 – 31 y	5	12
32 – 34 y	1	2
35 – 37 y	4	9
Total	43	100
Educational stage		
Elementary school	12	28
Junior High school	8	19
Senior High school	21	49
University	2	5
Total	43	100
Pekerjaan		
work	14	33
no work	29	67
Total	43	100
Paritas		
Primiparous	23	53
Multiparous	20	47
Total	43	100

As in table 1, show that of the 43 respondents aged 26-28 years as many as 13 postpartum (30.23%) and those aged 17-19 years there are 3 mothers postpartum (6.98%). Based on the educational stage 49% mothers's last education is high school and 5% graduate from university programe. respondents who do not work as many as 29 mothers postpartum (67.44%) while the private work as many as 14 women post partum (32.56%). as many as 23 post partum mothers is primiparous (53.49%), while as many as 20 mothers multiparous post partum (46.51%).

Early mobilization

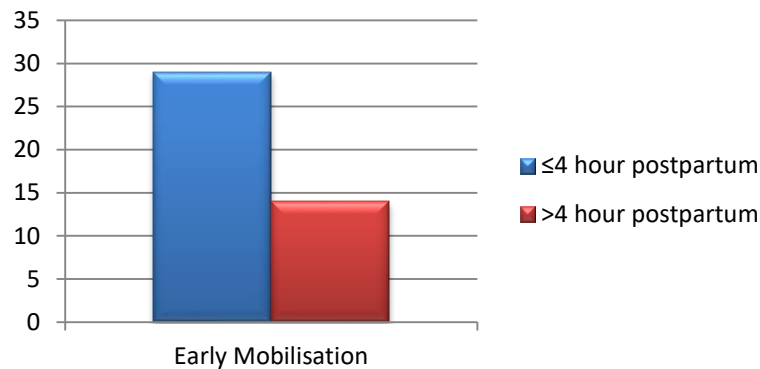


Figure 1 Frequency Distribution of Early Mobilization On Mother Postpartum

Show on figure 1, obtained from 43 postpartum mothers who did early mobilization immediately after delivery (≤4 hours postpartum) were 29 maternal postpartum (67.44%) while those not doing early mobilization (> 4 hours postpartum) as many as 14 women postpartum (32.56%).

Urinary elimination

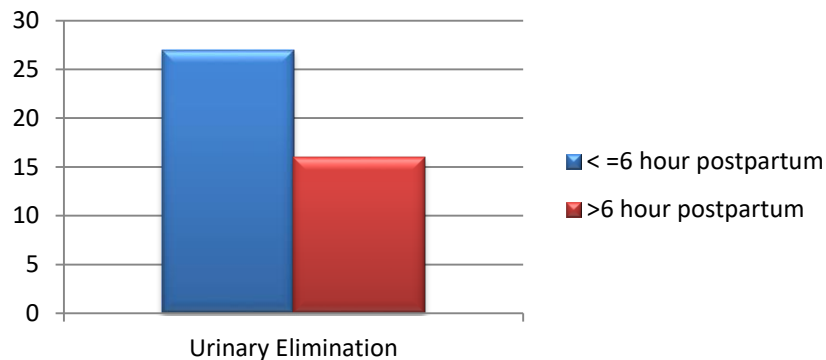


Figure 2 Frequency Distribution First Urinary Elimination on Mothers Postpartum

Show on figure 2, found 43 postpartum mothers with normal urinary elimination (≤6 hours postpartum) by 27 postpartum mothers (62.8%), abnormal urinary elimination (> 6 hours postpartum) as many as 16 women postpartum (37.2%).

Relationships between early mobilizations with first urinary elimination

Table 2. Cross table on relationship between early mobilization with First Urinary Elimination Mothers Postpartum

Early Mobilizations	First Urinary Elimination				Total	
	≤6 hour postpartum		>6 hour postpartum		N	%
	N	%	N	%		
≤4 hour postpartum	23	53,5	6	13,95	29	67,44
>4 hour postpartum	4	9,3	10	23,25	14	32,56

Based on Table 2 shows that of the 29 postpartum mothers who do ≤ 4 early mobilization as much as 23 hours postpartum mother post partum (53.5%) with a first urinary elimination ≤ 6 hours postpartum. While the 14 post partum mothers who did early mobilization > 4 hours post partum mothers as much as ten post partum (23.25%) with a first urinary elimination > 6 hours post partum. Based on the results of statistical analysis using fisher's exact test with SPSS 16.0 with an error rate of $\alpha = 0.05$ is obtained $p = 0.002$. So $p < 0.05$ then purchase $0,002 < 0,05$ so that H_0 rejected, meaning there is relation between early mobilization with urinary elimination first postpartum mothers.

DISCUSSION

Postpartum mothers should have immediately mobilised early because of early mobilization will help proper blood flow which also ultimately affect on the downsizing of the uterus, lochia expenditure, stitching the wound healing process as well as the first elimination in the postpartum mother. But it also can reduce the incidence of complications of the bladder, constipation, puerperal venous thrombosis, pulmonary embolism, bowel and bladder function better [9]. Early mobilization is affected by factors, among others: the general state of the mother, perception, motivation, fatigue, fear, and other types of labour.

Maternal postpartum early mobilization provides many benefits one of which prevent complications of the bladder, one of the things that can trigger postpartum mothers too soon mobilization is the motivation of the midwife and the family to help do. This is evident from the results of research in hospital which showed that 67.44% of postpartum mothers who did early mobilization. But there is also a postpartum mother who understand the benefits of early mobilization but did not do so because of the fearful pain in the perineum stitches and fatigue as a result of childbirth.

Usually at 2 hours post-partum, mother has been able to get out of bed and perform activities as usual. Mobilization carried out in stages starting from the sloping to the right or to the left, sit and walk. Based on post-partum care standard by WHO that within 2 hours postpartum, midwives should provide education in the mother to begin to mobilize gradually. The government's policy has been made, if any postpartum mothers who didn't early mobilization, the role of midwives in providing an explanation must be improved, in order to reduce the risk of others, because not mobilize.

In the first 6 hours post partum, the patient should be able to urinate. The longer urine retained in the bladder can lead to difficulties in urinary organs, for example infections. Emptying the bladder minimize the risk of problems such as bleeding or infection of the uterus venue change [3]. Things that can affect the urinary elimination expenditure that position, perineal wound pain, childbirth, early mobilization, fluid intake, muscle tone and anesthesia.

Based on the results of research and theory above it can be concluded that urinary elimination first post partum mothers in Surabaya Muhammadiyah Hospital is normal. This is due to post partum mothers awareness about the consequences of urine were arrested, also due to the motivation of midwives and family to do so early mobilization can help smooth expenditure urinary elimination first.

In the treatment of postpartum mothers need to be done early mobilization (early ambulation) is less than 4 hours after delivery, because of early mobilization can restore pelvic muscles and back to normal. Mum will feel stronger, and this causes stomach muscles to be strong, so that reduce back pain [12]. Within the first 6 hours postpartum, the patient should be able to urinate. The longer urine retained in the bladder can lead to difficulties in urinary organs, such as an infection. A smooth blood circulation will accelerate recovery and reduce suffering constipation haemorrhoid for fear of

defecation as well as many fewer complaints about the urinary system, by early mobilization as soon as possible to help smooth micturition and defecation can overcome [5,10].

As health workers, especially midwives should provide education from an early age about the importance of early mobilization for postpartum mothers. These services can be given during antenatal care during labour and after childbirth. From the research and put forward the theory that there is conformity so that it can say that the postpartum mothers who do well early mobilization can indirectly help expedite the urinary elimination first postpartum mothers.

Many factors affect the volume, quality of the urine and the client's ability to urinate. One of which is the muscle tone. Muscle tone which has an important role in helping the process of urination are the bladder, muscles of the abdomen, and pelvis. These three things are very important role in controlling contraction of urine. ⁽¹¹⁾ Early mobilizations start from the simple movement, as like right oblique, left oblique, sit and walk, so as to stimulate muscle movement of the abdomen and pelvis, because of these factors the speed of a mother's ability to mobilize early will accelerate the ability eliminisai urine.

The strength of this study is the study sample were mothers who give birth normally, so that the bias due to post sc wound pain can be avoided. he weakness of this study is the small sample number.

CONCLUSION

Most of the mothers postpartum've done as many as 29 early mobilization post partum mothers, and the first normal urinary elimination (≤ 6 hours post partum). There is a relationship early mobilization with urinary elimination first post partum mothers. From the above results the researchers have a suggestion for Further Research Expected to add and develop knowledge in the field of health so that it can be used as an advanced research related to early mobilization with a first urinary elimination postpartum mothers

As a profession that is closest to the people, especially women and children should bear the midwives to early to provide education on the importance of early mobilization after childbirth. This information can be provided since the late trimester of pregnancy, especially in primigravida. For health agencies can make a SOP (Standart Operating Procedures) for a midwife working in order to teach the mother post partum to mobilize early because it can help smooth the elimination of urine, thereby reducing the incidence of bladder infections.

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ICASH-A33

**COMPARISON TRANSCUTANEOUS ELECTRICAL NERVE
STIMULATION KINESIO TAPING AND DECREASING TO SCALE
BACK PAIN IN PREGNANT WOMEN UNDER THIRD TRIMESTER IN
PUBLIC HEALTH DISTRICT JUWIRING KLATEN, INDONESIA**

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ABSTRACT

Background: *The changes of soft tissues and connective buffer that able to decrease elasticity and flexibility of muscles can cause low back pain in the third trimester of pregnancy. Dissemination percentage of pregnancy low back pain at first trimester (16.7%), second trimester (31.3%), and third trimester (53%). It can cause long term back pain and increase the trend of back pain in post-partum and chronic back pain that can be more difficult to be cured, if the back pain is not handled well immediately. Management of low back pain can be done both by pharmacologically and non-pharmacologically.*

Aims: *The present study aimed to compare the efficacy between transcutaneous electrical nerve stimulation (TENS) and Kinesio taping to the decreasing of low back pain on third trimester pregnant women in Public Health District Juwiring Klaten, Indonesia.*

Methods: *This research is a quasi-experimental research with non-equivalent design and pretest and posttest control group design. There were 18 postpartum, selected by purposive sampling method, and divided into 2 groups equally – intellect TENS and Kinesio taping “Spol Kinematics Tex” group. The therapy was done for 6 times (twice a week). The pain was measured by NRS scale. Data was then analyzed by Wilcoxon and Mann-Whitney test to find the mean differences.*

Result: *This research highlight that effectiveness of interact TENS to decrease low back pain on third trimester pregnant women then the application of Kinesio taping therapy (p value = 0,007)*

Conclusion: *Transcutaneous Electrical Nerve Stimulation is more efficient to reduce low back pain scale in third-trimester of pregnancy compared to Kinesio taping. This present study suggests a promotion of ergonomics in the form of counseling and poster display to the public, especially pregnant women to reduce low back pain patient. Further research with a larger number of subjects with pure experiment is necessary to avoid the subjectivity factor measurements using a pain scale plasma levels of endorphins.*

Keywords: *TENS, intellect TENS, Kinesio taping, “Spol Kinematics Tex”, low back pain*

INTRODUCTION

Approximately 50 to 70% of pregnancy mother experience low back pain. The pain itself is related to: The age of pregnancy [1]. In the third trimester, the uterus expand bigger and the weight gain up which compel added stretch and tiredness on the body especially on back [2]. The pain also caused by hormonal changing that cause the soft tissue of buffer and connector decrease its elasticity and flexibility [3]. Prevalence of low back pain in third trimester is 53% [4].

Low back pain can cause negative impact on the living quality of pregnancy mother, like disturb the daily activity [5], like walking (40%), impaired sleep quality (58%), until need to leave from the work (10%) [6], If it does not get the right handling, can cause long-term LBP, increase back pain after birth and chronic back pain [7].

Many treatment of non-pharmacological which can decrease the medical medical interventions while experiencing lower back pain [8]. They are pregnancy exercise, yoga, often rest, exercise, warm compresses, Kinesio taping, massage, acupuncture, transcutaneous electrical nerve stimulation (TENS), aromatherapy, relaxation, and herbs. Some medications such as acetaminophen is also useful to decrease the number of LBP patient [6].

TENS therapy has proven to reduce various types of pain within 15-30 minutes. TENS is able to activate both large and small-diameter nerve that will deliver a variety of sensory information to the central nervous [9]. A research using 79 subject on third trimester showed that TENS with exercise is more effective and safety to decrease LBP on pregnancy [10].

Kinesio taping is good to increase range of motion, supporting joint function, activate the lymphatic system and endogenous analgesic system, improve microcirculation and the effects of muscle function. Kinesio taping relieved low back pain after the use of 2 to 3 days. Kinesio taping experiencing the peak effect after 24 hours of use and decreases its function after 4 days [11].

The number of pregnant women in Central Java province is 613.243 people [12], while the number of pregnant women in Klaten is 18.557 people [13], In Juwiring, there are 486 people of pregnant and 85 of 156 people of pregnant on the third trimester experience LBP. Based on the interview at Juwiring Public Health, 6 from 10 pregnancy mother on the third trimester had to experience LBP. The technique to reduce LBP there are posture correction, kinesio taping, and TENS. Based on the research before, the better way to know about electrotherapy deeper is using TENS [3]. Based on the background and issues above, the researchers wanted to investigate about the comparison between TENS and Kinesio taping on reducing the scale of low back pain in third-trimester of pregnancy at Juwiring Public Health, Klaten.

METHOD

This research is used Quasi-Experimental study design which is non-equivalent pretest and posttest control group design. Conducted at December, 25th 2015 until January, 30th 2016 at Juwiring Public Health, Klaten Yogyakarta, Indonesia. The sample of this research is third-trimester pregnant in Juwiring Public Health Klaten who experience low back pain with functional disorders daily, has no history of surgery in the spinal area, at least two times of Antenatal care, has not received therapy TENS or Kinesio taping is included. Mother who has the sensibility of the skin, there is a history heart disease and preeclampsia, wound lower back area, receiving analgesic drugs or inflammation and got physiotherapy treatment within the previous ten days is excluded. Subjects who did not obey the order declared null and void or drop out. Technique sampling which used in this research is Pocock formula [14], using sample from Mo-an, et-al [15], that are 9 people in each group and to anticipate dropping out, they added by 11 participant.

Data was taken at Juwiring public health, the subject is divided into 2 groups (TENS group and Kinesio taping group) and therapy is done for three weeks (twice in a week). The researcher using interview to and NRS to measure the intensity and quality of low back pain, the data was taken on pre and post therapy. With portable TENS which have two electrodes. Electrodes were attached to the skin of lower back and a distance of each electrode is 5cm, in this study used 120 Hz frequency and

100 microseconds of therapy. The skin should be clean and free of grease, lotion and cream, remove any metals in the area of therapy and do not stimulate the area directly.

Kinesio installed by Mechanical Functional Correlation, the researcher and physiotherapy fixing Kinesio at low back spinal area. Kinesio was installed when participants were standing out, so the low back becomes maximal flexion. Kinesio were cut 20 cm and slice it, so that make a Y-shaped. The strain of Kinesio attachment is not allowed on the beginning and end, but on the middle of kinesio, it was strain approximate 15-25% or 1-2 inches. This is use to stabilize the lumbo sacral ligament. Kinesio be replaced every three days by researcher or physiotherapy.

This research has done using NRS validity which indicates $r = 90$. NRS pain scale indicates the reliability of more than 0.95 [16] and test results Cohen's kappa for instruments NRS 0.86 [17]. Researcher used non-parametric test, and saphiro-test. The result shows that the data is not normal distribution, so that the researcher used Wilcoxon test to compare the average number of pregnancy mother with LBP and pregnancy mother without LBP. Furthermore, the researcher used Mann-Whitney test to compare after getting TENS treatment and Kinesio Taping. The researcher work together with physiotherapy in collecting the data and giving intervention on both control group for three weeks. This research has been permit from the ethic committee of STIKES 'Aisyiah Yogyakarta (now University Aisyiyah Yogyakarta). In addition to the ethical principles of research, researchers also made an informed consent given to the patient before the study has done and the researchers explain fully this study such as side effects or advantages.

RESULTS

The age subject between 20-35 years old. The most subject with 20-25 years old is 66.7%. All participant experienced low back pain. Pain duration with sub-acute category is 13 people (72.2%). Low back pain cause bending 11.1%, standing 16.7%, too long sitting 66.7%, not clear 5.6%. To reduce the pain by rubbing oil 33.3% and take a rest 66.7%.

Low back pain levels of subjects before and after the therapy group and the group Kinesio taping TENS:

- 1) Levels of low back pain before and after *TENS* therapy

Table 4.2 Distribution of subject level of back pain before and after TENS therapy (N=9)

Pain levels	Before						After					
	T 1	T 2	T 3	T 4	T 5	T 6	T 1	T 2	T 3	T 4	T 5	T 6
None	0	0	0	0	0	0	0	0	0	0	0	0
Low	0	0	0	0	2	7	0	0	0	2	7	9
Moderate	1	1	7	9	7	2	1	7	9	7	2	0
Severe	8	8	2	0	0	0	8	2	2	0	0	0

- 2) Levels of low back pain before and after *kinesio taping*

Table 4.3 Distribution of subject level of back pain before and after kinesio taping (N=9).

Levels of Pain	Before						After					
	T 1	T 2	T 3	T 4	T 5	T 6	T 1	T 2	T 3	T 4	T 5	T 6
None	0	0	0	0	0	0	0	0	0	0	0	0
Low	0	0	0	0	0	6	0	0	0	1	4	3

Moderate	1	2	4	9	9	3	2	4	7	8	5	6
Severe	8	7	5	0	0	0	7	5	2	0	0	0

Researcher used the Wilcoxon test (for normality test results are not normal distribution data) indicate that the therapeutic P_{value} from first sample to sixth is <0.05 which indicate no differences decrease lower back pain scale before and after therapy TENS in the third trimester pregnancy.

Researcher used the Wilcoxon test, which the P_{value} of therapy 1 is 0,157. There was no difference in scaling back low back pain before and after treatment. In the 2nd treatment of Kinesio Taping and the 6th therapy found the value of $p < 0.05$, so there was differences decrease low back pain scale before and after therapy but it was not significant in difference.

Researcher used the Mann-Whitney test, with this statistical test, showed Z-score value of -2.706 and P_{value} of 0.007. Based on these results it can be concluded that there was any differences decrease low back pain scale between TENS therapy and Kinesio taping.

DISCUSSION

The results showed all low back pain relief because it comes from the non-receptor skin layer cutaneous and sub-cutaneous, pain originate are usually easy to be allocated and defined. A delta receptor has the characteristics of pain dissipates, myelinated, the sensation of pain is sharp, precise and local sensation, pain threshold is relatively similar for everyone [18].

The category of sensitive subject before TENS therapy and Kinesio taping are in severe pain. This is in line with research carried out by the union of a neurologist throughout Indonesia (PERDOSSI) that was found 28.13% of back pain sufferers with an average value of pain are in moderate and severe pain [19]. Participant of this study is primigravid because there was usually have an excellent abdominal muscle because the muscle has never experienced a previous stretch [7].

The result was no significant difference was found in the fetal heartbeat [20]. Kvorning et al. (2004) in his study of low back pain in pregnancy with the results of TENS does not cause adverse effects there is a pregnant woman. There are no effects on the application of TENS for mothers and newborns [21].

The difference in rates of low back pain before and after TENS therapy at third-trimester of pregnancy

TENS group Statistical test results showed the P_{value} of the treatment 1st to 6th is <0.05 indicating no differences lower back pain scale before and after therapy TENS in third-trimester pregnant women. These results are consistent with research Keskin et al. [10] TENS is more efficient and safe for lower back pain in pregnancy.

TENS applied impulse is low (<10 Hz) the production of endorphins as a natural pain geared toward By the resulting reduction in pain can be slow but can reduce pain which lasted for several hours. TENS at high impulse (> 50 Hz) 'gates' pain will be closed, the effect of pain will soon subside, but not so long ago [22].

The difference in rates of low back pain before and after treatment at the Kinesio Taping third trimester of pregnancy.

Statistical analysis showed the p value in the treatment one is 0,157, so there is no difference in lower back pain scale before and after therapy.

Finding of Kinesio taping reduces low back pain is consistent with the results Paoloni et al [23], which observed the decrease in pain, as measured by VAS, after four weeks of treatment with

Kinesio taping. Although the mechanism of Kinesio taping is not clear yet, the notion that Kinesio taping apply the pressure on the skin and external loads that can stimulate the mechanoreceptors skin (myelinated nerve fibres) can thus inhibit the transmission of pain by the gate control theory [24].

The difference in rates of low back pain third trimester of pregnancy between TENS therapy and Kinesio taping

Statistical test results showed the p value of 0.007 for the $P_{value} < 0.05$ it means there are differences decrease lower back pain scale between the TENS and Kinesio taping. These results concluded that both treatments in the average value of a pain scale that is different, but TENS produces pain level lower than in the treatment of Kinesio taping it means that TENS is more effective to scale down his low back pain third-trimester of pregnancy compared with Kinesio taping.

In this study impulses of TENS used is 120 Hz then the pain will be closed through the nerves in the spinal cord are transmitted to the brain to produce natural endorphins that reduce pain "gate control Theory " but the effect of pain will soon subside, but not so long. The use of TENS in a period of more than two weeks will be more meaningful than when used in a short time.

The advantage of using TENS is that unlike eliminate pain with medication is not addictive, does not cause drowsiness or nausea, and can be done at any time as needed. However, the use of TENS therapy is now generally impractical because it requires specialize skills and knowledge to adapt existing programs on TENS therapy tool with complaints and the type of treatment desired. Consequently, tool TENS therapy is useful in medical rehabilitation and physiotherapy clinics.

The limitations of this research are the subjectivity factor, collecting data on the intensity of pain. However, it has been sought as much as possible to get good results by asking for help from others (Midwives, Physiotherapy) to perform measurements.

CONCLUSIONS AND RECOMMENDATIONS

Transcutaneous Electrical Nerve Stimulation is more efficient to reduce low back pain scale in third-trimester of pregnancy compared to Kinesio taping. This present study suggests a promotion of ergonomics in the form of counseling and poster display to the public, especially pregnant women to reduce low back pain patient. Further research with a larger number of subjects with pure experiment is necessary to avoid the subjectivity factor measurements using a pain scale plasma levels of endorphins.

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ICASH-A34

**RELATIONSHIP OF EDUCATION, FAMILY INCOME, COMPLIANCE
AND PROCEDURE CONSUMPTION OF IRON TABLET TO
ANEMIA AMONG PREGNANT WOMEN**

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ABSTRACT

Background: In Indonesia, the contribution of anemia towards the maternal mortality is estimated to reach 10% up to 20%. Anemia may know as an initiating cause of various problems of infant and maternal mortality. Many ways have been done to overcome the case of anemia, but there are still so many pregnant women who suffer from anemia.

Aims: This study aimed to identify the relationship of education level, family income, compliance and procedure of iron tablet consumption with anemia in pregnant woman at Midwifery Primary Care (MPC), Pakem, Sleman, Yogyakarta.

Methods: This was an observational analytic study with cross sectional design. The samples of this study were 39 pregnant mothers in MPC, who met the criteria inclusion and exclusion. The data was analyzed by chi-square test.

Results: There were relationships between anemia and family income (p value = 0.042), compliance (p value = 0.017) and procedure of Iron tablet consumption (p value = 0.024). There was no relationship found between anemia on pregnant woman with education level (p value = 0.172).

Conclusions: The research above indicates anemia in pregnancy is not caused by a single factor and should be treated as a matter of various causes. As well as for researchers next urged to conduct further research on the nutritional intake of pregnant women and infectious diseases to determine the factors that are directly related to the incidence of anemia among pregnant women.

Keywords: Anemia in pregnancy, education level, family income, compliance and procedure of iron tablet consumption

INTRODUCTION

Based on the Indonesian Demographic and Health Survey (IDHS) In 2012, maternal mortality rate in Indonesia reached 359 per 100,000 live Nativity. The MMR in Indonesia is the highest when compared to other ASEAN countries [1]. The World Health Organization (WHO) estimates that 35-37% of pregnant women in Developing Countries and 18% of pregnant women in developed countries are anemic. However, many of them have suffered from anemia at the time of conception Early [2].

Although it does not rank first, anemia contributes to death in Indonesia estimated at 10% to 12% [3]. Anemia in pregnancy is a national issue because it reflects the value of socio-economic welfare of society. Anemia is considered a severe public health problem today, it is defined by the World Health Organization (2001) [4] as "a condition in which the blood's hemoglobin concentration is abnormally low as a result of the lack of one or more essential nutrients, any that is the origin of

this lack." Based on the Health Profile of Indonesia in 2010 the prevalence of anemia among pregnant women of 24.5%. This situation indicates that anemia is a public health problem.

Low hemoglobin levels can cause IUGR, abortion, the length of time of confinement for less thrust uterus, postpartum hemorrhage and vulnerable inbesiksi [5]. Oral or parenteral iron therapy should aim at replenishing body iron deficits. Iron deficiency in pregnancy has been defined by the National Academy of Sciences Panel on nutrition and pregnancy as ferritin levels lower than 12 mg per Ml [6]. Ferritin levels are considered the gold standard for the diagnosis of iron-deficiency anemia in pregnancy [7]. Based on the research results of Yogyakarta Special Region Health Department (2013) the incidence of anemia among pregnant women is still high at around 15-39% [8].

Research conducted by Dwi Astuti (2016) [9] showed the incidence of anemia among pregnant women was significantly related to the mother's education and compliance to consume iron tablets. Education is also one of the factors that influence the formation of behaviors that affect adherence and compliance with the consumption of iron tablets do Ante Natal Care (ANC). Family income is very influential in purchasing power, and use eats every day.

Based on data from the Health Office Yogyakarta (2013) [10] in Pakem 18.84% of pregnant women are anemic visit scope K1 93.12% and K4 91.28%. Results of a preliminary study conducted in Community Health Centers Pakem are 9 Midwifery Primary Care (MPC). Where MPC with the visit of the highest maternal which is located in MPC F, The number of visits to pregnant women in MPC F 2015 is 417 visits with an average of 35 visits pregnant women each month. While the number of visits to expectant mothers in another MPC of each month is still below 30 pregnant women.

Furthermore, preliminary study results obtained by the number of visits of pregnant women in March 2016 as many as 41 people. The amount collected from pregnant women who are not anemic is 23 people (56.09%), while as many as 18 who are anemic pregnant women (43.90%), with hemoglobin levels below 11 g / dl. It can be seen that almost half of pregnant women suffer from anemia in pregnancy.

Based on the above issues, from a variety of risk factors of anemia in pregnant women, researchers interested in conducting research on the relationship of education level, family income, compliance and procesure consumption of iron tablets with the incidence of anemia among pregnant women in MPC F Pakem Sleman, Yogyakarta. This is because of other factors has been widely studied and adapted to the characteristics of the respondents in the study site where the ANC pregnant women average more than a predetermined standard and no pregnant women who are experiencing infectious diseases.

METHODS

This was an observational analytic study with cross sectional design. To examine the dynamics of the correlation only between the risk factors with effects such as illness or a particular health status. Variables included risk factors and variables that include the effect observed while at the same time, so that research results are limited to the assessment of the relationship several factors studied [11].

This research was conducted in MPC F Watuadek located in the village, Pakem, Sleman, Yogyakarta. Time data collection takes place in June 2016. The population in this study were all pregnant women who had prenatal MPC F in June 2016 amounted to 48 pregnant women. In this study, the sampling technique used is total sampling the entire population who meet the inclusion and exclusion criteria used as samples and obtained 39 respondents.

Reasons take total sampling because according to Sugiyono (2007) [12] the number of the population less than 100 so that the entire population of the research sample everything. Criteria for inclusion in this study were pregnant women trimester II and III checkups in MPC F, Yogyakarta. While the exclusion criteria in the study are pregnant women who are being /has recently experienced bleeding and pregnant women who do not get the iron tablet.

Analysis of the data will be used univariate and bivariate. If the univariate analysis has been done, will be known the distribution of each variable, followed by bivariate analysis. The bivariate analysis conducted on two variables were related or correlated [11]. The data obtained from the field was analyzed using Microsoft Excel for calculation. Chi Square test performed using a significance level $\alpha = 0.05$ and Confident Interval (CI) of 95%. To determine the biological importance, in this study using a value Ratio Prevalence (RP).

RESULTS

The bivariate analysis was conducted to see the relationship between the independent variables consisting of education level, family income, compliance and the consumption of iron tablets with the dependent variable incidence of anemia among pregnant women.

1) Relationship Education Levels With The Incidence Of Anemia Among Pregnant Women

Table 1. Education Level Relationships with Genesis Anemia In Pregnant Women in MPC F

Education Level	Genesis of Anemia						P-value	CI 95%	RP
	Anemia		No Anemia		Total				
	n	%	n	%	n	%			
Low	9	23,1	5	12,8	14	35,9	0,172	0,930-3,429	1,786
High	9	23,1	16	41,0	25	64,1			
Total	18	46,2	21	53,8	39	100			

As in Table 1 the results obtained Chi Square test p value > 0.05 is 0.172, with a 95% CI 0.930 to 3.429 (includes figure 1) so that it can be concluded that there is no relationship between level of education and the incidence of anemia among pregnant women in MPC F. Rated RP obtained by the 1,786, because the value of the 95% CI includes numbers 1 it can be concluded that the low level of education "is not necessarily" a risk factor for anemia in pregnant women.

2) Family Income Relationship With The Incidence Of Anemia Among Pregnant Women

Table 2. Relationship with Genesis Family Income Anemia In Pregnant Women in MPC F

The level of income	Genesis of Anemia						p-value	CI 95%	RP
	Anemia		No Anemia		Total				
	n	%	n	%	n	%			
Less Income	10	25,6	4	10,3	14	35,9	0,042	1,153-4,321	2,232
Enough Income	8	20,5	17	43,6	25	64,1			
Total	18	46,2	21	53,8	39	100			

As in Table 2 the analysis results obtained p -value $< \alpha$ (0.05) is 0.042 with confidence interval range is from 1.153 to 4.32 (does not include the number 1), then H_0 is rejected, so it can be concluded that there is a relationship between family income levels with the incidence of anemia in pregnant women in MPC F Pakem Sleman, Yogyakarta.

3) Iron Tablets Consumption Compliance Relationship With The Incidence Of Anemia Among Pregnant Women

Table 3. Relationships Compliance Consumption Of Iron Tablets With Anemia In Pregnant Women In MPC F

Compliance consumption of iron tablets	Genesis of Anemia						<i>p</i> -value	CI 95%	RP
	Anemia		No Anemia		Total				
	n	%	n	%	n	%			
Not obey	10	25,6	3	7,7	13	33,3	0,017	1,307-4,784	2,500
Obey	8	20,5	18	46,2	26	66,7			
Total	18	46,2	21	53,8	39	100			

Chi Square test results are shown in Table 3 indicates a significance value of 0.017, which means p -value < 0.05 with 95% CI values do not include the number 1 is between 1.307 to 4.784, then H_0 is rejected. It can be concluded that there is a relationship between the consumption of iron tablet compliance with the incidence of anemia among pregnant women in MPC F.

4) Relationships of Procedure Consuming Iron Tablet With Incidence Of Anemia Among Pregnant Women

Table 4. Procedure Consumption Method relationship with Genesis Tablet Iron Anemia In Pregnant Women in MPC F

Procedure Consuming Iron Tablet	Genesis of Anemia						<i>p</i> -value	CI 95%	RP
	Anemia		No Anemia		Total				
	n	%	n	%	n	%			
False	15	38,5	9	23,1	24	61,5	0,024	1,084-9,006	3,125
Correct	3	7,7	12	30,8	15	38,5			
Total	18	46,2	21	53,8	39	100			

As in Table 4 the results of a Chi-Square test of procedure consuming iron tablet relationship with the incidence of anemia in pregnant women. The significant value that was obtained was 0.024 (< 0.05) with CI values between 1.084 to 9.006 (does not include the 1) so that it can be concluded that there is a relationship between procedure consuming iron tablet with the incidence of anemia among pregnant women in MPC F. Value ratio prevalence obtained is equal to 3.125 ($RP \Rightarrow 1$) means that pregnant women are one of the iron tablet consumption 3,125 times greater risk for pregnant women is anemic compared to the right to consume iron tablets.

DISCUSSION

Educational attainment affects the changes in attitudes and behavior of healthy living. The level of higher education will facilitate the person or people to absorb information and implement it in their behavior and everyday lifestyle, particularly regarding health and nutrition. But someone who just graduated from elementary school is not necessarily less able to prepare food that meets nutritional requirements than other people are better educated. Due to low education even if the person is diligent in listening to the countryside and have always participated in nutrition counseling is not likely to be a better nutritional knowledge [13].

Values prevalence ratio (PR) obtained by the means 2,232 pregnant women whose income is less than (<Rp1.338.000) risk 2,232 times more likely to have anemia compared with pregnant women enough family income level. Income is a factor that most determines the quantity and quality of the food so that there is a close relationship between income nutrition consumption [14]. Revenues less purchasing power can affect pregnant mothers to buy the food needed during pregnancy. This resulted in less food intake and increased the risk of anemia during pregnancy [15]. Governments need to prioritize socio-economic status of the poorest populations in the planning of public policy and the need for more efficient prenatal care [16].

The major cause of anemia may be a diet low in meat, fish, or poultry. Heme iron from hemoglobin and myoglobin found in meat, fish, and poultry are effectively absorbed by receptors in the gut, whereas the bioavailability of non-heme iron from plants is low [17]. In determining the socio-economic status of the family, the only parameter used in this study was the monthly income of parents. This was a relatively harsh assessment, as other parameters were not included, for example, the total number of the members of the family, or any other earning family members besides parents. However, using only this parameter, the difference in the monthly family incomes between cases and controls was statistically significant [18].

Values obtained prevalence ratio of 2.5, and it appears that the RP value of more than 1, which means pregnant women who do not comply risk taking iron tablets anemia 2,5 times greater than pregnant women who dutifully consume iron tablets. Consumption of iron tablet is done routinely during pregnancy provides a better chance to avoid anemia in women who are pregnant [19]. Much needed compliance and awareness of pregnant women consume iron tablet that though the side effects of these drugs that sometimes cause nausea, vomiting, diarrhea and sometimes can cause constipation (constipation) [20].

Many factors cause iron intake are inadequate e.g., food intake is less due to the lack of economy, the low level of absorption of Fe in the intestine due to a lack of knowledge of mothers on the procedure for taking iron tablets, so when taking iron tablets unwitting mother also consume food or drinks that inhibit absorption iron such as tea, milk, and coffee [21]. Therefore women should eat iron tablets at night for the absorption process better. Needs to be disseminated to pregnant women consuming a iron table and proper way to reduce the side effects. Drink after a meal or before bedtime, and it would be better if you drink accompanied eat fruits such as bananas, papayas, oranges and others [20].

CONCLUSION AND RECOMMENDATION

The research above indicates anemia in pregnancy is not caused by a single factor and should be treated as a matter of various causes. So expect health workers in MPC F further improve the prevention programs anemia in pregnant women and provide information on the importance of compliance and how pregnant women consume iron tablet to reduce the incidence of anemia.

Pregnant women should routinely consume iron tablet at night using water, or by drinking Vitamin C. Also pregnant women also have to be smart in choosing the food that will be consumed, namely by increasing the intake of foods rich in iron such as meat, eggs, vegetables, and fruits.

As well as for researchers next urged to conduct further research on the nutritional intake of pregnant women and infectious diseases to determine the factors that are directly related to the incidence of anemia among pregnant women. There is also the need for the promotion of insecticide-treated bed nets (ITNs) and interventions such as mass media campaigns peer /outreach education, life skill programs to educate women on the advantages of early ANC booking and compliance with the use of prescribed medications.

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ICASH-A35

**RELATIONSHIP BETWEEN MOTHER'S PARTICIPATION IN
SUPPORT GROUPS WITH EXCLUSIVE BREASTFEEDING
PRACTICE IN PUSKESMAS UMBUL HARJO I YOGYAKARTA,
INDONESIA**

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ABSTRACT

Background: By the Indonesian Demographic and Health Survey (IDHS) in 2012, infant mortality rate in Indonesia is still quite high at 32 deaths per 1,000 live births. The majority of infant deaths occur in the neonatal period. The main capital in achieving quality health starts since the beginning with breastfeeding without any additional food in this case of exclusive breastfeeding. Many mothers do not provide exclusive breastfeed due to social factors (maternal employment, social, cultural, supportfamily).

Aims: This paper explains the relationship between the rate of participation in maternal supporting group with the success of exclusive breastfeeding program in Community Health Centers Umbulharjo I Yogyakarta in 2014.

Methods: This study employed correlation analytical survey with cross sectional approach. The samples were 30 mothers who having a baby age 6 to 12 months, and participated in a maternal supporting group.

Results: Of the 30 respondents, 26 (86.7%) of respondents successfully breastfeed exclusive. Of which 23 respondents (76.7%) with a participation rate of mothers in support groups with good category, 22 (73.3%) were successful exclusive breastfeeding and 1 (3.3%) of respondents who did not give exclusive breastfeeding, in the medium category 3 respondents (10.0%), 2 respondents (6,7%) were successful exclusive breastfeeding, and 1 (3.3%) of respondents who did not give exclusive breastfeeding, and low category 4 respondents (%13.3), 2 respondents (6,7%) were successful exclusive breastfeeding and 2 (6.7%) of respondents who did not give exclusive breastfeeding. The participation rate of mothers in maternal supporting group affects the success of exclusive breastfeeding with the P value = 0.026.

Conclusion: There was a significant relationship between the rate of participation of mothers in maternal supporting group success exclusive breastfeeding mothers. The social relations become very important to increase the exclusive breastfeeding through mother support groups.

Keywords: Participation rate, Maternal supporting group, Exclusive Breastfeeding

INTRODUCTION

Quality human capital base formation begins in infancy in the womb, with the provision of mother's milk (ASI) from an early age, especially in exclusive breastfeeding. Past two years of life is a period critical to lay the foundations for growth, development and health optimal in the long run. Hence it is very important to ensure that children aged 0-2 years to get optimal nutrition [1].

WHO and UNICEF (2006) have recommended that breast milk is given exclusively during the first six months of a baby's life, at the age of 6 months starting complementary feeding by

qualified and administration ASI passed on to infants aged two years or more. The infant mortality rate in Indonesia based on the 2012 Indonesia Demographic and Health Survey (IDHS) is still high at 32 deaths per 1,000 live births, the majority of infant deaths occur in the period neonates [2].

Exclusive breastfeeding is one program that is quite difficult developed as it relates to various social problems in community. In Yogyakarta awareness to breast feed exclusively on the baby is still low when compared to Bantul and Kulon Progo. Data from Yogyakarta Health Office in 2012 coverage of exclusive breastfeeding in Bantul has reached 63.5%, 58% Kulon Progo, Gunung Kidul 44.8%, Sleman 42.5%. While in the city of Yogyakarta itself coverage exclusivebreastfeeding breastfeeding only reached 46.4% [2]. Not yet achieved the level of success of exclusive breastfeeding is influenced by maternal education level, working mothers, social, cultural, family support, maternal health, parity, and the role of health workers in this regard through mother-support group with a participation rate of mothers in the mother support group, mother breastfeeding will be quiet, safe and comfortable for the support of around, so that the continuity of a mother to breastfeed her child can maintained until the child can eat extra food [3].

Results from Polriani (2010) shows that there is a relationship which between the positive role of mother support group with exclusive breastfeeding [4,14]. While research conducted by Triastra (2009) show that there is a relationship mother support group significantly concerning the behavior of mothers in exclusive breastfeeding, shown on the behavior of exclusive breastfeeding in the group hamlet set-up mother support group 17% (39% on the prior program and 56% in after the program) compared with none hamlet set-up mother support group at 8.8% [5].

From the preliminary study and information from health professionals Health Centers Umbulharjo achievement data I obtained exclusive breastfeeding in the Region Health Centers Umbulharjo I in 2012 and 39.3% in 2013 approximately 66.05% despite the increase, the achievement of exclusive breastfeeding is still below the national target set of 80%. Based on the interviews 2 April with eight nursing mothers showed that two mothers exclusive breastfeeding, 6 mothers said not to breastfeed Exclusive with reason, two mothers say worked as a hunting mill, 2 said that the milk does not come out since the birth of the baby, two people said felt Her milk less. Some even say since the age of 4 months infants have been given foods such as bananas and porridge (Puskesmas Profile Umbulharjo I, 2014). Is there any relation participation rate of mothers in mother support group with success of exclusive breastfeeding in Puskesmas Umbulharjo I Yogyakarta in 2014? ". Objective to determine the relationship of mothers in the participation rate mother support group with the success of exclusive breastfeeding in community health centers Umbulharjo I Yogyakarta 2014.

METHODS

Research using the method of collecting analytic approach Cross Sectional approach. A total of 30 respondents, mothers who have babies > 6-12 months. The sampling technique using total sampling as many as 30 respondents. The instrument used in this study was a questionnaire. Analysis of the data used to the statistical test Chi-square.

This research was conducted in Puskesmas Umbulharjo I Yogyakarta. Research using the method of collecting analytic approach Cross Sectional approach. A total of 30 respondents, mothers who have babies > 6-12 months. The sampling technique using total sampling as many as 30 respondents. The sample in this study using inclusion and exclusion criteria as follows: Inclusion criteria: Mothers with babies aged > 6 months -12 months Puskesmas Umbulharjo I Yogyakarta, Mothers who have a health status who have no contraindications to giving breastfeeding, and Willing to become respondents. Exclusion criteria were as follows: Mothers with babies aged <6 months, Mothers who have babies with labiopalatokisis.

RESULTS

This research was conducted in RW 4 and RW 12 in Village Giwangan health centers Umbulharjo I Yogyakarta obtained results with respondents were 30 mothers who have babies > 6-12 months.

Table 1. The frequency distribution of respondents by characteristics

Respondents' characteristics	Frequency	%
<i>Education</i>		
Uncomplete secondary	11	36.6
Secondary	15	50.0
Higher education	4	13.3
Total	30	100.0
<i>Age</i>		
< 25	5	16.7
25-35	21	70.0
>35	4	13.3
Total	30	100.0
<i>Parity</i>		
1	6	20.0
2	16	53.3
3	8	26.7
Total	30	100.0
<i>Occupation</i>		
Unemployed	20	66.6
Private sector	5	16.7
Self-employment	1	3.3
Factory worker	2	6.7
Government officer	2	6.7
Total	30	100.0

Based on table 1 shows that there is a tendency of education most most are high school respondents as many as 15 people (50%), the respondent's age most most are 25-35 years as many as 21 people (70%), the number of parity was 2 of 16 people (26.7%), the type of work the respondent most most are IRT / not working as many as 20 people (66.6%), and has The same tribe is the tribe of Java by 30 respondents (100%). all respondents come from the same tribe (Java) ie 30 respondents (100%).

Table 2. The level of participation in the mother support group

Level of participation in support group	Frequency	%
Good	23	76.7
Medium	3	10.0
Low	4	13.3
Total	30	100.0

According to the table 2. It can be seen that the participation rate of mothers in mother support group with a sample of 30 respondents most had levels of participation the good category is 23 respondents (76.7%) categories were 3 respondents (10.0%) and low category of 4 respondents (13.3%),

based on the questionnaire the participation rate was lowest for the number three aspects of the visit home together motivator if there are participants KP-mother who gave birth and number 13 on reading materials or books related to the theme before the discussion begins. The results measure the level of participation in the activities of mother support group (KP) is an ordinal scale, the assessment criteria are derived from responses to questionnaires with four possible answers' always, often, sometimes, never "to the criteria of good judgment, medium and low.

Assessment criteria: Participating good if the correct answer is 76% -100%, Participating medium if the correct answer is 56%-75% and Participating low if the correct answer is <56%.

Table 3. Exclusive breastfeeding

Exclusive breastfeeding	Frequency	%
Successfully	26	86.7
Not managed	4	13.3
Total	30	100.0

Based on Table 3. shows that exclusive breastfeeding is 30 respondents, most are successful exclusive breastfeeding is as many as 26 respondents (86.7%). And that did not work as much as Exclusive breastfeeding 4 respondents (13.3%). Based questionnaires are not successful exclusive breastfeeding in the aspect of number 8 on the granting of additional? food complementary foods before 6-month-old baby and number 9 on the provision of water when a later newborn continuation of breastfeeding for 6 months. The measurement results Exclusive breastfeeding is the nominal scale, the assessment criteria are derived from responses to questionnaires with two answer " Yes " and " NO " to the assessment criteria of successful and unsuccessful. Assessment criteria : Exclusive breastfeeding successful if answered correctly 100% and exclusive breastfeeding Not successful if answer is correct <100%

Table 4. Relations Participation rate in support groups with Exclusive breastfeeding success

Level of participation in support group	Successful breastfeeding		Unsuccessful breastfeeding		Total		p-value
	F	%	F	%	F	%	
Good	22	73.3	1	3.3	23	76.7	0,026
Medium	2	6.7	1	3.3	4	10.0	
Low	2	6.7	4	6.7	4	13.3	
Total	26	86.7	4	13.3	30	100.0	

Based on Table 4. The results indicate that the mother had a participation rate of mothers in the maternal supporting group with the good category that managed to give exclusive breastfeeding as much as 22 respondents (73.3%), whereas mothers who had a participation rate of mothers in maternal supporting group-good category that is not success exclusive breastfeeding as one respondent (3.3%), the level of partition of motherin maternal supporting group with the category of being a successful exclusive breastfeeding as much as 2 respondents (6.7%), while the level of participation in the mother support group with category which fail to give exclusive breastfeeding as one respondent (6.7%), and the level of participation in the maternal supporting group with low category of successful exclusive breastfeeding as much as 2 respondents (6.7%), while the level of participation in the –maternal supporting group low category are not able to give exclusive breastfeeding as much as 2 respondents (6.7%).

Based on the analysis there was a trend seen between levels of participation Mother in Maternal supporting group-high with the success of exclusive breastfeeding well with results as many

as 22 people (73.3%) who have a good level of participation with Exclusive breastfeeding success. Calculations with Chi Square has obtained h calculated $X^2 = 7,299 > X^2_{\text{tabel}}$, $df = 2 = 5.99$. P value = $0.026 < 0.05$, then H_0 is rejected and H_a accepted, so it is concluded that there is a relationship between levels mother's participation in the maternal maternal supporting group with the success of exclusive breastfeeding in Health Centers Umbulharjo I Yogyakarta. Based on the results it can be deduced that the higher the mother's level of participation in the maternal supporting group breastfeeding success Exclusive increasing.

Based on the analysis, there was a trend seen between the high level of participation of mothers in the support groups with the success of exclusive breastfeeding with result 22 respondents (73.3%) with a participation rate of mothers in support groups with good category were successful exclusive breastfeeding. Calculations with Chi Square has obtained h calculated $X^2 = 7,299 > X^2_{\text{tabel}}$, $df = 2 = 5.99$. P value = $0.026 < 0.05$, then H_0 is rejected and H_a accepted, It can be concluded there is a significant relationship between the level of Mother's participation in maternal supporting group with success of exclusive breastfeeding in Puskesmas Umbulharjo I Yogyakarta. Based on the results it can be deduced that The higher the participation rate of mothers in the support groups.

DISCUSSION

The level of participation in the mother support group Based on Table 2 shows that the participation rate of mother the maternal supporting group, mostly in the good category is 23 (76.7%), moderate category 3 respondents (10.0%) and low category of 4 respondents (13.3%), factors that affect the low participation rate among other things the meeting schedule KP-Mother together with working hours and parity with the number of children > 1 . Based on the characteristics of the respondents, the level of good participation tend to be at the level of high school education, participation being tended in the level of secondary education, in terms of age tend to respondents with categories Low participation were age 25-35 years, whereas parity is likely to the respondents who have a second child as well as respondents with job status i.e., house wife.

The results of this study indicate that the participation rate of mothers in good mother support group. However, from the fourth respondent participation levels low 2 respondents were not able to give exclusive breastfeeding and 2 among the successful exclusive breastfeeding This is according to research (Polriani 2010) entitled "The effectiveness of the role of Exclusive breastfeeding support group to mother" showed that there is a positive relationship between the role of maternal supporting group and Exclusive breastfeeding [4,14]. Here the mother will get various information directly on exclusive breastfeeding so it will be easier understood.

The results showed most of the rate of participation the maternal supporting group has a good level of participation contained in aspects implementation, but there are women who have this level of participation lacking in exclusive breastfeeding are the aspects of number 3 regarding home visits together motivator if there are participants maternal supporting group delivery (50%) and number 13 on the reading materials or books related to the theme before the discussion begins (45%). On mother's level of participation, participants maternal supporting group support each other and motivating in exclusive breastfeeding.

Each participant may submit questions or opinions to the motivator or other participants about experiences, ideas and information that is known and discussed together. If there are unanswered questions, the questions. The bags will be recorded in the book of questions that will be delivered or ask the builder maternal supporting group is midwived the region. Every three meetings, midwives in health centres as a coach region monitoring by visiting mother support group meetings with the aim

identify the progress already made, and discuss the difficulties faced and action plan. Then every 3 months coach region as a centres midwife meets regularly with participants mother support group to make participation in the mother support group more enhanced and exclusive breastfeeding, and discuss successes, difficulties, and learning that occurs during the carrying out of activities meetings and home visits. Additionally, midwife equips participants maternal supporting group with advanced knowledge and skills acquired from during follow-Maternal supporting group. So participation less than it should be and maternal motivation less will affect the role of Maternal supporting group as well.

Exclusive breastfeeding success Based on Table 3 shows that the success of exclusive breastfeeding. Exclusive breastfeeding is largely successful, as many as 26 respondents (86.7%), and just 4 respondents (13.3%) were not successful Exclusive breastfeeding exclusive. This is a concern for the coach Maternal supporting group that among mothers breastfeeding who joined the Maternal supporting group, there are still mothers not exclusive breastfeeding. Factors affecting Exclusive breastfeeding mothers did not succeed in the baby when the baby is born breast milk has not come out so that the baby is fed and formula the occurrence of misperceptions about exclusive breastfeeding. Also, some misconceptions that often disregard baby. For partly maternal nutrition, breastfeeding is an action that natural and instinctive, they think breastfeeding is not necessary to be learned. Mostly mothers are less aware of the importance of exclusive breastfeeding as the main meal infant. Relationships in the maternal supporting group Participation Rate mothers Success Exclusive breastfeeding Based on Table 4 shows no relationship between the level of participati on mother support group in the success of exclusive breastfeeding mother indicated on chi-squareX2 coefficient count = 7,299> X2table, df = 2 = 5.99. P value = 0.026<0.05, then Ho is rejected, and Ha accepted, so it is concluded that there is the relationship between the mother's level of participation in the Maternal supporting group with breastfeeding success Exclusive in Health Centers Umbulharjo I Yogyakarta.

This is consistent with the results of the study (Ingram *el al*, 2010) entitled "Effect of antenatal peer support on breastfeeding initiation" indicates that the peer support has experience breastfeeding or who are breastfeeding is effective in improving the initiation breastfeeding and support breastfeeding. Mother will be more flexible reveals the problems faced in breastfeeding compared to their peers with families [7,8,20].

The above description is relevant to the opinion of Notoatmojo (2010) stating that knowledge is influenced by several factors, including from the experience. Experience can be gained from own experience and others [9,13]. The experience gained can expand knowledge and raise the motivation of a person in breastfeeding Exclusive. Motivation less will affect the level of participation of mothers as well as the effect on motivation in exclusive breastfeeding.

CONCLUSIONS AND RECOMMENDATIONS

Mother participant level in maternal supporting group at 23 respondents and Exclusive breastfeeding success 26 responden (86.7%), It can be concluded there is a significant relationship between the level of Mother's participation in maternal supporting group with breastfeeding success Exclusive with P value = 0.026 <0.05.8

For obstetrics that can be used to developknowledge, especially about mother support group with Exclusive breastfeeding. Participants maternal supporting group hould be more active in activities mainly in the mother support groupdiscussion groups so they can add to the experience and insight regarding exclusive breastfeeding which is expected to increase Exclusive breastfeeding. For health workers, especially so when the center midwife maternal supporting group activities

participants were given a clearer explanation about Exclusive breastfeeding sense because there is still a participant wrong understand about exclusive breastfeeding.

For further research To be able to examine other factors that have not been discussed at. This research which may affect the success of exclusive breastfeeding

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ICASH-A36

**THE CORRELATION AMONG DURATION OF ORAL
CONTRACEPTION WITH THE INCIDENCE OF MELASMA IN
SUMBERWUDI, LAMONGAN, EAST JAVA, INDONESIA**

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ABSTRACT

Background: An increasing of estrogen in the body including consumption certain pills, excessive exposure to sunlight, or even by pregnancy, may cause various effects such as as melasma, brown pigmentation that can occur in women, appeared in certain organs

Aims: The objective was to analyse the relationship between duration of use of oral birth control pills combined with the occurrence of melasma.

Methods: This is an analytical research using cross-sectional approach involved 17 respondents who were selected by a purposive sampling technique. Inclusion criteria for this study was as acceptor oral pill combinations at least 30 days or have taken one blister. In this study, the research instrument used was an open questionnaire and observation. Data was then analysed by parametric statistic using fisher's exact.

Results: The results found the combined oral pill acceptors complained emergence of black spots on the face in a period of more than 2 years of use whereas previously unheard.

Conclusion: Based on the results, health workers in the provision of counselling to patients about the side effects of the combined oral pill black spots face (melasma). Thus, acceptors got enough for knowledge and able to cope with the occurrence of dark spots face (melasma).

Keywords: Combined oral pills; melisma, black spot, skin, oral birth control pills.

INTRODUCTION

The National Family Planning Program in Indonesia (Keluarga Berencana) has a significant contribution to the efforts to improve the quality of the population. One of the key messages in the National Strategic Plan for Making Pregnancy Safer (MPS) in Indonesia 2001-2010 is that every pregnancy should be a wanted pregnancy. The new paradigm of the National Family Planning program's vision is to realise a "Qualified Family 2015" [1,2]. Family planning became one of the success histories in the 20th century. Currently, almost 60% of couples of reproductive age use contraception throughout in the world and more than 200 million women worldwide have been taking birth control pills and the current amount of usage has reached 65-70 million people [3].

Based on data from Lamongan Public Health Office (2012), combined oral pills is the second option as many as 78837 people or 30.45% [4]. The content of esterogen and progesterone in the combination oral pills if during the use of excess hormone will cause melasma (dark spots on the face) [5].

In particular users of hormonal combined oral pills estrogen and progesterone contained therein if the excessive use will affect the anterior pituitary to produce MSH (*Melanin Stimulating Hormone*) in the amount of excessive and prolonged use will affect hyperpigmentation of the skin. If the skin disorder is allowed to continue could cause malignancy of the skin cells [6,7]. This abnormality can lead to complaints to change the appearance and aesthetics to psychosocial disorders [8].

The emergence of new chloasma will disappear gradually when the pill was informed and if not stopped may chloasma will never disappear altogether [9]. Prevention of the onset or increase the weight and recurrence of melasma are sun protection [10]. Patients are required to avoid direct exposure to ultraviolet rays, in particular between the hours of 9:00 to 15:00. We recommend that if you out of the house using a broad umbrella or hat [8]. In this research was to analyze the relationship between duration of use of oral birth control pills combined with the occurrence of melasma.

METHODS

This type of research is an analytic method with the cross-sectional approach. The population in this study is acceptors combined oral pill that consist of 42 people. The sampling technique is purposive sampling, to obtain a sample of 17 people who meet the inclusion criteria.

Inclusion criteria for this study were: acceptor oral pill combinations that are willing to be investigated. Acceptors using combined oral pill for at least 30 days or have take one blister, they are taken continuously. Combined oral pill acceptors which exposed with sunlight > 6 hours a day (9:00 to 15:00). Exclusion criteria in this study were combined oral pill acceptors for beauty like Diane, Yas, Yasmin. Combined oral pill acceptors under treatment and beauty care doctor. Combined oral pills and acceptor combination there is a family descent or experiencing melasma. In this study, the research instrument used was an open questionnaire and observation. Statistical tests used were Fisher's Exact test. The collected data was then analysed by automated analysis with Statistical Program Product and Service Solutions (SPSS).

RESULTS

The data includes the results of research duration of use combined oral pills, the incidence of melasma and relationship between duration of use of combined oral pills with the occurrence of melasma. Respondents in this study is use of combined oral pill acceptors that do not work or a housewife who had high school with a vulnerable age of 21 - 35 years old and have 1 - 2 children, for economic setatus respondents are middle income status.

1. Duration Of Combined Oral Pills

Table 1. Distribution Frequency long used of Respondents

No	Duration Of Combined Oral Pills	Frequency (<i>f</i>)	Prosentase (%)
1.	< 1 year	10	59
2.	> 1 year	7	41
	Amount	17	100

Based on table 1, explained that 59% of respondents who use combined oral pills with long usage <1 year and 41% of respondents using combined oral pills with long usage > 1 year.

2. Effects of melasma

Table 2. Distribution frequency occurrence of side effects of dark spots face (melasma).

No	Effects of melasma	Frequency (<i>f</i>)	Prosentase (%)
1.	Yes	7	41
2.	No	10	59
	Amount	17	100

Based on the table 2, explained that 59% of respondents did not experience any side effects facial black spots (melasma) and 41% of respondents experienced side effects facial black spots (melasma).

3. The relationship between duration of contraceptive use combined oral pill with the incidence of melasma.

Table 3. Cross-tabulation between duration of oral contraceptive use pill combination with the incidence of melasma

No	Duration of contraceptive use combined oral pill	Effects of melisma		Not occur of melasma		Amount	
		Σ	(%)	Σ	(%)	Σ	(%)
1.	< 1 year	0	0	10	59	10	59
2.	> 1 year	7	41	0	0	7	41
	Amount	7	41%	10	59%	17	100 %

From the table without fisher test it shows that more than 1 year use they experienced melasma.

From the analysis by researchers using SPSS 16.0 with *fisher's exact* test. *Fisher exact* test results obtained $p = 0.000$ where the value of $\alpha = 0.005$, $p < \alpha$ then H_0 rejected it means there is a relationship between duration of use combined oral pill with the occurrence of melasma.

DISCUSSION

The occurrence of melasma on the face of the combined oral pill acceptors due to the accumulation of the hormone esterogen in the body can lead to some form of melasma that was tailor to the scene. According to Soepardiman (2007) on clinical forms of melasma is divided in the form of Centro-facial covering the forehead, nose, cheeks middle or middle section, under the nose and chin, malar shape covering nose and cheeks and forms part lateral mandibular covering the mandible area [8]. According to Gilly Andrews (2009) which states that the appearance of the spots on the face to use combined oral pill started during the first period of 3 months of usage [11]. Meanwhile, according to Lily Soepardiman (2007), that the utilization of the contraceptive pill, melasma appears within one month to 2 years after starting the Pill [8].

And given oral pills can lead to stimulation more or less to these organs than androgen hormones produced before administration of oral pills. The occurrence of melasma on users of oral pill combinations requires a long time and depending on the levels of the hormone esterogen in the body and the oral pills combinations. In the buildup of esterogen hormones which exist in the body can cause a variety of influences that appear in certain organs in the body of one of melasma, but these sightings do not appear suddenly in a short period; it takes quite a long time. This is consistent with the statement of Hartanto (2004) on the use of long-term, the effects of estrogenic, androgenic of progesterone and oral pills have any effect on the organs and tissues of the certain body (skin, uterus, ovary, brain, breast, arteries, veins and so on others) [12].

The dark spots on the face (melasma) are freckles uneven light brown to dark brown that occur on the cheeks, forehead, the upper area of the lips, nose and chin. At respondents surveyed in this study was selected respondents who kind of suffered facial black spots (melasma) for the use of combination oral birth control pills which respondents wasn't exposed to sunlight >6 hours a day (9:00 to 3:00 p.m.). No offspring or family history suffered facial black spots (melasma), do not use cosmetics and certain drugs that can trigger melasma. Melasma usually arises from two primary cells of the epidermis (after creationist) is melanocytes, are found in the basal layer.

According to Anderson (2006), in melanocytes synthesised pigment granules called melanosomes. Melanosomes are containing cocoa bio-chroma called melanin. Through bumps Dendrik long, the melanosomes transferred to a creationist. Melanosomes hydrolyzed by the enzyme at different speeds. Creationist was determining the amount of melanin in the skin colour [6]. Melanin protects from the sun's effects are adverse. Instead, sunlight, drugs, hormones, especially esterogen and progesterone if the excessive use will affect the anterior pituitary to produce MSH (Melanin Stimulating Hormone) of the excess and affect hyperpigmentation of the skin. Melasma often occurs or is found in women.

Side effects facial black spots (melasma) due to the accumulation of the hormone esterogen in the body that can trigger the occurrence of black spots on the face (melasma). Many factors affect the incidence of melasma, but the respondents who experienced these circumstances claimed never sunbathe playing under the sun with a long time during the day, in their families experience no black spots on the face.

Limitations of this study is the number of samples in this study were 17 acceptors of combined oral pill because respondents who researched the respondents were included in the study inclusion criteria to avoid biased results. This is inversely proportional to the theory put forward by Sugiyono (2010) that the minimum sample study is 30 samples [13]. Therefore, when this sample who met the inclusion criteria more then the results will be better. Hopefully, by the development of knowledge of mothers about oral combined pills of the side effects so that research results can use as supporting existing.

CONCLUSIONS

Respondents who use combination oral birth control pills began to complain to get changes in the skin of their faces when in a period of > 2 years of use in which they complained of black spots on their face that had never happened to them. Side effects facial black spots (melasma) due to the accumulation of the hormone estrogen in the body that can trigger the occurrence of black spots on the face (melasma). Many factors affect the incidence of melasma, but the respondents who experienced these circumstances claimed never sunbathe panasan with a long time during the day, in their families mengalmi no black spots on the face.

The professional midwifery can provide information or counselling on contraceptive combination pill consisting of benefits, advantages and side effects of the combination pill in acceptors oral combination pill so as to increase knowledge and improve the quality of midwifery services through professionalism obstetrics. As well, side effects such as melasma that does not only occur in the combined oral pills alone but who did not use oral pill combinations may also occur or arise melasma.

Hopefully, by the development of knowledge of mothers about combined oral pills of the side effects so that research results can use as supporting existing theories. Expected results of this study can provide information, images and input on future researchers concerning family planning methods

combined oral pills. If yoant to examine the black spots on the face (melasma) should use methods of data collection by further tests such as that of the theory to determine the occurrence of melasma due to hormonal so that more accurate data was obtained.

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ICASH-A38

THE RELATIONSHIP OF FAMILY SUPPORT TO MOTIVATION (INTENTION) FOR MEDICAL TREATMENT IN PATIENTS WITH CERVICAL CANCER IN LIGAR MEDIKA CLINIC, WEST JAVA – INDONESIA

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ABSTRACT

Background: Cervical cancer is a gynecologic disease with high malignancy rate and becomes the second leading cause of death among women worldwide after breast cancer. In the Ligar Medika Clinic, from 129 cases have been identified, 8 patients died. High mortality rate in patients with cervical cancer was caused more by the delay in treatment due to lack of knowledge and physical side effects of treatment of patients and psychological disorders such as their rejection reactions.

Aims: The purpose of this paper is to know the relationship of family support to the motivation or intention for medical treatment in patients with cervical cancer

Methods: The research method used was an analytic study with cross-sectional design. There were 30 patients with cervical disease invited to fill the questionnaire. Data was obtained directly using a Likert scale questionnaire further run in univariate and bivariate analysis with Chi-Square.

Results: The result indicates most of the respondents were lack of family support. This present study found a significant correlation between family's supports to the motivation (intention) medical treatment of cervical cancer patients (p value < 0.001)

Conclusion: The findings alarm a need to encourage family of patients to provide support to them during medication. It is to provide complete information about cervical cancer that can induce the family's attention in ongoing treatment in patients and provide the patients the motivation.

Keywords: Family support, motivation, cervical cancer.

INTRODUCTION

Cervical cancer or carcinoma of the uterine cervix is a gynecologic disease with high malignancy rate and becomes the second most cause of death among women worldwide after breast cancer. (1) According to data, 83% of cervical cancer cases are in developing countries. 510.000 women are diagnosed with cervical cancer increase and 280.000 people died. These are because a patient comes in an advantages stage (2).

Data from the Ministry of Health (3) showed that patient with cervical cancer worldwide are estimated to occur approximately 500.000 new cases, 270.000 of them die every year and 80% occur in developing countries, including Indonesia. There are an estimated 40.000 new cases of cervical cancer each year in Indonesia. Cervical cancer is second most cancer found in women in the world. Cervical cancer malignancy is developed from pre-cancer to invasive cancer, and its process are gradually and take years (4).

The data obtained from the visit reports in Poly Obstetrics Dr. Hasan Sadikin Hospital which is a referral hospital in West Java Province of cervical cancer, there were about 2046 (twenty thousands and forty six) cases of patients who have cervical cancer, and in 2013 increased to 3101 (three thousand and one hundred one) cases of patients with a diagnosis of cervical cancer. Ligar Medika Clinic Bandung recorded, there were 119 (one hundred and nineteen) cases of cervical cancer patients, 6 (six) of them died, while in 2013 there were 129 (one hundred and twenty nine) cases of cervical cancer patients and 8 (eight) of them died.

The high mortality rate of cervical cancer caused more by the delay in treatment. The problem is the lack of knowledge of each regarding cervical cancer until they came to the hospital is already at an advanced stage,(5) coupled with the cost of treatment, which certainly is quite expensive. According to,(6) the high cost of therapy is one of reason not to take the disease seriously.

Not only a matter of medical expenses are a problem for patients with cervical cancer, but also the perceived impact of the treatment, such as regarding patient physical and psychological disorders such as mood problem, the rejection they have had cervical cancer. Sometimes people are panic and enforce things which are meaningless and futile. After passing all of things, in the end they will realize and accept the fact that their life are have been changed. Some patients have been thinking and feeling more realistic and entrusted entirely to the doctor for continued treatment.(7)

Hence in the process of therapy, the patient should have the motivation to be able to carry out the treatment process. Cervical cancer patients who have high motivation will strive against the disease although the hope for a recovery of 100% is thin. Therefore, the motivation for treatment is something that encourages and reinforces the behavior and guides people in stressful situations which it can survive without the desire to live and no willingness for people to continue living as well.(8)

When cervical cancer patients are experiencing adversity with all its problems regarding both physical and emotional reactions to face the illness, the social supports are required by patients to reassure and comfort them. The most dominant social supports are given the family. The support may include the information, individual behavior, or a material that can make them feel being loved, cared and valued.(9)

Based on research conducted by Mutmainah(10) in RSUD Kraton Pekalongan District in 2013 showed that there is strong relationship between family supports for motivation to recover in cancer patients undergoing chemotherapy. It was evidenced by the Spearman Rank test in getting $p\text{-value} = 0.001 < \alpha (0.05)$ so that H_0 rejected by the Spearman Rank correlation coefficient ($r = 0.730$) shows that there is a strong relationship between the variables of family support with variable motivation to recover in cancer patients undergoing chemotherapy and towards positive correlation means higher family support the greater motivation to improve in cancer patients undergoing chemotherapy in Kraton Pekalongan Hospital.

From the preliminary study on March, which was carried out at Ligar Medika Clinic, there is a decrease in cervical cancer patient visits. After interviewing 10 (ten) patients, there was a drop of motivation in treatment including 6 (six) patients who feel desperate to treatment of radiation and chemotherapy, 2 (two) patients stated that they could not bear the pain which he underwent during therapy performed in the absence of accompanying family, 2 (two) another patients said they were less of confident in the treatment carried out by doctors and chose alternative therapies. According to literature, research and previous preliminary study, researcher intend to know relationship of family support to motivation (intention) for medical treatment in patients with cervical cancer.

METHODS

This research method using the analytical method of correlation which is study design to look at the relationship between 2 (two) variables, family support and motivation (intention) for medical treatment. The study design used a cross-sectional approach that researchers find the relation between risk factors (family support) with effect factors (motivation/intention for medical treatment) by measuring the dependent variable (motivation/intention for medical treatment) and independent variables (family support) at a time. The sample in this study were all women with cervical cancer in Ligar Medika Clinic totaling 30 (thirty) people. Sampling technique is total sampling according to Arikunto(11).

In this study, the dependent variable is the motivation of cervical cancer patients undergoing treatment. Motivation for treatment is encouragement from the inside and from the outside that arises in cervical cancer patients in treatment (chemo-radiation). Scale used in this variable is the Likert scale, in which the question was positives with: scores strongly agree (SS) = 4, agree (S) = 3, disagree (TS) = 2, strongly disagree (STS) = 1. Negative questions with: scores strongly agree (SS) = 1, agree (S) = 2, disagree (TS) = 3, strongly disagree (STS) = 4.(12)

Independent variable in this study is the family support that help provided by the family consisting of costs (instrumental support), information, and acceptance of physical changes after radiation and chemotherapy (support ratings), and taking into account the condition of the patient under any circumstances (emotional support).

Scale used in this variable is the Likert scale, in which question positive with a score strongly agree (SS) = 4, agree (S) = 3, disagree (TS) = 2, strongly disagree (STS) = 1. The negative questions with a score strongly agree (SS) = 1, agree (S) = 2, disagree (TS) = 3, strongly disagree (STS) = 4.(11)

Data was taken from primary data obtained directly from respondents through questionnaires concerning family support and motivation (intention for medical treatment) of cervical cancer patients. At the time of the study, respondents previously briefed in advance about the intent and purpose of the study, the researchers propose further informed consent (consent form) to the respondent. At the time of data collection, the researchers do when respondents were outpatient and inpatient clinics to facilitate researchers distributed questionnaires on family support and motivation to undergo treatment. Deployment questionnaire was conducted for approximately 6 days until the questionnaires collected and filled everything.

Validity test carried out before the questionnaires distributed, it was done for each question of each variable. A question is said to be valid if the variable score was significantly correlated with the total score. This questionnaire test instrument using the formula "Product Moment Correlation".(13)

Validity test results obtained valid values on the questionnaire support the family, while the motivation questionnaire undergoing treatment values obtained are invalid 4, namely the question item number 6 (six), 11 (eleven), 13 (thirteen), and 17 (seventeen) because the count $r < r$ table (0.444), four questions were discarded because the other questions because it covers the whole substance.

In this study, the results of the test have a value of Cronbach's Alpha (0.954) that is greater than the constant value of 0.6, then the statement that has been declared valid reliable. As Riyanto(12) said that reliable if r alpha > constants (0.6).

RESULTS

The research had been done to 45-55 years old 30 (thirty) female respondents with educational background maximum is senior high school. In this section, detail of results are briefly shown below:

Family support

Table 1. Depiction of family support

Family Support	Frequency (F)	Percentage (%)
Lack of Well	20	66,7
Well	10	33,3
Total	30	100

Based on Table 1, it can be seen that the majority of respondents stated that family support is still lacking in the treatment of 20 people (66.7%).

Motivation (intention for medical treatment)

Table 2. Depiction of Motivation (intention for medical treatment)

Motivation (Intention) for medical treatment	Frequency (F)	Percentage (%)
Lack of High	16	53,3
High	14	46,7
Total	30	100

Based on Table 2, can note that most respondents have low motivation in undergoing treatment that is as much as 16 (53,3%).

Table 3. The Relationship of Family Support to Intention for Medical Treatment in Cervical Cancer Patients.

Family support	Motivation (intention) for medical treatment				Total		P value	OR CI 95%
	Lack of		High		N	%		
	n	%	n	%				
Lack of Well	15	75	5	25	20	100	0,001	27 (2,705-269,460)
Well	1	10	9	90	10	100		
Total	16	53,3	14	46,7	30	100		

Based on Table 3, it can be seen that of the 20 (twenty) respondents were less support from family, nearly all have lack of motivation to treatment as many as 15 (fifteen) people (75%), whereas 10 (ten) of respondents who support the family almost all patients have a high motivation as many as 9 (nine) people (90%). Statistical test results obtained P-value = 0.001 < α (0.05), meaning that H0 rejected, and the HA accepted. It means, there is a relationship between family support for motivation in patients with cervical cancer for treatment. Value OR (odds ratio) = 2.7. That is the significant level of 95%, and it is known that patients who received the support of the family have the opportunity for their motivation (intention) is high compared with patients who received lack of family support.

Table 4. Strength Elements The Family Support to Intention for Medical Treatment in Cervical Cancer Patients.

Family Support	Contingency Coefficient Value
Informational support	0,39
Emotional support	0,47
Appraisal support	0,56
Instrumental Support	0,59

Based on Table 4, shows that there is a relatively high correlation between the instrumental support with motivation (intention) in cervical cancer patients treatment, with contingency coefficient value of 0.59 when compared to the three other elements of family support. Refer to table above, there is a relatively high correlation between instrumental support and motivation of cervical cancer patients undergoing treatment, with contingency coefficient value of 0.59 when was compared to three other elements of family support.

DISCUSSION

Based on this research, it can be seen that among the four elements of family support are examined, it turns out that having a quite strong relationship is instrumental support. The support is the provision of material that can provide direct assistance such as lending money, provision of goods, food and services. The support can reduce anxiety because people can immediately solve the problem associated with the material [14].

Instrumental support is indispensable in addressing the issues that are considered to control. In this case, where the process of chemotherapy require financial support which is relatively expensive, so if this support was obtained, it will ease the burden on the patient and directly motivating patients to recover because it was able to finance their treatment [15].

This support is shown as families accompanying patients undergoing chemotherapy, the family set up a vehicle to drive, prepare the food and drink during chemotherapy, so the patients feel the family is always there for them.

The patients who have received support from families still highly motivated, this may be caused by other factors such as: the need, where the person doing the activity due to factors the needs of both biological and psychological. Foreexample, patients undergoing chemotherapy because parents want healthy fast, then expectation is a person motivated by experiencing success and their expectations of success are the satisfaction of a person, success and self-esteem increased and moved a person toward achieving the goal, then the environment is the place in where one lives [16,17].

Environment can affect a person as well as being motivated to do something, mass media in the era of globalization share the information both print and electronic (TV, radio, computer / the internet). Hence the media target can increase knowledge eventually and expected to change their behavior in a positive direction towards health [18].

The latter is the facility (infrastructure, availability of facilities that support the patient's recovery is available, easily affordable motivates patients to recover. Included in the services are the availability of cost sufficient to cure the patient and medical devices that support the patient's recovery [19,20].

CONCLUSION

There are relationship between family support and intention for medical treatment of cervical cancer patients. The patients who receive good support from family, having motivation (intention for medical treatment) 27 (twenty seven) times higher than clients who do not receive family support. It is recommended that families of cervical cancer are more encouraging and taking part in their treatment, for example, providing assistance in the form of donations to further ease the burden and increase their motivation (intention for medical treatment), then provide provision of food and beverages. Hence the patients feel the family is really there when they needed and increase the motivation of the patients.

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ICASH-A39

**STUDENTS COPING MECHANISM TOWARD STRESS IN WRITING
SCIENTIFIC PAPERS AT SARI MULIA MIDWIFERY ACADEMY
BANJARMASIN, INDONESIA**

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ABSTRACT

Background: Academic roles and responsibilities of students become the cause of stress, but it can be from outside or from inside the students itself. The problem is the students' incapability towards stress, thus they make an adjustment by coping mechanism.

Aims: This study aimed to identify coping mechanisms that have been used by the students toward a stress on in writing scientific papers at Sari Mulia Midwifery Academy Banjarmasin.

Methods: This study was a qualitative research with case study approach. The data was collected from three primary sources: 1) Sari Mulia Midwifery Academy's students who are preparing writing scientific papers, 2) three people who met the study criteria, and 3) nine triangulation persons who are parents, friends, and academic advisor to test the credibility of the data. The data was then processed and analysed through the result of the interview using translation, transcription of data coding organizer, and then conclusion was made based on the data that the writer was obtained.

Results: The result showed that students used an adaptive coping mechanism to confront the stressful event like a writing scientific paper with doing some effort to solve the problem.

Conclusion: Students get stress when they are preparing for writing scientific papers and students do adaptive coping mechanism. As having social support from their closest persons can do adaptive coping mechanism to face the stress. That is important to the school to pay attention to students' adaptive coping mechanism in order to improve students' performance, even under high pressure and stress.

Keywords: Coping mechanism, stress, students, writing scientific papers.

INTRODUCTION

Everyone has experienced stress and ordinary people who can adapt to the stress of long-term or short-term stress so that stress away. Usually, stress is not only associated with a physical illness, but a person's psychological problems also. The physical and emotional tension that accompanies stress causes discomfort. Most teens experiencing instability from time to time as a consequence of the effort of adjustment to new patterns of behavior and social expectations of new [1].

Adolescences are easily affected by the environment that leading to disappointment and suffering, the growing conflicts and contradictions, dreams and fantasies, courtship and romance, alienation of adult life and cultural norms. Teenagers should coping mechanism, to deal with changes in the face or a load that received the body and raises the burden of the body that are non-specific responses that stress [2].

Transition experienced by students, encouraging students to face many demands and new developmental tasks. Roles and responsibilities of students are causing the stress (stressor) for students. They have to use coping mechanism to deal with stress. The coping mechanism is the way in which people solve problems, adapt to change, as well as the response to a threatening situation [3].

Academic essay preparation can be a negative event for students. Because it required having skills in applying theories gained in class to face the problem and its solution using the scientific method. Writing scientific papers or research addresses an issue of a problem that can view from the standpoint of scientific theory and member benefits, and these problems can be real data from existing phenomena.

Students are prone to stress because of the transitional nature of campus life. Most students reported high levels of stress due to new responsibilities, the most common source is the increased workload of the class.

Writing scientific papers is a report / DIII midwifery students' final assignment as a condition of graduation. In the process, a lot of obstacles experienced by students in preparing Writing Scientific Papers. These constraints that cause students experience changes especially changes in the psyche. Demands to complete the Writing Scientific Papers, which is one absolute requirement of graduation makes the student should be able to finish with a time predetermined by the institution.

Based on the results of interviews with five students who are preparing writing scientific papers said they experienced stress caused due to the difficulty of setting the time, find references, and obstacles to the process guidance. Things they feel including headaches, sleep disturbances, appetite disturbed. Efforts are being made even different student is to remain doing repair tasks, crying, walks, watch movies, sleep more. Therefore, the ways that help students to deal with a threatening situation like an academic paper preparation is very interesting to study.

METHODS

This study used a method of qualitative research with case study approach and ways of collecting data with in-depth interviews. Case Study is a research strategy in which researchers investigated carefully coping mechanisms undertaken by students in preparing Writing Scientific Papers. The sample in this study was taken by using purposive sampling. With Inclusion criteria: Students AKBID Sari Mulia who under 20 years of age; Students who are still active at academy Midwifery Mulia Sari and is developing KTI; Students who have low score, medium and good; Students who have sufficient time for give information; Students who live with their parents. In this study there key informants are students who are preparing writing scientific papers as many as three people who met the study criteria and nine triangulation to test the credibility of the data. Verify data by Listening to recordings of interviews and made a transcript of the data; Categorize and make coding talks according to the topics described in the interview; Re-read the transcript results in order to obtain an overview of the results of data collection; data analysis;. The process of data analysis using data analysis techniques model of Miles and Huberman through three components which include the reduction of data (data reduction), presentation of data (data display), and conclusions/ verification.

RESULTS

From the result of in-depth interviews with key informants such as students of Sari Mulia Midwife Academy Banjarmasin which is writing scientific papers, there are some opinions expressed, there compiling scientific papers, the students experienced stress differently. It can be showed the results of the stress experienced by students in preparing writing scientific papers is as follows:

"What I felt during compile this KTI I feel stress, headaches, cannot sleep well, eat bad, thinking continues as unfinished".

It was also justified by the Companions of informants who know her activities every day.

"I think he also stressed, as this is a responsibility that is not restful sleep, irregular eating even no appetite".

Supported also by the information conveyed parents that during compile KTI, informants spend more time in front of the laptop until late at night.

"If I noticed any change my child, rarely naps, sleep at night is always late at night and has also told me that the dizzy doing KTI."

Many factors can cause stress on the students themselves appear during compile KTI stress can appear either from within or from outside the students or the self-students.

"KTI stressful for many things, first because of the lack of reference is obtained, lack of family support, a very limited time, and also the process of landing guidance counselors do not understand".

Justified by the Companions that the references provided did not match what he wanted, informants do not understand how to find a good reference.

"I think right because there is some information that will be sought is not available in the book if there might be the old books. We also have to finish according to schedule have by institutions".

Information obtained from the parents also show if the parents are busy with work outside the home so that he did not understand her because she rarely met with his son.

"I do not know how difficult a task my daughter because I believe he can never complained. I work from morning till late night even so rarely meet to discuss".

Other supporting information obtained from the supervising KTI that students' understanding of the research, from data collection, determine the sample, how to measure and others still less so an obstacle that causes stress prepare students for KTI.

"I think, constraints experienced by students in developing KTI namely concerning their knowledge who do not understand how to retrieve data, Analysis, Research Methodology."

Students who are preparing KTI has immense potential to experience stress and will certainly do the coping mechanisms to resolve problems / stress it. Various ways in which students in the face of stress during compile KTI, quite a few can do good business with a positive impact on the stress they experienced.

"If it was too late, I was dizzy watching the romantic drama, because I loved it so after watching can laugh and be entertained at last there is courage to do."

Based on information obtained from informant's parents, the same thing also was said that his son did not always live in his bedroom in addition to doing his job, which owned entertainment is to watch the drama.

"When it came home he went inside the room, and I saw him do chores and when tired of watching the romantic drama left in her laptop too, never came out or laze."

DISCUSSION

In the process of preparing the writing scientific papers found that college students were stress and had sleep problems. They cannot sleep well because they kept thinking about their papers. Perceived stress about writing scientific papers was think hard. It was leading students to think carefully, feel tired and feel more craving. For some people if in dealing with problems such as stress he might be less or loss of appetite which is different from participants in this study. Another perceived stress in preparing students writing scientific papers is the presence of eating disorders. The amount of the burden of existing mind made him think carefully so that students feel tired and hungry. For some people if in dealing with problems such as stress he might be less or loss of appetite. However, another case with perceived stress student. The amount of work to do it spend so much energy to think hard.

There are so many causes of the emergence of stress experienced by a person in his life, as well as the causes of stress in students that make up the writing scientific papers. The problems were found in the process of thesis including difficulty finding literature, limited funds, are not used to writing in the sense of writing scientific papers, less familiar with the system scheduled work by setting time so tight and problems with the thesis supervisor [3,4].

Several things can cause Mulia Sari Midwifery Academy students stress over preparing writing scientific papers derived from student self itself, which fear, trouble getting references/ literature, time constraints, lack of understanding of research methods. While the stress that comes from outside the student is social support and the role of supervising the Writing Scientific Papers, the students in preparing Writing Scientific Papers.

Feelings of fear to confront with mentors, student self-testing during the process guidance and the lower confident for examination of students. The first phase in which students in the preparation of the final project (Writing Scientific Papers) is to determine the ideas/ topics. The idea is an idea or design that is composed in mind and outlined in the form of reports. Information obtained when the study was students confused by the direction of the supervisor to repair the same but with a different command. Differences of opinion between students and lecturers and the fellow can be a cause of stress for preparing writing scientific papers.

Students are having difficulty getting the reference books that support the research due to the lack of books and limitations of the literature available in the library to make students often have difficulty doing writing scientific papers. The fear arises within the student who caused the students afraid the lecturers will complicate when the exam even though these students have never known but information from other people who can change the mindset of someone who feels capable of being scared and even minder resulting stress on students.

From interviews conducted by researchers find information that students with low-income family support to make students uncomfortable and less enthusiasm in doing writing scientific papers so that it makes students for support outside of that friend who can provide motivation for him to keep working.

Students do not understand how the sampling, do not understand the methods of research, even the students only worked on writing scientific papers improvise without knowing right or wrong, the students rely on referrals supervisor because it recognized that during the course of research methodology in the freshman class is less ideology and finally at the time of the study or students trying to relearn to ask the brother-level or even to the advisor.

From the results, the information that the efforts are made by the students in the face of stress preparing writing scientific papers is an adaptive coping is coping mechanisms no negative impact that may impede the process of Writing Scientific Papers. Kelly (1978), Patton (1986), Reynolds (1987) on Sujianti (2012) self-adaptive behavior and social maturity of someone in common, everyday activities in accordance with age and circumstances related to the culture of the group. Coping mechanisms do students not far from the business unwind and be entertained for a moment with the right stuff without doing things that harm beyond the control of the student's own, and even some students attempted to ask a friend, a friend or a brother level.

The results of research Dayvivity (2012) showed that the major stressors that students are preparing for the exam block, solid schedule of lectures, classes were full, skill lab exams and written exams.

Sari Mulia Midwifery Academy student who was writing scientific papers in this study had to focused on the problem / coping active adaptive so that students can put aside other things that are not related to these issues at hand. Coping-focused on the problem / active coping is where the individual is actively seeking a solution of the problem to eliminate conditions or stressful situations [5,6].

Student Academy Sari Mulia Banjarmasin has an actively coping mechanism are influenced by the social support provided by family and those closest to students (friend), Support and motivation from the nearest capable of providing confidence and positive thinking in the face of stress students finish preparing writing scientific papers so that the preparation can be done in agreement with the specified schedule.

CONCLUSION AND RECOMMENDATION

Student's Sari Mulia of Midwifery Academy experience stresses in preparing the writing scientific papers. Stress happens to students varies characterized by symptoms. The symptoms of stress are sleep problems, more craving, less/loss appetite, headaches. The causes of stress in students during writing scientific papers namely: fear, literature limitations, and time in the study, the role of counselors, social support, and knowledge of students in the preparation of writing scientific papers. Coping mechanisms used by the student in preparing writing scientific papers is an active coping mechanisms/ focus on issues that are adaptive, coping mechanisms that do support students to solve problems encountered.

As an educational institution should attempt to explain to the students that the writing scientific papers is not a scary thing. As well as providing support regarding guidance so that students are more motivated to complete the task eventually.

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ICASH-A40

**FACTORS ASSOCIATED WITH IRON ANEMIA DEFICIENCY IN
CHILDREN AGED 12 TO 36 MONTHS IN PUBLIC HEALTH CENTER
JATILAWANG, BANYUMAS
CENTRAL JAVA**

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ABSTRACT

Background: According to the WHO, anemia prevalence in preschool children in the world obtained 47.4% from the total population of anemia sufferers. Indonesia collected 44.5%, therefore, it was included in the prone region to anemia cases in pre-school children. Iron Deficiency Anemia (IDA) was closely related to low birth weight babies and premature age, nutritional status, socio-economic and low maternal education. Children who experienced anemic iron deficiency (ADB) in infancy at risk of barriers to growth and development

Method: This was a cross sectional study. The population covered all healthy children aged from 12 to 36 months. The sample on the study determined by consecutive sampling, 152 subjects were selected. Examination conducted by the method Hb and serum ferritin cyanmethemoglobin using ELISA method. Data analysis used chi-square and Logistic Regression.

Results: The prevalence of IDA in Puskesmas Jatilawang Banyumas regency was 28 cases (18.4%). Malnutrition status, maternal education and family income contributed a significant relationship to the incidence of iron deficiency anemia in infants. Children with malnutrition status collected 10.5 higher risk than children with good nutrition. Children with mother education backgrounds were only at Elementary School or Junior High School supported 12 times greater iron deficiency anemia (95% CI: 12,16- 202.5), and children who came from families with incomes <Rp 1.100.000,- obtained 7.08 times iron deficiency anemia(95% CI: 1,70- 29.3).

Conclusions: The prevalence of iron deficiency anemia was 18.4%. Malnutrition status, maternal education and family income were risk factors of anemic iron deficiency in children aged 12 to 36 months in Puskesmas Jatilawang Banyumas.

Keywords: Iron Deficiency Anemia, Nutritional Status, Age Children 12 to 36 Months.

INTRODUCTION

Iron deficiency anemia is a major problem that occurs in the world. IDA is the most common anemia, especially in developing countries. Based on estimates from the World health Organization (WHO), most of the children suffered from iron deficiency and one third suffered from IDA. The combination of high iron requirements with a low diet in iron causes of early childhood is the period most susceptible to iron deficiency with or without anemia [1]. According to WHO, the prevalence of anemia in school children (0- 5 years) in the world reached 293 million (47.4%) of the total population of anemia sufferers. The highest prevalence in Southeast Asia was 115.3 million (65.5%) and Indonesia obtained 21.59% (44.5%) [2]. The incidence of anemia at the age of 0- 5 years in 2009 in Surakarta, Central Java, 57.9% [3].

Based on the results of several studies, it suggested that IDA was closely related to low birth weight babies and premature, sex, age, nutritional status, socio-economic and low maternal education [4]. Consumption of foods containing low iron was still a major cause of IDA among many contributing factors. Rapid growth of children before 24 months in conjunction with unmet demand for iron put children into the largest risk group for IDA across all age groups [5]. Children who experience IDA in infancy may have more serious risk of long-term developmental disorder, such as cognitive impairment. Results of research Olney, *et. al* (2007) revealed that children who were malnourished obtained obstacles in motor development such as children who had anemic iron deficiency [6].

The incidence of IDA is an important health indicator. The diagnosis of IDA is confirmed by the findings of history, physical examination and laboratory tests to support clinical symptoms which was not typical [7]. Measurement of iron status and hemoglobin levels can provide information about the severity of iron deficiency. If children under five shows $Hb < 110$ g/l and decreased levels of serum ferritin (< 12 Ug /dl), it can be concluded that he is IDA sufferer [1].

In Indonesia, screening and program prevention on the incidence of IDA has not reached the toddler group. Up to now, the program only focused on the group of pregnant women. In 2015, in the region of Puskesmas Jatilawang Banyumas during January-October 2015, there were 3243 children under five. These areas have a bigger population of children under five in Banyumas and have not been carried out blood tests for the detection of IDA. The purpose of this study was to determine the prevalence of IDA in children aged 12- 36 months and determine the factors associated with anemia in Puskesmas Jatilawang Banyumas.

METHODS

This study was a cross sectional study held in April 2016 in four villages in Puskesmas Jatilawang Banyumas covered Tinggarjaya, Kedungwringin, Tunjung and Bantar villages. Population and study subjects were 12 to 36-month-old baby who came to *posyandu* (neighborhood health center). The sample selected by health baby criteria and parents willingness to become respondents. Population and study subjects were 12 to 36-month-old baby amounts 1235 baby. The number of samples in this study were 152 children under five. Calculated based on the prevalence abbreviation and the prevalence of IDA in research before conducted by Nugrohowati (2010) in Surakarta (57,9%) [3]. Sampling technique applied consecutive. The independent variables in this study were the nutritional status, age, maternal education, and family income. The dependent variable was anemic iron deficiency in infants.

Data on the age of the baby, maternal education and family income were collected from questionnaires given to parents. Parents obtained an explanation about the purpose and the benefits of research, then the respondent would sign an informed consent and filled out a questionnaire that was guided by a research assistant. A research assistant was a village midwife and had been explained and confirmed of the research that would be conducted. Nutritional status assessment procedure was done by calculating the weight for age of the children and recorded in the WHO growth curves based on gender. The procedure to collect Hb through *cyanmethemoglobin* method, which was carried out in an integrated laboratory. First, prepare vacutainer EDTA solution has been added, then the cubital fossa baby was cleaned with alcohol 70% cotton, wait until dry. Two ml of blood was taken from the brachial vein. Blood that has been obtained was then collected and put in a coolbox and transported to the laboratory within about 25 km (49 minutes) from the point of sampling. In the laboratory, examination of blood samples of hemoglobin was done by Drabkin solution and read with *spetrofotometer* with a wavelength of 540 nm. Serum ferritin inspection procedures were performed

using *MiniVidas- Biomerieux's*. Limitation of anemia if $Hb < 11$ g /dl, while iron deficiency anemia if $Hb < 11$ g /dL and serum ferritin levels < 12 ug / L.

The bivariate analysis was conducted to determine the effect of each independent variable on the dependent variable (the status of IDA). The independent variables with p value < 0.25 in the bivariate analysis would be processed into a multivariate analysis to determine the level of risk that previously known to be associated with the independent and the dependent variables. Logistic regression analysis with *backward* method. Prevalence Ratio with 95% significance level used to estimate the strength of the relationship between independent and dependent variables. In multivariate analysis, independent variables with p value < 0.05 was a significant variable in the incidence of IDA.

Ethical feasibility to conduct the research was obtained from the Health Research Ethics Committee Universitas 'Aisyiyah Yogyakarta. Each of the respondents involved in this study must sign an informed consent form and given an explanation to the intentions and objectives of the research and its impact during the research process taken.

RESULTS

The research showed that the prevalence of anemic iron deficiency was 18.4% to the age < 24 months consisted of 44 infants (28.9%), and meanwhile, 24 to 36 months were 108 (71.1%). Status of malnutrition was found in 30 infants (19.7%) and 122 infants (80.3%) with good nutritional status. Thirty mothers of infants (19.7%) had low levels of education and 46.1% had low income. Twenty-eight infants (18.4%) suffered from IDA (Table 1).

In this study, a group of children aged < 24 months with malnutrition status had a significant association with IDA in children aged 12 to 36 months. Similarly, the low maternal educational level (SD- SMP) and low family income ($< Rp$ 1,100,000) (Table 2).

Multivariate analysis revealed that the nutritional status variable, maternal education and family income were risk factors of anemic iron deficiency. The level of education was the most dominant risk factor associated with the incidence of IDA (OR : 12.1). Overall factors; nutritional status, education and family income affected 67.7% incidence of IDA in children aged 12 to 36 months in Puskesmas Jatilawang Banyumas (Table 3).

Table 1. Respondent characteristics

Characteristic	N	%
Age		
<24 month	44	28,9
24- 36 month	108	71,1
Nutritional Status		
Malnutrition	30	19,7
Adequate nutrition	122	80,3
Education background		
Primary school- Junior High School	30	19,7
Senior High School- University	122	80,3
Family Income		
\leq 1.100.000	70	46,1
$>$ 1.100.000	82	53,9
Anemic iron deficiency to baby		

Positive IDA	28	18,4
Negative IDA	124	81,6

The research showed that the prevalence of anemic iron deficiency was 18.4% to the age <24 months consisted of 44 infants (28.9%), and meanwhile, 24 to 36 months were 108 (71.1%). Status of malnutrition was found in 30 infants (19.7%) and 122 infants (80.3%) with good nutritional status. Thirty mothers of infants (19.7%) had low levels of education and 46.1% had low income. Twenty-eight infants (18.4%) suffered from IDA.

Table 2. The correlation of risk factors to anemic iron deficiency to children

Variable	Anemic iron deficiency				Total	P value	PR	CI 95%
	Anemic iron deficiency		Negative Anemic iron deficiency					
	N	%	n	%				
Nutritional Status								
Malnutrition	16	53,3	14	46,7	30	0,00	10,4 7	4,123- 26,618
Adequate nutrition	12	9,8	110	90,2	122			
Mother education background								
Primary School- Junior High	22	78,6	8	26,7	30	0,00	53,1 67	16,793- 168,32
Senior High- University	6	21,4	116	95,1	122			
Income								
Rp < 1.100.000	22	78,6	48	68,6	70	0,00	5,80 6	2,196- 15.350
Rp ≥ 1.100.000	6	21,4	76	92,7	82			
Age								
<24 Month	6	13,6	38	86,4	108	0,331	0,61 7	0,232- 1,645
>24 Month	22	20,4	86	79,6	44			

In this study, a group of children aged <24 months with malnutrition status had a significant association with IDA in children aged 12 to 36 months. Similarly, the low maternal educational level (SD- SMP) and low family income (<Rp 1,100,000) (Table 2).

Table 3. The result of logistic regression analysis to risk factors related to anemic iron deficiency

Variable	P value	PR	CI 95%
Nutritional status	0,002	10,5	2,39- 46,0
Mother education background	0,000	12,1	12,16- 202,5
Income	0,007	7,08	1,70- 29,3
R ²			0,677

Multivariate analysis revealed that the nutritional status variable, maternal education and family income were risk factors of anemic iron deficiency. The level of education was the most dominant risk factor associated with the incidence of IDA (OR : 12.1). Overall factors; nutritional status, education and family income affected 67.7% incidence of IDA in children aged 12 to 36 months in Puskesmas Jatilawang Banyumas

DISCUSSION

The research was a analytic study conducted to determine the prevalence of IDA in children aged 12 to 36 months done for the first time in Puskesmas Jatilawang Banyumas. The results of this study revealed that the prevalence of IDA in children aged 12 to 36 months was 18.4%. The data was reported by 32% and it was lower than the national incidence rate compared to the prevalence of IDA in Indonesia in 2011. However, these results could not be compared with the incidence in the other regions in Indonesia since the prevalence of anemic iron deficiency in children aged 12 to 36 months were not yet available nationally. This was caused by the government that still focused on the handling and prevention of IDA, whereas WHO stated that children aged 6- 59 months was one of the groups with a high risk of IDA out of adolescents, pregnant and lactating mothers groups [8].

The research showed that children aged <24 months who were IDA was 13.6%, however, statistically it showed no significant correlation between age children with IDA (p value = 0.331). This finding fitted to the results of research conducted by Sekartini, *et.al.* (2005) indicated that infants aged 4- 12 months there had no significant relationship between IDA in infants with the age factor (p value = >0.05) [9]. The results of this study was different from the results of research conducted by Gebreegziabiher *et. al.* (2014) who argued that children aged 6- 23 months was the age group at most risk almost 3 times were anemic compared to 48- 59 months age group (40.7%) [13]. The prevalence of IDA was decreased according to the age, this decrease occurred dramatically in children aged > 23 months. It was due to lower iron requirements per kg body weight associated with a reduction in the rate of growth and a shift in dietary patterns of meal replacement supplements into the adult food.

The explanation that could be described on different research findings was the short of age range. Therefore, it affected the results of statistical analysis. Whereas, other studies revealed that the greater age range, the better and meaningful result obtained. In addition, this study did not assess of the child's diet to support the analysis of the incidence of IDA in that age range.

Children aged 12 to 36 months with malnutrition status and suffered anemic iron deficiency was 53.3% and there was a significant relationship with the incidence of anemic iron deficiency (p value = 0.00). The study showed that children with malnutrition status were at risk for IDA 10.5 times higher compared to children who had good nutritional status (CI: 2,39- 46.0). Leite, *et. al.* (2013) supported the result that he suggested that nutritional status was positively associated with the incidence of IDA after controlling other variables (PR: 1.31, 95% CI: 1,21- 1,41). Anemia and malnutrition often occurred together, the problems of shortage of certain nutrients would occur simultaneously on individual. The relationship between the measurement of nutritional status and anemia was affected by some common causes such as socioeconomic status, sanitation, infectious and parasitic diseases as well as diet food (10).

Based Banyumas Health Profile 2015, Puskesmas Jatilawang region was an area that has a number of infants with the highest malnutrition status throughout Banyumas Regency [11]. Various attempts have been made to address the issue of malnutrition in the region such as support exclusive breastfeeding, provision of food supplementation (*Taburia*) to the baby through a group of neighborhood health center, health service in children under five (weighing infants routinely in Posyandu), as well as provide treatment in cases of malnutrition in Puskesmas Jatilawang. However,

the handling for underweight infants were limited until now by providing food supplements and not followed by screening or screening of the long-term risks such as IDA screening. It happened because the investigation of the condition of IDA in infants and young children have not been implemented as a program of health care of infants and toddlers in the Puskesmas level. The government was only implementing screening programs and prevention of anemia in pregnant women.

The American Academy of Pediatrics (AAP) recommended doing hemoglobin (Hb) and hematocrit (Ht) tests at least once at the age of 9-12 months and repeated six months later at the age of 15-18 months or additional checkup once every 1 year at age 2 -5 years. The examination was conducted on a high-risk population, such as premature infants, low birth weight, history of getting prolonged care unit neonatology, and children with a history of bleeding, chronic infection, ethnic group with high prevalence of anemia, exclusive breastfeeding without supplementation, fresh cow's milk at an early age, and other social risk factors [12].

The study showed that the mothers with SD- SMP education backgrounds and having children with IDA was 22 (78.6%). Statistical analysis showed a significant relationship between maternal education SD-SMP with IDA (p value = 0.00) and at risk of IDA 12 times higher (95% CI: 202.5- 12,16) compared to children who had mothers with higher school education (SMA-PT) after being controlled by the nutritional status and family income variables. This study findings were supported by Woldie *et. al.* (2008), which revealed that children of unschooled mothers was more experienced to suffer from anemia than children of secondary education and higher education mothers (AOR = 2.6; 95% CI: 1,26- 5.27) [4].

According Woldie, *et. al.* (2015), the level of education of parents positively influenced the practices associated with health care and feeding practices in children [4]. Mothers with a good education were more aware of the health of their children and their scientifically proven practice of feeding their children and prove the health status of their children. Mother's education was also associated with knowledge about nutrition. In general, the higher a person's education, the better the level of knowledge. Mothers with relatively high education tended to have the ability to use resources better family than mothers with low education. The higher the mother's education, the higher knowledge about the variety of food. Variety of foods was used to meet the nutritional needs in infants [4].

The study obtained that the *odds ratio* of the variable of maternal education on the incidence of IDA (OR: 12.1, CI: 12,16- 202.5). It occurred because the distribution of the data obtained relating to maternal education level was uneven so it obtained unclear description of the actual maternal education.

Parents who have an income < Rp 1,100,000 with the child suffered from IDA was 22 (78.6%). Statistical test explained a significant relationship between family income and the incidence of IDA in children aged 12 to 36 months (p value = 0.00). Bivariate and multivariate analysis showed a significant relationship between income and IDA in children aged 12 to 36 months. Children who came from families with incomes < Rp 1.100.000,- obtained a risk of IDA by 7.08 times higher (95% CI: 1,70- 29.3) than children who come from families with incomes > Rp1,100,000,- after it was controlled by the nutritional status and maternal education variables.

The findings were consistent with the results of research conducted by Gebreegziabiher, *et. al.* (2014) which stated that the anemia incidence experienced by children was related to low family income. The children who came from low-income families were at risk 4.8 times higher and likely to develop anemia than children from families with higher incomes (95% CI: 3,2- 7,3) [14]. According Woldie, *et. al.* (2015), in some research findings showed low family income related to food security in

the household [4]. The low economic status would cause the loss of the ability to provide a variety of foods and rich in nutrients and ensure food security. Finally, food security in the family was a determinant factor in the status of malnutrition (undernutrition) including anemic iron deficiency [13].

The research strength was the first research done relating to IDA in Puskesmas Jatilawang, so it might give a description of early IDA in children aged 12 to 36 months in this region. In addition, laboratory tests were conducted to determine hemoglobin level and serum ferritin whether it met the standard set by WHO through *cyanmethemoglobin* and *enzyme linked immunosorbent assay* (ELISA) methods. The research also showed a disadvantage that the number of samples in this study was insufficient to affect the results of statistical calculations and variations in the value of each independent variable.

CONCLUSION

Nutritional status, maternal education and family income were risk factors of anemic iron deficiency. Overall factors; nutritional status, education and family income affected 67.7% incidence of IDA in children aged 12 to 36 months in Puskesmas Jatilawang Banyumas. The government should collaborate with Puskesmas to create a program of IDA detection in infants as one of protection of anemic in early age.

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ICASH-A41

**EFFECT OF VARIATION IN THE NUMBER OF THICK SLAB ON
THE SCAN TIME AND IMAGE INFORMATION ON THE
EXAMINATION OF MAGNETIC RESONANCE
CHOLANGIOPANCREATOGRAPHY (MRCP)**

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ABSTRACT

Background: Thick Slab is a technique used in the MRCP examination to acquire the image of the biliary system by using oblique slices in taking some parts of the image at different angles. Image quality with a thick slab technique is considered better than the thin slice since the image visualization of the bile ducts system in various parts appear more clearly.

Aims: The purpose of this study is to determine the effect of variation in the number of thick slab on the scan time and image information on the MRCP and determine the most informative image with the most effective scan time as possible.

Methods: This study type was an experimental study conducted in St. Elisabeth hospital Semarang. The data were in the form of 90 MRI images of biliary tract of 3 patients with 5 variations of Thick Slab (6, 12, 18, 24, 30). The image assessment was taken by 5 respondents regarding the information of the objects of Right Hepatic Duct, Left Hepatic Duct, Common Hepatic Duct, Pancreatic Duct, Cystic Duct, Common Bile Duct and Gallbladder. Data analysis was conducted by regression test and cross tabulation.

Results: The study results showed that there was an effect of varying the amount of thick slab on the scan time. The effect of varying the amount of thick slab on the image information can be seen from the statistical test that there was no effect, however descriptively there was a different on the specific per object. The image of thick slab variation of 12 was an image that had the highest value of information with the mean value of 1,988, the total value of 13.936 and a scan time of 0.46 S so that the most informative image with the most effective scan time was on the thick slab number variation of 12.

Conclusion: There was an effect of variation in the number of thick slab on the scan time. More variation of the number of thick slab was followed by an increase in the value of the scan time. But there was no effect of variation in the number of thick slab on the image information, however descriptively there was a different on the specific per object which showed that the highest score for the Right Hepatic Duct, Common Hepatic Duct were in the thick slab of 12 and 30, respectively

Keywords: Thick Slab, Scan Time, MRCP

INTRODUCTION

The quality of the MRI image is influenced by several factors such as SNR (Signal to Noise Ratio), CNR (Contrast To Noise Ratio), spatial resolution and imaging time (scan time) [1]. On the usual abdomen MRI, there was a difficulty to evaluate the gallbladder organ and the ducts in detail and optimal so that there is not much to be assessed from these organs. The use of Ultrasonography modalities still has many limitations encountered in revealing the ducts from the gallbladder because they are hampered by the stomach and duodenum. As a solution for this problem, Magnetic Resonance Cholangiopancreatography examination is used to evaluate the gallbladder and the ducts due to possible presence of stones, tumors and other diseases with multiplanar images obtained by aligning the biliary tree with sensitive sequence MRI to show the flow without the use of contrast media [2].

Abdominal MRI examination such as MRCP is generally more difficult to do because it is a moving organ. Discrepancies or errors in taking the value of the technical parameters used and the lack of knowledge of the radiologist can produce less optimal image quality and inspection, so that the abdominal MRI examination depends on the technique used and knowledge of the radiologist in mastering the examination process and by performing modification of the inspection parameters [3].

The filming of gallbladder is by using series description acquisition technique of Thick slab MRI with SSFSE sequence [4]. The use of improper amount of thick slab on the biliary tract MRI often causes problems in presenting a good image of the biliary and gallbladder systems [5]. Moreover, inappropriate selection the thick slab may cause suboptimal results of the diagnostic information. This happens because there is no definitive benchmark in determining the amount of thick slab that causes technique variability performed by the radiologist. Variations in the amount of thick slab with the same thick slab size on biliary tract MRI used by the radiologist also cause the inconsistent scan time for the same organs in patients with a body mass index that is the same. It can be seen from the experience of researchers during practice in some hospitals in Central Java and East Java, where the radiologist used varied Thick Slab: 7,8,10,11,12,18,22, 24. With the variation of the number of thick slab used, it is not yet known how they affect the scan time, and the results of image information of Right Hepatic Duct, Left Hepatic Duct, Common Hepatic Duct, Cystic Duct, Pancreatic Duct, Common Bile Duct and Gallbladder to be able to diagnose optimally on clinical information is expected to be fulfilled by the most effective scan time as possible.

METHODS

It was a quasi-experimental study to test the effect of variation in the number of thick slab on the scan time and image information on the biliary tract MRI examination as effective as possible. Study Period: In June-July 2012. Study Location: St. Elisabeth Hospital. The independent variable was the change in the number of thick slab. The dependent variables were scan time and image information. The controlled variables were: FOV, TR, TE, Matrix (PE), Fractional Echo, Partial Fourier, NEX. The populations in this study were all MRCP examinations in St. Elisabeth Hospital Semarang in June - July 2012. The sampling technique in this study was accidental sampling technique. The samples consisted of 3 female patients with MRCP examination. The inclusion criteria in this study were adult patients, cooperative, weight 50-55 kg.

Study Instruments using observation guidelines, questionnaires, pen and camera. Tools and Materials for this research are MRI machine of GE Health Care 1.5 Tesla, Film size of 34 x 45 cm, Coil Type (Body Coil), Processing, View box, Patient. Data Collecting Method by

Observation, Experiment and questionnaires. The author observed and documented the biliary tract MRI examination in the variation of the thick slab number of 6, 12, 18, 24, 30. Experiment by gave treatment of variation in the number of thick slab with the same size to determine the effect on the scan time and image information. The questionnaires was given to five radiology specialist doctors to provide an assessment of each image based on the variation in the number of thick slab, along with displaying the images of biliary tract MRI examination with thick slab number variation. The parts in the questionnaire to be observed were: Right Hepatic Duct, Left Hepatic Duct, Common Hepatic Duct, Cystic Duct, Pancreatic Duct, Common Bile Duct, and Gallbladder. Respondents were asked to observe and assess each image objectively by giving grades of 1-4.

RESULTS

The study was conducted on three female patients, age between 19-22 years. Total scanning time for T2 Weighting SSFSE sequence on a patient was about 30 minutes. Each patient were given five variations of the number of thick slab i.e. 6, 12, 18, 24, 30, which produced an images equal to the number of thick slab variation, and then six images form the number variation of thick slab of 12-30 considered the best to be able to reveal anatomical information of Right hepatic Duct, Left hepatic Duct, Common hepatic Duct, Pancreatic Duct, Duct fibrosis, Common Bile Duct, Gallbladder were chosen with the aid of a radiologist while the images in the thick slab number variation of 6 were all used so that in total there were 90 images.

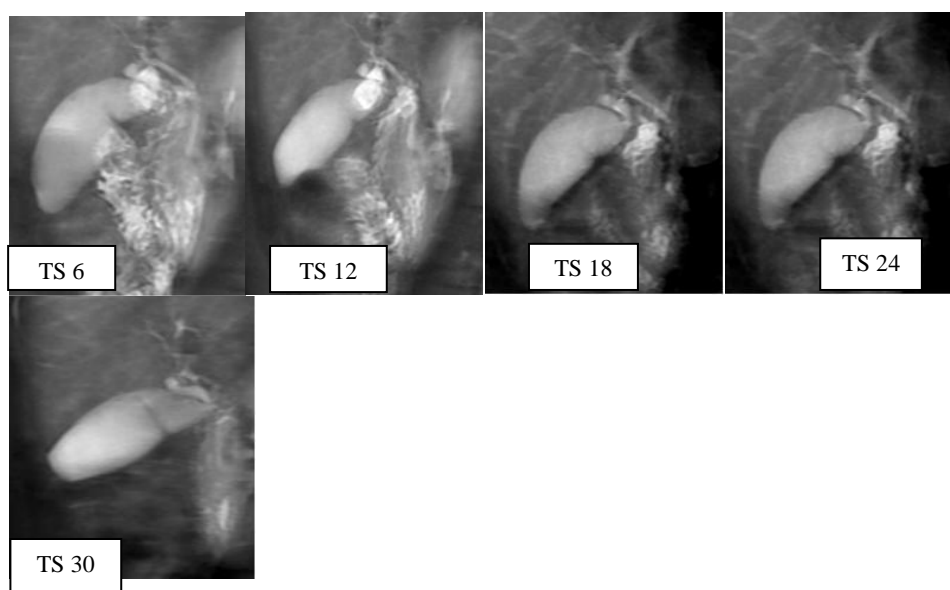


Figure 3.1 The samples of examination image results with the variation of thick slab number of 6, 12, 18, 24, 30 on the first patient (Source, study data at St. Elisabeth Hospital, 2012)

The effect of the number of thick slab on the scan time showed that an increase in the number of thick slab that was followed by an increase in scan time. The thick slab number of 6, 12, 18, 24, 30 produced scan time of 0.21: 0.46: 1.10: 1:34: 1.59 seconds.

Table 1 Value of regression test results thick slab of the scan time

Variasi Jumlah Thick Slab	R	R Square	P
Scan time	0,983	0,966	0,003

Further SPSS analysis was performed. Regression test result obtained the R value of 0.983 which meant that there was a very strong and significant relationship between variations in the number of thick slab and the scan time since R-value closed to 1, with R-square value of 0.966.

Table 2 Value of regression test results thick slab of the image information

Variasi Jumlah Thick Slab pada Informasi Citra	R	R Square	P
Right Hepatic Duct	0,606	0,368	0,278
Left Hepatic Duct	0,104	0,011	0,868
Common Hepatic Duct	0,476	0,227	0,418
Cystic Duct	0,383	0,147	0,524
Common Bile Duct	0,208	0,043	0,738
Gallbladder	0,286	0,082	0,641

Regression test on the thick slab variations on the anatomical information obtained R Square values of: 36.8%, 1.1%, 22.7%, 14.7%, 4.3%, 8.2%, which meant that object image information of Right Hepatic Duct, Left Hepatic Duct, Common Hepatic Duct, Cystic Duct, Common Bile Duct and gallbladder were affected by the variations of thick slab number in those values.

Table. 3 Variation in the number of thick slab on the scan time and image information.

Variation in the Number of Thick Slab	Scan Time	Mean Value of Image Information
6	0,21 S	1,79
12	0,46 S	1,98
18	1,10 S	1,83
24	1,34 S	1,84
30	1,59 S	1,92

Based on the results in the descriptive table above, it can be seen that there were differences in the variations of the number of thick slab on the scan time and image information, thick slab variation increase was followed by an increase in the value of scan time. And for the difference in variation thick slab number on image information, the highest mean value was on the thick slab number variation of 12 with the result of 1.98, followed by thick slab number variation of 30, 24, 18 and 6.

DISCUSSION

Regression test results obtained R square value of 0.966 which means that 96.6% of scan time was influenced by the variations of thick slab. The influence of variation thick slab on scan time is in accordance with the reference according to [5], which stated that by using a thick slab the MRI scan time would decrease. The time in performing thick slab during biliary tract MRI examination is an important part because it is determined by the patient's ability to hold his breath for a few seconds. The length of time that patients hold their breath is in accordance with the thick slab number variation. To produce 6 images in the variation of thick slab number of 6, the examiner required a scan time of 21 sec for the patient to hold their breath. In the variation of thick slab number of 12, 18, 24 and 30 the scan time became 46 seconds, 1.10 seconds, 1.34 and 1.59 seconds. So the increase/decrease in scan time was influenced by the variations in the number of

thick slab used and it is very beneficial for patients directly because it affects the time for patients to hold their breath to get optimum image results. It also affects the overall biliary tract MRI examination because if during thick slab part is taken the patient can follow the hold breath cues as instructed by the officer so well and there is no repetition, it makes overall biliary tract MRI examination time becomes shorter.

Descriptive analysis of the results of the mean value of the thick slab number on the image information showed that there were differences in the scores of the variation of thick slab number of 12 and 30, which were two of the thick slab number variations with the best mean value of 1,988 and 1,924, respectively. There was no effect of variation of the number of thick slab on image information due to the absence in the weighting of the objects assessed. It is consistent with the statement of the respondents who were Radiology Specialist doctors that all objects that to be seen in the biliary tract examination were equally important.

After being associated with abnormalities on certain objects that want to be observed with biliary tract MRI examination, not all parts are common disorders, in quantity there are specific objects to be mainly concerned and frequently have abnormalities which should get a specific weighting such as gallbladder for diagnosis of inflammation of the gallbladder (cholecystitis), cholesterolosis, gallbladder hydrops (mucocele), Cholelithiasis [7,8].

Abnormalities in the biliary system are needed to be seen with MRI in the diagnosis of gallbladder with cholelithiasis, acute and chronic cholecystitis and carcinoma of the gallbladder [6]. So if the weighting is given on specific object, it will yield a different assessment score. Moreover, the lack of effect might be due to the dominating subjectivity of the respondents, when reading overall 90 images for each respondent, there was a tendency that the respondents' eyes were tired to give score to the assessment since it was viewed on a computer so that the assessment scores could have a tendency to be similar. Specific to the pancreatic duct object has a similar image information data value that is 1, because of all the ducts that wants to be observed with biliary tract MRI, pancreatic duct is the most small duct, so there is a tendency that this organ is not visible, except when the patient is in ill condition with enlarged pancreatic duct [8].

There was an influence of variation in the number of thick slab on the scan time as can be in descriptive and statistical tests. Descriptively, the effect of variation in number of thick slab on the image information showed that there was a difference from the specific per-object which showed that the highest score for the Right Hepatic Duct and Common Hepatic Duct were in thick slab of 12 and 30, respectively. While the highest score for the Left Hepatic Duct, Cystic Duct, Common Bile Duct were on thick slab of 12, and the highest score for gallbladder was in the thick slab of 30. When it is suspected abnormalities in one particular object observed from the preliminary examination such as ultrasound, the better focus and optimal view of these objects in biliary tract MRI can use the reference of thick slab number variation in accordance with the highest score on each of these objects. Based on the results of a total score of 13.936 and an mean score of 1,988 in the descriptive count of the variation of thick slab number of 12 had an informative and the highest value of image information with a scan time of 0.46 S. Variation in the thick slab number of 12 got the highest score rather than the variation of the highest thick slab number due to in the thick slab of 30 the breath holding time was long of 1 minute 59 seconds, so there was a chance of the patients movement of the organs as the effect of breath holding in long enough time, and also the chance of visceral movement since the duodenum near the biliary system tends to move. Besides, liquid produced from the gallbladder itself can move with an increased scan time because of the possibility of gallbladder to be distressed by the body coil during the examination.

CONCLUSION

There was an effect of variation in the number of thick slab on the scan time. More variation of the number of thick slab was followed by an increase in the value of the scan time. But there was no effect of variation in the number of thick slab on the image information, however descriptively there was a different on the specific per object which showed that the highest score for the Right Hepatic Duct, Common Hepatic Duct were in the thick slab of 12 and 30, respectively. Furthermore, the highest scores for the Left Hepatic Duct, Cystic Duct, Common Bile Duct were in the thick slab of 12, images with the variation in the number of thick slab 12 was an image that had the highest information value, it was indicated by the mean value of 1,988, the total value of 13.936 and a scan time of 0.46 S, so that the image which was the most informative with the most effective scan time might be on the thick slab number variation of 12.

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ICASH-A42

**IMPLEMENTATION AND EVALUATION OF BREAST CARE TO
THE CHILDBED MOTHER IN COMBINED WARD OF PUSKESMAS
TEGALREJO YOGYAKARTA, INDONESIA**

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ABSTRACT

Background: Breast care is an act carried out at the time pregnant and nursing mothers. It aimed to improve blood circulation and to prevent problems that often arise at the time of breastfeeding including the frequent occurrence of mastitis (inflammation of the breast) in postpartum mothers. Breast care is often overlooked by mothers who are breastfeeding because after giving birth they have no knowledge to breast care.

Aims: This study aims to investigate the implementation of the breast treatment by health workers and to examine the implementation by the breast care postpartum mothers at health centers Tegalrejo.

Methods: This research is a descriptive nonexperimental with cross sectional. Out of 104 puerperal women in health centers Tegalrejo, a total of 20 puerperal women who gave birth in June 2016 was selected followed 10-15 % of total population by Arikunto's formula. There were 15 health providers also involved in the study. Analysis of the data in this study used a computerized system with Excel program, after the data was collected in the tabulation, then both of the officer and postpartum mother sought to see the picture at the health center Evaluation of Breast Care Tegalrejo using frequency distribution.

Results: The results of this study showed that through the implementation of Breast Care, implemented by health personnel at health centers Tegalrejo, of 15 health providers obtained good results, and of 20 respondents obtained medium result.

Conclusion: The conclusion that the breast care Implementation according to the perception of puerperal women and health workers, the fact that there is in the assessment indicate the category of no good, only seven people puerperal women (35%) who received breast care.

Keywords: Evaluation, breast care, childbed mother.

INTRODUCTION

According to the national movement of the enhancement use of breast milk, with the ongoing effort to socialize the early breast milk and that combined care, it is expected to support 100% exclusive breast feeding at 2000 to the Indonesian babies. The success of breast feeding needs a good management of lactation. Beside to support the success of breast feeding in order breast milk to be smooth, it needs a management which sustainable from the pregnancy period to breast feeding period [1].

For supporting breast milk to be smooth it also needs breast care, while in the policy from Puskesmas chief, that health workers must give a lactating management counseling and do the breast care at the time of puerperal.

Puskesmas Tegaltrejo has one inpatient ward for midwifery which has capacity of 12 beds, and has 3 outpatient polyclinics which are health room for mother and children and family planning, a public examination room, a tooth examination room, with the 15 numbers of health workers that handles with the health of mother and children who 2 of them are from Sekolah Perawat Kesehatan (SPK) graduate, 7 of them are from midwife D-I, 5 of them are from D-III, 1 of them is from D-IV, and 11 of them are in the combined ward exclusively.

The numbers of maternity patients on January 2002 – Mei 2002 are 427 people, living babies are 423, and death babies are 5. All of the patients in combined ward get breast care after delivering only once by the health workers who works at morning shift.

The number of pregnant mother's visit trimester three months from January 2002 – Mei 2002 are 247 people. All of them get counseling how to take care their breast by individual at the first time of their pregnancy check. According to the data above it is clear that the breast care is not yet being held every day by the health workers because of the limitation of workers who are in the combined ward and also the experienced childbed mothers. The purpose of this research is to know the implementation of breast care by health workers, and know the implementation by the breast care puerperal women.

METHODS

This research is using descriptive nonexperimental method with the cross-sectional layout. The subjects of this research are childbed mothers and health workers who are in combined ward of Puskesmas Tegaltrejo, based formula Arikunto S (1996) when the population of more than 100 people, the sampling between 10% - 15% or 20% - 25% or more, the. Sample is being taken by 20% from 104 childbed mothers who gave birth in June 2002 with the number of respondents consisted of 20 childbed mothers and 15 health workers. Analysis of the data in this study using a computerized system with Exel program, after the data was collected in the tabulation, then both of the officer nor patients postpartum mother percentage sought to see the picture at the health center Evaluation of Breast Care Tegaltrejo using frequency distribution.

RESULTS

This research is showing that Implementation Evaluation of Breast Care which is being held by health workers in the Puskesmas Tegaltrejo is 77.5% categorized good from 15 respondents, and the implementation evaluation of breast care to the childbed mothers from 20 respondents is 66.25% categorized enough, the implementation of breast care according to the perception of childbed mothers and health workers, the fact shows that bad category, only 7 childbed mothers (35%) who get breast care.

Table 1. The Implementation of breast care by childbed mothers

No.	Statement	Response			
		Yes		No	
		F	%	F	%
1.	The mother gets guidance about breast care in childbed period by Puskesmas Tegaltrejo.	16	80	4	20
2.	After the mother gives birth the breast is taken care by Puskesmas Tegaltrejo.	7	35	13	65

3.	Mother breast care is being held every day by Puskesmas Tegalrejo.	5	25	15	75
4.	The mother is doing the breast care by herself after giving birth.	20	100	0	0
5.	Breast milk is smoothly come out.	16	80	4	20
6.	The mother is breast feeding her child.	19	95	1	5
7.	The mother is given a guidance to solve the problem which is usually occurs in their breast feeding period by Puskesmas Tegalrejo.	13	65	7	35
8.	The mother gives formula to her baby if the breast milk is not yet out at all.	10	50	10	50
Total		106	66.25	54	33.75

Shown in Table 1, the implementation breast care by the health workers which is seen from the point of view of childbed mothers show that 66.25%, while from questioner point number 4 the mother does the breast care herself about giving birth is 20 people (100%).

Table 2. The Implementation of Breast Care by Health Workers

No.	Statement	Response			
		Yes		No	
		F	%	F	%
1.	Nakes gives a guidance about breast care to the mother in combined ward.	15	100	0	0
2.	Nakes does breast care to the childbed mothers after they gave birth.	14	93,3	1	6,7
3.	Nakes does breast care every day to the childbed mother in combined ward.	12	80	3	20,3
4.	Nakes suggests the childbed mothers in combined ward to do the breast care themselves.	5	33,3	10	66,7
5.	Nakes suggests the childbed mothers in combined ward to breast feed their baby.	15	100	0	0
6.	Nakes gives a guidance to the childbed mother in combined ward to solve the problem which often occurs in their breast feeding time.	15	100	0	0
7.	Nakes does the implementation of breast care because of the constant procedure (protap).	8	53,3	7	46,7
8.	Nakes gives formula to the baby if breast milk is so few or does not come out yet.	9	60	6	40
Total		93	77,5	27	22,5

As presented in Table 2, there are five health workers (33.3%) suggest the childbed mothers do breast care for themselves, while the implementation of breast care by the health workers is shown an average good result which is (77.5%).

DISCUSSION

To support the implementation of the success in breast care breastfeeding should begin earliest possible childbed period is 1-2 days after the baby is delivered and performed twice a day. [2]. Results of research in 2000 that it of 30 respondents who get breast care from health personnel is 6 people (20%) is said to be a good mother childbed were breastfeeding her came out smoothly as much as 16 people (80%) and that her milk out noncurrent only 4 people (20%). Whereas 19

people (95%) of mothers breastfeed their babies, and 1 (5%) of mothers do not breastfeed their babies, this means an interest in breast-feeding mothers is very height [3]. With lactation management is good, that good preparation during pregnancy and continued with the treatment at maternity hospitals/wards to join and advice at the time will come home the sustainable, it will support successful breastfeeding [4].

From the results of the study in 2001 breast-feeding mothers in the postpartum rooming quite high, namely: 41 (97.6%) of 42 respondents. While in this study 19 Mothers who breastfeed their babies postpartum namely 95%, and get directions to address issues that arise at the time of breast-feeding as many as 13 people (65%), and were not guided only seven people (35%) [5].

All of the health workers gives instructions to solve the growing problem of feeding time is 15 (100%). of the above figures, there are seven people who did not get a clue problems that arise at the time of breastfeeding. So it will affect the secretion of breast milk smoothly. The issues that need to be explained in the postpartum mother include: Breast swelling, occurs because the milk does not discuss carefully, so that the rest of the milk collected in the duct system that causes swelling [1]. Any breach of the nipple, the nipple when the breast blisters and pecah-pecah then the treatment becomes difficult, because the fissure is also a point of entry of bacteria it should be immediately addressed by providing breast cream masse.

The next feed is temporarily stopped. The milk can be removed manually until the nipples heal, when cured breastfeeding can be continued [6]. Mastitis (inflammation of the breast), caused by swollen breasts that are not in the milk and treated, sore nipples will facilitate the entry of germs, bras that are too tight and maternal malnutrition, lack rest, anemia will be susceptible to infection [7]. Breast abscess from the complication of mastitis [8]. Many factors affect the ASI spending one of them is the lack of breast care during childbirth. And formula feeding should also not use a pacifier, because it will cause the baby's nipple confusion that will affect the success of breastfeeding [1].

Another factor that strengthens the use of milk bottles, among others, the use of Cosmetology Pill, the prestige that looked more "modem" and no less important is the influence of inspiration-inspiration (Sunoto cit Soetjningsih, 1997). Should be explained in addition to postpartum mothers that breast milk contains substances that are required for the growth of the baby, also a most baby food is safe, practical and economical [4]. Research results obtained, the treatment of breast implementation carried out by health workers is 77.5%, well categorized. While implemented by puerperal women own 66.25%, categorized enough. Noting the fact that there is that between the implementation of breast care carried out by health workers and the implementation of breast care received by postpartum mother given the patient's side is not appropriate postpartum mothers. Because it needs improvement to achieve optimal results in the implementation of breast care at puerperium.

Researchers have methodological limitations in this study is the use of non-experimental descriptive cross-sectional design, the amount and timing sample limited research. This research should wear test questionnaires, observations, and interviews so that it will get a complete data. Observations and interviews so it will get a complete data. The variables are evaluated in this study is different, namely health personnel research subjects measured implementation breast care during childbirth, while the output of the postpartum mother is his alone.

CONCLUSION

Results Breast Care held by health workers in health centers Tegalrejo 77.5% of 15 respondents considered good, and the implementation of breast care puerperal women 66.25% of

the 20 respondents categorized enough. Maintenance of the breast as perceived by puerperal women and health workers, the results showed poor category, only seven mothers (35%) who get breast care. Health personnel training on lactation management is needed to improve the implementation of breast care in the puerperal women

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ICASH-A43

**EFFECTIVENESS OF PREGNANCY EXERCISE ON PAIN
REDUCTION AMONG WOMEN IN THE FIRST STAGE OF LABOR**

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ABSTRACT

Background: Every woman who gave birth should feel pain during childbirth. One of the ways to reduce labor pain is non-pharmacological method is through pregnancy exercise. From the observations conducted by researchers in March 2016 obtained from 10 nulliparous laboring women, there are three people experiencing mild pain, five people experiencing moderate pain and two people experiencing severe pain during the progress of delivery.

Aims: This research aimed to know the differences of the mean level of pain during the first stage of labor between women who performed pregnancy exercise and those who did not.

Methods: The design of this research was quasi-experiment. This research conducted in midwife practice Yenni Fitri in Bukittinggi Padang-West Sumatera between March to August 2016. A total of 16 pregnant women and joined the class of pregnant women was selected using purposive sampling method and be asked to fill observation sheet.

Results: The result showed that there was a significant different in labor pain during the first stage of labor (p value < 0.001). The mean pain level among pregnant women who participated to pregnancy exercise was 4.03, lower than the control group (6.25).

Conclusion: Exercise during the third trimester of pregnancy was the good way to the mother to adapt the pain during delivering baby. Pregnant women can do routine pregnancy exercise from the first trimester of pregnancy. This research is expected to recommend health service providers, especially midwives, to deliver the information and the advantages of pregnancy exercise to the women, and to facilitate exercises on third grade pregnant women since exercise during pregnancy is effective and cost-effective in reducing pain and discomfort during the first stage of labor if done regularly.

Keywords: Exercise, labor pain, pregnancy.

INTRODUCTION

Childbirth is a physiological process that should be experienced by every pregnant woman and it is currently highly waited by pregnant women to be able to feel the happiness to see and hug her baby. But childbirth is also accompanied by pain that makes happiness coveted and overwhelmed by fear and anxiety. Childbirth started from the uterus to contract and cause changes in the cervix (opening and thinning) and ends with the birth of the placenta is complete [1].

Pain during childbirth causes psychological changes, including increased anxiety accompanied by crying, hand gestures (which signifies pain) and muscle tension throughout the body. The pain experienced during childbirth is very subjective for every woman. Childbirth pain is personal, every people perceive pain differently on each of the same stimulus depends on its pain threshold. Pain during childbirth is a manifestation of contraction (shortening) muscle of the

uterus. Most mothers consider childbirth pain as something dangerous and frightening experience [2].

Some of the factors that cause pain in Childbirth is reduced supply of oxygen to the muscles of the uterus (childbirth pain becomes more severe if the interval between contractions is short, so that the supply of oxygen to the muscles of the uterus has not fully recovered), stretched the cervix (effacement and dilation), Fear and anxiety can cause the release of stress hormones in large quantities (epinephrine, norepinephrine, and others) that resulted in the emergence of labor pain were longer and heavier. Pain and stress during delivery activate sympathetic nervous system, resulting in increased concentrations of catecholamine so that it can contribute to prolonged childbirth (prolonged second stage) so that it can increase the risk of caesarean deliveries [3].

One effort to reduce Childbirth pain Non-pharmacological are exercises during pregnancy. These exercises can produce a natural analgesic effect on the body to reduce aches and pains [4]. Pregnancy exercise was first introduced on the results of the obstetrician named by dr. Gratley Dick Read, research reveals that every woman should be prepared mentally and physically to face the delivery process [5]. There are three components in exercises during pregnancy, i.e, breathing exercises, strengthening and stretching the muscles of the pelvic and relaxation exercises [6].

Pregnant gymnastic exercises should be started in three trimesters of pregnancy around 28-36 weeks of gestation to flex the muscles of the pelvic floor, breathing exercises before the delivery process is done so that the mother can manage pain in the face of labor pain that mothers can feel calmer and supply oxygen throughout the body running smoothly, relaxation exercises during training exercises is also important so that the mother can manage the pain so as to reduce tension and anxiety during labor so that can reduce childbirth pain [7].

Mothers who regularly undergo exercises during the third trimester of pregnancy will experience the birth process easier, smoother and shorter duration of childbirth. Based on the result of research about correlation between pregnancy exercise and the duration of the second stage of Primigravida in pregnant woman at Sadewa Mother and Child Hospital using survey analytical method, most respondents, or 43 people (68.3%) did pregnancy exercise regularly and 42 people (66,7%) experienced normal childbirth during the second stage. And there is a correlation between pregnancy exercise and the duration process of childbirth of the second stage of labor in primiparous mother [8].

Another factor that can affect the intensity of childbirth pain is age of younger mothers have sensory pain is more intense compared with mothers who have an older age. Younger age tend to be associated with psychological conditions are still unstable triggering anxiety so that the pain is felt more and more strongly than in mothers who multiparas and mother multiparas have birth experience before it will be easier to adapt to pain compared with women who had never had any experience in this primiparous mother [9].

Based on preliminary researches that had been done by researchers at Midwife Practice Yenni Fitri Bukittinggi Padang in March 2016, there were 424 birth mothers, where the birth by 190 primiparous people. From observations obtained from 10 primiparous birth mothers, three people experienced mild pain; five people experienced moderate pain and two others suffered severe pain during childbirth. This is indicated by daily exercise and pregnancy exercise. Exercise had been followed by pregnant women that can affect childbirth pain. Based on the description above, he study aimed to know the differences of the mean level of pain during the first stage of labor between women who performed pregnancy exercise and those who did not. This study

conducted in Midwife Practice Yenni Fitri Padang – West Sumatera, 2016. Researchers are interested in knowing the effectiveness of exercise in the third trimester of pregnancy on pain reduction during the first stage of labor in midwife practice Yenni Fitri Padang- Sumatera West London, 2016.

METHODS

This research used a quasi-experimental with Post-test only design with Nonequivalent Groups. Intervention done by giving pregnancy exercise training to the women on their third trimester of pregnancy (28-40 weeks) for 4 times (28, 30, 32, 34 weeks gestation). Then, respondents were monitored until the first stage of the active phase of childbirth (4 cm-10 cm) to assess pain in childbirth.

The population in this research was every woman who registered in the pregnant women class in Midwife practice Yenni Fitri in Bukit tinggi, Padang-West Sumatra from March to August 2016. The technique is non-probability sampling using purposive sampling [10]. Samples were obtained as much as 16 pregnant women were then helped two groups of eight control group and 8 intervention group. Determining the number of samples is using the formula for the calculation of experimental research to a completely randomized design, randomized or factorial [11]. Inclusion criteria for this research were primiparous pregnant women and normal pregnancy. Researchers conducted exclusion in pregnant women multiparous and pregnant women who did not follow the pregnancy exercise regularly.

Collecting data in this research used questionnaire to obtain information neighbour characteristics of respondents. Then, researchers examined the childbirth pain as much as four times in the first stage of childbirth (4 cm, 6cm, 8cm and 10 cm) using a Visual Analog Score (VAS), assessment of pain are grouped into three: mild pain (scale 0-3), moderate pain (scale 4-6), and severe pain (scale 7-10) [13]. Visual Analog Score is widely used in clinical studies to evaluate a subjective symptom to measure the level of pain [12]. Reliability of VAS was reliable enough to be used in assessing the acute pain [13].

RESULTS

Table 1 showed that the group got exercise training, third trimester of pregnancy, it was total 8 respondents and was five respondents (62.5%) were in the mild pain scale, 3 respondents (37.5%) were in moderate pain. This indicates that the scale of pain in the intervention group only at the mild pain and moderate pain, no respondents who were in severe pain scale. While the group that did not do the exercises in the third trimester of pregnancy consisted 8 respondents, there were five respondents (62.5%) who were at moderate pain scale, and as many as three respondents (37.5%) who were in severe pain scale, there were no respondents were on a scale of mild pain. To determine the relationship or effect between the independent and dependent variables suspected of having links with one another. This research used analysis Independent T-Test to determine the effectiveness of exercise pregnancy exercise in third trimester of pregnancy for the reduction of pain during the first stage of childbirth.

Table 1. The frequency distribution of childbirth pain between the intervention group and the control group

Group	Pain						Total	
	Mild		Moderate		Severe		F	%
	F	%	F	%	F	%		
Intervention	5	62,5	3	37,5	0	0	8	50
Control	0	0	5	62,5	3	37,5	8	50
Total	5	31,2	8	50	3	18,8	16	100

Table 2. The difference of mean of pain intensity during first stage of childbirth between Intervention group and control group

Variable	N	Mean	Median	T	SD	Min-Max	SE	95% CI	P value
Intervention	8	4.03	4.00	-5.596	0.795	3,00-5,25	0.279	3,37-4,70	.000
Control	8	6.25	6.37		0.790	5,00-7,00		5,58-6,91	

Table 2. Showed that the mean pain intensity on first stage of childbirth in group that was doing training pregnancy exercise much lower (4.03) with a minimum of pain intensity scale of 3.00 and the maximum is 5.25. While in third trimester of pregnant women that did not do pregnancy exercise, mean of first stage childbirth pain (6.25) with a minimum value of the pain scale of 5.00 and a maximum value of 7.00. Statistical test was using Independent t-test and obtain ρ value (0.000) $< \alpha$ (0.05), this showed that H_0 was rejected and it means that there were significant difference on the mean level of pain during the first stage of labor between women who performed pregnancy exercise and those who did not. The differences were the intervention group had lower the mean level of pain compared with control group.

Based on the result with the Confident Interval 95% believed that pregnancy exercise in third trimester of pregnancy will reduce pain during giving birth first stage between 3.37 to 4.70. Statistical test using independent t-tests obtained ρ value (0.000) $< \alpha$ (0.05) means that there were significant difference on the mean level of pain between pregnant women who did performed pregnancy exercise and those who did not.

DISCUSSION

Table 1 showed 8 (50%) respondents that pregnant women who had pregnancy exercise experiencing mild childbirth pain as much (62.5%), moderate pain (37.5%) and no pregnant women who experienced severe pain (0%). It is different in women who did not do the exercise during pregnancy 8 (50%) respondents were experiencing moderate pain (62.5%), severe pain (37.5%) and there was no pregnant women who experienced mild pain. Mothers who during pregnancy routinely conduct exercises during pregnancy third trimester only suffered mild pain and moderate during the first stage of labor because at the time of exercises, pregnant women doing physical movements that aim to flex the muscles of the pelvic floor, the abdominal wall and buttocks so ready to accept the pressure of the baby's head. Then, pregnant women are also taught during the exercises how to take a good breath and how to manage fear and anxiety in the face of labor by doing miraculous relaxation techniques that labor pain can be reduced. While pregnant women who do not exercise pregnancy exercise in pregnancy third trimester, experienced moderate pain and severe as the muscles of the pelvic floor, abdomen and buttocks are not trained to flex / stretch the muscles so that it is not ready to accept the pressure of the fetal head so that the

pain natural mothers tend to be heavier what more if followed by fear and anxiety in the face of childbirth process [14].

Research result in Table 2 indicates that the average pain intensity in a group doing exercises in third trimester of pregnancy lower (4.03) with minimum pain (3.00) and maximum (5.25), compared with the average pain in the group that did not exercise gymnastics in the third trimester of pregnancy (6.25) with the minimum pain (5.00) and maximum value (7.00), then p value (0.000) $< \alpha$ (0.05), it shows that there are significant differences in mean pain and the intervention group control. So it can be stated that women who performed pregnancy exercise had lower mean pain level than women who did not perform pregnancy exercise. Statistic test showed that there were significant differences the mean pain level between women who performed pregnancy exercise and those who did not. Pregnancy exercise has good effect on mean pain level during the first stage of labor among women with pregnancy exercise compare women who didn't.

So it can be stated that pregnancy exercise is effective in the third trimester of pregnancy effectively decrease pain during first stage of childbirth.

Labor pain is caused by several factors, the reduced supply of oxygen to the muscles of the uterus, the stretching of the pelvic muscles due to pressure from the decline in the infant's head, this anxiety and fear, can also increase the pain experienced by pregnant women. At the moment women experience fear and anxiety, the body will stimulate the hormones epinephrine and non-epinephrine, these hormones can exacerbate the pain a mother feels heavier [15]. Childbirth pain management should ideally be given during pregnancy. Mothers should be given information about pain reduction techniques when childbirth [16]. Labor pain and stress faced activates the sympathetic nervous system thereby increasing plasma concentrations catecholamine and may contribute to a prolong labor (long duration in the second stage of labour) [17]. One effort that can be made in reducing pain during the first stage of labor is to prepare pregnant women are physically and mentally from the third trimester of pregnancy through pregnancy exercise routine practice, preparation exercises if pregnant through physical movement aims to strengthen and stretch the muscles bibs especially the pelvic floor muscles, mental preparation during training is to teach relaxation techniques and teach her how to take a breather right. This technique can block stress hormones and oxygen supply would run smoothly, safely and spontaneous [17].

Based on the result of research on the impact of pregnancy exercise during pregnancy on adaptation response of childbirth pain in Joho Majolabab Sukoharjo Hospital using comparative approach to case control, found that respondents who participated in exercises during pregnancy contained as many as 11 people (27.55%) had pain being and as many as 10 (25%) of people at the level of severe pain [18].

Result of research on the effects of exercise pregnancy training during childbirth process in the Mother and Child Hospital Aisyiyah Yogyakarta using design of experiments found 15 pregnant women who participated in the training pregnancy exercise as many as 80% women who gave birth and 20% who experienced childbirth complications. While the 15 pregnant women who did not follow the exercise are 66.66% of pregnant mothers delivered with complication, and only 33.33% which maternity normal. Statistical test got p value of (0,025) $< \alpha$ (0,05) [19].

So that training of pregnancy exercise routinely conducted since the third trimester, pregnancy will make the mother calm in the face of childbirth. Pregnancy exercise is a method to prepare pregnant women not only physically but also mentally so that delivery went smoothly, safely and spontaneous. Training pregnancy exercise has a positive impact to flex the muscles in an effort to prevent the complications of childbirth. Pregnancy exercise also gives the mother a

sense of comfort, and training in making good breath to increase the consumption of oxygen during childbirth, in addition it makes to be easier mothers follow the instruction of doctors and midwives [13].

Based on the analysis of the implementation pregnancy exercise, it stated that pregnancy exercise can reduce the intensity of pain because the body is trained to perform movements that aim to maintain the elasticity and strength of muscles and joints associated with childbirth. When the contractions, muscles pelvic and ligaments hold the baby's head tension well, so that the sensation of pain is felt by the mother decreases. Pregnancy exercise also trains mothers to set good breathing, relaxation training done also beneficial for reducing stress levels, anxiety that pain intensity was reduced [15]. This research had been prepared and implemented suitable with scientific procedures, but the research still has limitation. This research was conducted only one Midwife Practice in the Bukit Tinggi, Padang-West Sumatera with a small number of samples required due to limited time, considering this research takes a long time. In applying pregnancy exercise, the limitation experienced is the difficulty of pregnant women to attend classes' pregnant women to join the exercise regularly.

CONCLUSION AND RECOMMENDATION

Pregnancy exercise training is effective for reducing pain of the first stage of childbirth. Pregnant women can be routinely doing pregnancy exercise, considering pregnancy exercise is effectively able to reduce first stage pain of pregnancy. Pregnancy exercise is a safe method of pain relief, can be done at home and cost-effectiveness. The presence of this research are expected for health workers especially midwives in order to provide information about the benefits of pregnancy exercise. Facilitating pregnancy exercise and teaching the mother how to do pregnancy exercise is so that pregnant women can independently do so. With pregnancy exercise undertaken during the third trimester of pregnancy the birth process that will be faced can work safely, smoothly and spontaneously.

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ICASH-A44

**THE DESIGN OF RADIOLOGY VIEWING BOX USING
POTENTIOMETER SYSTEM**

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ABSTRACT

Background: In the process of work to gain the maximum results, a radiologist needs a viewing box tool to read radiographs.

Aims: to create a viewing box tool by using a potentiometer system.

Methods: This study used applied research method by creating and using the design of viewing box tool by using a potentiometer system and testing the viewing box tool created by using a Lux meter and 15 respondents consisting of five radiologists and 10 radiographers who should fulfill the questionnaire form.

Results: The mean of viewing box illumination reached 220 lux. The results of the questionnaire showed that 100% radiologist gave an A (excellent) and expressed that the viewing box tool created could be used properly and 90% radiographers provided an A (excellent) and expressed that the viewing box tool created could be used properly, while 10% radiographer gave a value of B (moderate).

Conclusion: viewing box tool created could be used properly and obtained optimal results as a tool in reading radiographs. Potentiometer system contained in the viewing box was very helpful in reading radiographs because it allowed to adjust the light intensity according to user needs.

Keywords: Viewing box, Potentiometer

INTRODUCTION

In the work process of radiology installation, ionizing and non-ionizing radiation are using as energy sources. In the radiograph science, to obtain good quality and adequate radiographs, it is influenced by several factors, among others: the radiographic techniques, materials, equipment and techniques of darkroom/ processing. All of which is interrelated each other, so if one factor is ignored then the radiographic images produced will be inadequate. After passing through these stages then the operator will obtained a yield of radiographs, but radiographs are not the end of the radio-diagnostic examination process, without the written results or expertise from the radiologist then radiography process can be said to be redundant. In this case there is a need to implement quality control and quality assurance standards in viewing the radiographic images, to support the overall optimization of the radiography process [1]. Radiographer has a responsible to see the film to assess its suitability as a diagnostic support which is often referred to as the image quality [2]. Contrast, sharpness and the mean of density will be tested from each other and this is a quality that can be considered in accordance with the state of the displayed image. In general, the fewer the

number of odd light, the better the detection analysis of a radiologist to read radiographs, so it is advisable to reduce light scattering in the eye to enhance the performance capability of the radiologist [3]. The film with good quality is not necessarily better when viewed with the viewing box that does not meet the standards [4]. It's very important. Therefore, the selection of good quality viewing box is indispensable when planning the radiology department. There should be a comprehensive quality assurance program for the viewing box to obtain good, consistent and informative image visualization [5]. The display of light intensity of the viewing box should be able to set in low and higher lighting so that the detection accuracy when viewing calcification in the glandular tissue can be seen clearly [6].

Potentiometer is one type of resistor that the resistance value can be set according to the needs of electronic circuits or the needs of the user, it is often also used in the lamp brightness regulator circuit (Light Dimmer Circuit) and the voltage regulator in the power supply (DC Generator). Structurally, the potentiometer consists of 3 terminal feet with a shaft or lever that function as the regulator. Potentiometer as known as resistor with scroll connection which is made setting voltage divider [7].

Therefore, the authors want to develop a viewing box tool, which in general the work if this tool resembles the factory manufactured tool. However, the author would like to modify it into a viewing box tool with the light intensity that can be set by using a potentiometer as required in reading radiographs.

METHODS

This study used applied research method by creating and using the design of viewing box tool by using a potentiometer system and the function test was performed by observing the objects being created. In order to test the effectiveness of the modified viewing box tool, then the tool function test experiment would be conducted at the Laboratory of Mathematics and Natural Science, University of Udayana and in some hospitals during March 2009. The data collection process was carried out by tool test experiment to measure the color temperature of the x-ray viewing box by using Lux Meters and it was also tested in terms of effectiveness, both in function and other available supporting components in the viewing box [8].

The instrument used in this study was a questionnaire addressed to radiology doctors and radiographers. This questionnaire was used to obtain the data in order to test the function of the modified viewing box tool in accordance with the actual function. The points to be assessed include: feasibility of the viewing box tool to be used in accordance with its function, and the added benefits from the supporting components contained in the viewing box. Assessment indicator A meant good, B meant moderate and C meant less good.

In designing the viewing box the authors needed tools and materials used in its manufacture, namely: Electric drill, cable scissors, blade/cutter, mechanical pens, solder, tin solder, Acrylic (black and white with 2 mm thickness), power supply, sandpaper, power cable, black duct tape, LED (light Emitting Diode), glue gun, potentiometer, resistor (resistance), on-off switch, step-down transformer to lower the voltage of AC to DC voltage, dimmer light (inflows regulators), capacitors, diodes (1 Ampere), relay, head sink, fuse, PCB board.

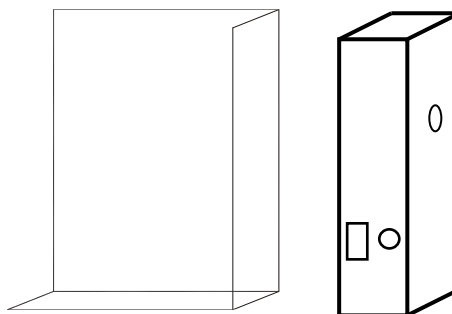


Figure 1 Acrylic pieces were adhered by using glue

As shown in figure 1. The process to make this tool was firstly by sketching on the surface of acrylic, in accordance with a box that will be created by using a mechanical pen, did the cutting and created holes for the placement of equipment/accessories required. Then the acrylics were arranged/shaped that have been cut by using glue, thereby there were formed two boxes with a height of 45 cm, length of 37 cm, a width of 7 cm and a height of 45 cm, a length of 8 cm, height 7 cm. The rear part of the viewing box was set to be opened and closed in order to facilitate the preparation of electronic series, LED lights and to simplify the tool repair at any time when the viewing box is damaged.

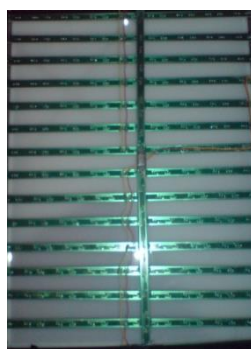


Figure 2 LED lamps series in the viewing box

As shown in figure 2. Firstly, potentiometer electronic system was outside the box before being placed in the box. This was done to facilitate the string. Then a series of LED lights that will be used on a viewing box were arranged with a distance of between 2 cm-3 cm for each LED (LEDs used here were as many as 288 pieces).

For each LED a resistance (resistor) of 220 ohm was provided in order to restrain the excess voltage that goes into the LEDs. After the series of LEDs and resistors was neatly arranged, then the series was attached in the box that has been made.

When all the components have been set and neatly arranged in a box, then all of the series were connected/linked to each other. The film prop was made on the front side of the viewing box by using rubber materials or similar material. The final stage was combining the box with bolts on the both boxes.



Figure 3 Modified viewing box by using potentiometer

RESULTS

The study was conducted from March to May 2009, to create a viewing tool box by using a potentiometer system. For viewing box lighting, the function test of the tool was conducted in the Optical Laboratory of Mathematics and Natural Science Faculty of Udayana University. Measurements were made by using Lux Meter and showed a mean of viewing box illumination of 220 lux. The function test of the viewing box was also conducted by using questionnaire addressed to 5 Radiology Specialists and 10 Radiographers in some hospitals to assess the feasibility of viewing box tool when it was used to read radiographs, and to assess the available supporting components on a viewing tool box.

Table 1 Frequency Distribution of the Radiologist and Radiografer in Assessing the Feasibility of Viewing Box Tools Use for Reading Radiographs

Variabel	F	%
<i>Radiologist</i>		
Good	5	100
Moderate	0	0
Less	0	0
Total	5	100
<i>Radiografer</i>		
Good	9	90
Moderate	1	10
Less	0	0
Total	10	100

As shown in table 1 , 5 radiologists (100%) who provided assessment, all of them provided Good on the Feasibility of Viewing Box Tools Use for Reading the Results of X-ray Photographs. 10 radiographers who provided assessment for the feasibility of viewing box use in reading radiographs, 9 radiographers (90%) provided an A (good) and 1 radiographer (10%) provided a value of B (moderate).

Table 2 Frequency Distribution of the Radiologist ang Radiografer in Assessing the Potentiometer System Contained in the Viewing Box

Variabel	F	%
<i>Radiologist</i>		
Good	5	100
Moderate	0	0
Less	0	0
Total	5	100

<i>Radiografer</i>		
Good	9	90
Moderate	1	10
Less	0	0
Total	10	100

As shown in table 2. 5 radiologists (100%) who provided assessment, all radiologists provided an A on the supporting components contained in the viewing box. 10 radiographers who provided assessment for the benefits of supporting components contained in the viewing box, 9 radiographers (90%) provided an A (good) and 1 radiographer (10%) provided a value of B (moderate).

The study results showed that the light intensity of the viewing box has met the standard of 220 lux. The whole radiologists who were respondents in this study provided excellent on the assessment of the feasibility of the viewing box in reading the radiographs and potentiometer system. Whereas most radiographers who were respondents in the study provided excellent on the feasibility of the viewing box in reading the radiographs and potentiometer system. The potentiometer system allowed radiologists and radiographers to set the required light intensity. Thus, viewing box can be used optimally in reading the radiographs.

DISCUSSION

Radiology viewing box is an assisting tool for radiologist in reading the radiographs. To be able to assess the radiographs, feasible viewing box tool is required. Most of the viewing boxes in Hospitals, especially in Indonesia have lighting system that can not be set. In fact, a good viewing box is a viewing box where the light intensity can be set lower and higher to produce high detection accuracy to view calcification in the glandular tissue clearly [6]. Therefore, making a viewing box tool with the light intensity that can be set is an appropriate solution.

Potentiometer is a three-terminals resistor with a sliding connection which form a voltage divider that can be tuned [7]. By using the potentiometer system, then light intensity on a viewing box can be adjusted as needed. This viewing box used LED lights with evenly spread mounting in the box, so that the viewing box had an evenly spread light intensity.

The materials used in the manufacture of viewing box in this study used acrylic material, while most of the viewing boxes in hospitals use ferrous materials. The fundamental difference that made the viewing box in this study was that it was easily moved because the basic material was lighter. With the potentiometer system on the viewing box created it is expected to assist radiologists in reading radiographs with optimal results. In general, the fewer the number of foreign light, the better the detection analysis of a radiologist to read the radiographs, so it is advisable to reduce light scattering in the eye in enhancing the performance capability of the radiologist [3].

Limitation in this study was the size of the viewing box that was still reserved for 1 big film size reading, so it is not possible to compare the two readings on big size X-ray films.

CONCLUSION AND RECOMMENDATION

Based on the results obtained, in general the viewing box tool that was created could be used properly and obtained optimal results as a tool in reading radiographs. Potentiometer system contained in the viewing box is very helpful in reading radiographs because it allows to adjust the light intensity according to user needs.

The advantages of the viewing box made, among others; it can be made with materials that are easy to get, lighter because it is made of acrylic, light intensity can be adjusted by using a potentiometer.

It is suggested that the viewing box should be maintained every 3 months by cleaning it and checking the electrical equipment and the fluorescence lamps.

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ICASH-A45

**CONSTRUCTION DESIGN OF AN ASSISTING TOOL FOR
IMMOBILIZATION IN THORAX AND ABDOMEN EXAMINATION
ON PEDIATRIC PATIENTS**

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ABSTRACT

Background: The main idea of designing an assisting tool for immobilization in pediatric thorax and abdomen examinations is that there are radiographer's difficulties while performing radiographs, especially pediatric thorax and abdomen.

Aims: This study aims to design of appliance assist for immobilization thorax and abdomen examination on pediatric patients.

Methods: This study was an exploratory experiment by designing, applying and testing the construction of an assisting tool for immobilization in thorax and abdomen examination on pediatric patients. The methods used in data collection were interview and observation. Function test results were analyzed based on the check list of the respondents regarding the feasibility of the tool.

Results: an assisting tool for immobilization in thorax and abdomen examination on pediatric patients was designed in examination table-shaped made of basic materials such as acrylic, hollow steel and Eser steel plate. Function test on the work of the assisting tool was performed by 6 respondents who applied it to the patient. Based on the function test results, there was of 89,5% respondents who stated that the tool for immobilization in thorax and abdomen examination on pediatric patients could help the performance of the radiographer in positioning and reducing the patient's movement and there was no artifact in the radiographs.

Conclusion: Function test results showed that the tool design could reduce the movement of patients and may replace the function of others to resist the movement of the patient. An assisting tool for immobilization in thorax and abdomen examination on pediatric patients should be improved further especially in choosing the material used, so that the toll will be lighter and can better reduce the patient's mobility and the size should consider the average height of the pediatric patients.

Keywords: Construction Design, Thorax and Abdomen Immobilization, Pediatrics.

INTRODUCTION

In radiographic examination, the presence of assisting tools is indispensable. The tools aim to help the performance of the radiologist in positioning the patient and the cassette as well as possible so that it will produce maximum radiographs of a radiographic examination. There are various assisting tools, such as sand bag, weighted angel block, head clamp, press chollers,

octagonal immobilization, tam-em board, Pigg-o-stat, tape, sheets or towels, covered radiolucence sponge blocks, compression bands, stockinette and face bandages [1].

Some examination assisting tools have specific characteristic that is can only be used in a specific examination and each has disadvantages, for example tam-em-board is an assisting tool for the examination on pediatric patients in supine position but there can still be a movement in the shoulder, then pig-o-stat is an examination assisting tool for the abdomen and thorax erect projection in pediatric patients which can only be used in pediatric patients who have been able to stand, and its use is less comfortable and causes pain. There is no literature that describes the development of assisting tools for pediatric examination in Indonesia.

The most widely performed radiography examination in hospitals and clinics is thorax examination. The radiologists agree that in most of the thorax examinations in pediatric patients, erect position is better than the supine position for more information. However, knowing how to get good radiographs quality in both positions is very important. Beside the position of the body, an accurate diagnosis is also dependent on the quality of images produced by short exposition time to cope with the movement. Taking image at the time of expiration may lead to an incorrect interpretation of the radiologist. Therefore taking image at the time of maximal inspiration is important to get the right diagnosis. Radiographs obtained from a good position and without rotation is also important for the correct diagnosis because a little rotation can cause significant deformation of the normal anatomy [2].

The reason for abdominal examination in pediatric patients different from adult patients in terms of the exposition and position factors of the patient. So, the examination technique or inspection procedures are very different. In addition to supine and erect position, assessment of acute abdominal condition or serial abdomen in adult patients usually also required additional left lateral decubitus position. In general, serial abdominal examination is incomplete without examination of the thorax with PA projection. To minimize radiation, serial abdominal examination in pediatric is performed 2 times: abdominal supine and an image showing air-fluid level. Erect position is preferred rather than the lateral decubitus position for patients under the age of 2 to 3 years, because in terms of immobilization and patient comfort, it is an easier position. Erect position can be obtained by a slight modification of Pigg-O-Stat, while lateral decubitus position requires significant modification of Pigg-O-Stat [2].

Based on the observations while conducting field work in some Radiology Installations, it was found that radiographers had difficulty to perform radiographic examination, especially pediatric thorax and abdomen. Radiographers need parents' help in doing immobilization to perform an examination. When the patient was crying and refused to do the examination, the parents should held directly to resist the movement of the patient, so as to reduce errors in thorax and abdomen radiographs. If there is movement during exposition progress it will affect the quality of the radiograph resulted. For that we need the tools to solve these problems by designing a the assisting tool for immobilization in thorax and abdomen examination on pediatric patients to help immobilize patient in thorax and abdomen radiographic examination, especially in pediatric patients.

METHODS

This study was an exploratory experiment by designing, applying and testing the construction of an assisting tool for immobilization in thorax and abdomen examination on pediatric patients. Data collection method was conducted by the researchers were interviews and observation. Interviews were conducted to obtain data from the function test of the tool by

fulfilling the questionnaire in the form of a check list by the respondents. Researchers observed the use of the assisting tool for immobilization in thorax and abdomen examination on pediatric patients under the age of 3 years and see how the use of these tools.

RESULTS

After the assisting tool for immobilization in thorax and abdomen examination on pediatric patients was made by using the materials of hollow steel and Eser steel plate, dense foam, waterproof fabric, velcro strip and acrylic, next step was performing function test on the work of the assisting tool by 6 respondents and the results can be seen in the table below:

Table 1. Table of recapitulation of the check list

No	Respondent	Number of Question	Supported	Did not support
1	Respondent 1	8	8	0
2	Respondent 2	8	8	0
3	Respondent 3	8	6	2
4	Respondent 4	8	7	1
5	Respondent 5	8	7	1
6	Respondent 6	8	7	1
	TOTAL	48	43	5

Referred to support is that these tools can assist respondents in to immobilize the patient, put the cassette in proper position, the examination time becomes shorter and not causing artifacts.

To determine whether the assisting tool for immobilization in thorax and abdomen examination on pediatric patients cause artifacts on the radiographs or not, the researchers used two image receptors in the form of imaging plate and radiographic film.



Figure 1. Results of radiographs of the patients with the tool in abdominal examination by using an image receptor in the form of imaging plate



Figure 2. Results of radiographs of the patients with the tool in thorax examination by using an image receptor in the form of radiographic film.

Of the two radiographs produced by the assisting tool for immobilization in thorax and abdomen examination on pediatric patients by using image receptors in the form of imaging plate and radiographic film, it can be seen that the tool did not cause artifacts which can interfere with important anatomical part in the radiograph.

DISCUSSION

There are a wide variety of assisting tools, especially for pediatric patients. However, based on observations while conducting field work practice, some Radiology Installations, did not have assisting tools for pediatric patients so that the radiologist experienced difficulties in pediatric radiography examination. Thus, the researchers designed the assisting tool for immobilization in thorax and abdomen examination on pediatric patients [1].

The assisting tool for immobilization in thorax and abdomen examination on pediatric patients is a tool designed to help immobilize patient in thorax and abdomen radiographic examination, especially in pediatric patients. The materials used to make this tool is hollow steel, Eser steel plate, dense foam, waterproof fabric, velcro strips and acrylic. Acrylic material was chosen because of the radiolucency characteristic, so it does not interfere with radiographs [3]. In the making process of this tool, electric welding was more used of to unify each part, but there were some sections were joined together by bolts that were acrylic part and headrests with the tool framework.

In this tool, patients could lie down comfortably, because the tool was quite wide. Acrylic was placed between the patient and the cassette which served as a barrier and the base of the patient. The movement of the cassette could be adapted to the Central Point in patients so that it could be arranged as a cassette on the examination table of general X-ray machine. Headrest was made of dense foam that can provide comfort for the patient. This headrest was coated with water resistant fabric and easy to clean. In this tool there were velcro strips that serve as the immobilization of the patient's movements. The velcro strips made of fabric that can be penetrated by X-rays. In addition, the location of the velcro strips could be adjusted to the patient's body.

Based on the recapitulation of the check list results on the assisting tool for immobilization in thorax and abdomen examination on pediatric patients that have been calculated by using a predetermined formula, then it was obtained a percentage of 89.5%. Based on the percentage value it can be concluded that the assisting tool for immobilization in thorax and abdomen examination on pediatric patients could help the radiographer performance in positioning the patient, cassette and reduced the patient's movements and did not require assistance from the patient's parents to hold the patient during the examination.

When respondent used the assisting tool for immobilization in thorax and abdomen examination on pediatric patients, there were obstacles associated with the mobilization of the tool, it was because the materials used ere too heavy. Nonetheless, the cassette placement when the tool was used was more easily and did not need the help of parents to hold the patient. By using normal exposition factor for pediatric patients, radiograph results from the use of this tool did not cause artifacts.

From the test results, the assisting tool for immobilization in thorax and abdomen examination on pediatric patients had some advantages and disadvantages. The advantages of the assisting tool can reduce the patient's movements so as to produce the optimal radiographs, can help to postion the patient and the cassette so that they are perpendicular to the direction of the X-rays. And do not cause artifacts which can interfere with important anatomical part in the radiograph. And the disadvantages is the weight of the tool is heavy enough so for female radiographer require more energy to move the tool.

CONCLUSION

Based on the function test results, the assisting tool for immobilization in thorax and abdomen examination on pediatric patients could help the radiologist performance. From the results of recapitulation it can be concluded that the tool could assist the radiologist in positioning the patient and reducing the patient's movements, as well as there was no artifact in the radiographs.

Based on the conclusion, the recommendations are: Should be improved further especially in choosing the material used, so that the toll will be lighter and can better reduce the patient's mobility. To better reduce the patient's mobility, the tool should use stronger strap material to assist patient immobilization optimally. The size of the assisting tool for immobilization in thorax and abdomen examination on pediatric patients should consider the average height of the pediatric patients.

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ICASH-A46

RISK FACTORS OF BIRTH ASPHYXIA IN PKU MUHAMMADIYAH HOSPITAL, BANTUL

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ABSTRACT

Background: Infant mortality rate particularly in the perinatal period, is significantly high and become a health problem both globally and nationally. The first thousand days of life are the golden periods for a child's growth. Health surveillance before and during pregnancy as well as in the birth process largely determines the quality of the child that will be born. Among four regions in Yogyakarta, Bantul region has the second highest number of infant mortality with 126 cases. The leading cause of infant death in this region is asphyxia which reaching 29 cases. In PKU Muhammadiyah Hospital, Bantul there were 264 (23%) infants from 1131 live births who suffered from asphyxia in 2014.

Aims: To determine the risk factors of birth asphyxia in PKU Muhammadiyah, Hospital Bantul in 2014.

Methods: This was an analytical observational study, with case control study design. The study was conducted in PKU Muhammadiyah Hospital, Bantul. Samples were newborns in PKU Muhammadiyah Hospital, Bantul from January to December 2014. There were 167 respondents in case group and 167 respondents in control group. Data were analyzed using univariate, bivariate with chi-square test and multivariate with conditional logistic regression analysis.

Results: From the results of multivariate analysis, four factors related to asphyxia were abnormal labor (OR=2.304;95%CI=1.402 to 3.787;p-value=0.001), premature rupture of membranes (OR=2.040;95%CI=1.019 to 4.083;p-value=0.044), anemia (OR=1.426;95%CI=1.182 to 1.720;p-value=0.000) and pregnancy spacing <2 years (OR=2.458;95%CI=1.060 to 5.698;p-value=0.036).

Conclusion: Abnormal labor, premature rupture of membranes, anemia and pregnancy spacing <2 years were the risk factors of birth asphyxia in PKU Muhammadiyah Hospital, Bantul in 2014.

Keywords: asphyxia, neonatal, risk factors

INTRODUCTION

Indonesian Doctors Association (IDI) defines birth asphyxia as spontaneous and regular respiratory failure during delivery or after birth that has several symptoms such as hypoxemia, hypercarbia, and acidosis [1]. World Health Organization (WHO) reports that among 120 million newborns annually around the world, 4 million (4.8%) are stillbirths and another 4 million (4.8%) are died less than 30 days after birth (neonatal further). Approximately 3.6 million (3%) of 120 million babies has asphyxia neonatorum that caused death for 1 million (27.78%) of them. In Indonesia, the rate of infant mortality in 2012 was 32 per 1000 live births. The causes of perinatal deaths were prematurity (32%), asphyxia (30%), infection (22%), congenital defects (7%), and others (9%) [2].

In Yogyakarta, there were 449 cases of infant mortality in 2013. Among four regions in Yogyakarta, Bantul has the second highest number of infant mortality with 126 cases, where 29 of them were caused by asphyxia. In PKU Muhammadiyah Hospital, Bantul there were 264 (23%) infants from 1131 live births who suffered from asphyxia in 2014 [3,4].

According to Oswyni et al, newborns asphyxia can induce to respiratory failure, metabolic disorders such as hypoglycemia and hypocalcemia, kidney damage and necrotizing enterocolitis. This was caused by hypoxia fetus in utero is related with factors that appear in pregnancy, childbirth or soon after birth [5].

Factors causing the lack of oxygen intake are hypertension during pregnancy (pre-eclampsia and eclampsia) 24%, antepartum hemorrhage (placenta previa, placental abruption) 28%, anemia (<10%), and overdue pregnancy. Factors of baby condition are prematurity (15%), Low Birth Weight (LBW) (20%), congenital defect (1-3%), and meconium stained amniotic fluid. Placental factors are twisted umbilical cord, short umbilical cord, umbilical cord knot, and umbilical cord prolapse. Neonates' factors are respiratory depression caused by anesthetics or analgesics consumed by mothers, and birth trauma, such as intracranial hemorrhage (2-7%). Delivery factors are prolonged labor (2.8-4.9%), assisted births (malpresentation, twins, shoulder dystocia, vacuum extraction, forceps) 3-4% and premature rupture of membranes (PROM) 10-12%) [6,7].

Safe and effective methods to prevent and overcome newborn death by asphyxia are including early detection of risk factor by performing quality antenatal care, normal or basic delivery care, and neonatal care by health care professionals [8]. Therefore, this study was conducted to determine the risk factors of birth asphyxia in PKU Muhammadiyah Hospital, Bantul, in 2014.

METHODS

This was an analytical observational study, with case control study design [9]. Samples were newborns in PKU Muhammadiyah Hospital, Bantul from January to December 2014. There were 167 respondents in case group and 167 respondents in control group. The study instrument was experiment forms. Secondary data were obtained from patient medical records from January 1st to December 31st 2014. Data was obtained from the hospital after received approval from Ethical Committee Board of Universitas Aisyiyah Yogyakarta with reference number 02/KEP-SAY/Exe./X/2015. Data analysis used univariate, bivariate, and multivariate analysis. Univariate analysis was conducted using frequency distribution table to describe characteristic of each variable (table 1 and 2), bivariate analysis was conducted using Chi-square test (table 3 and 4). Meanwhile, multivariate analysis was conducted condition logistic regression test respectively (table 5)

RESULTS

Table 1. Distribution of Risk Factors of Birth Asphyxia in PKU Muhammadiyah Hospital, Bantul, in 2014

Independent Variable	Asphyxia		Not Asphyxia		Total	
	N	%	N	%	N	%
Antepartum Hemorrhage						
Yes	1	0.6	0	0	1	0.3
No	166	99.4	167	100	333	99.7

Pre eclampsia						
Yes	5	3	2	1.2	7	2.1
No	162	97	165	98.8	327	97.9
LBW						
Yes	22	13.2	15	9	37	11.1
No	145	86.8	152	91	297	88.9
Prematurity						
Yes	17	10.2	6	3.6	23	6.9
No	150	89.8	161	96.4	311	93.1
PROM						
Yes	40	24	15	9	55	16.5
No	127	76	152	91	279	83.5
Meconium stained amniotic fluid						
Yes	8	4.8	2	1.2	10	3
No	159	95.2	165	98.8	324	97
Labor type						
Yes	122	73.1	81	48.5	203	60.8
No	45	26.9	86	51.5	131	39.2
Anemia						
Yes	48	28.7	22	13.2	70	21
No	119	71.3	145	86.8	264	79

As can be seen in Table 1, there are three frequent risk factors of birth asphyxia, which are 122 cases (73.1%) of abnormal delivery, 48 cases (28.7%) of anemia, and 40 cases (24%) of premature rupture of membranes (PROM).

Table 2. Distribution of Risk Factors of Birth Asphyxia in PKU Muhammadiyah Hospital, Bantul, in 2014

External Variable	Asphyxia		Not Asphyxia		Total	
	N	%	N	%	n	%
Maternal Age						
< 20 and > 35	2443	14.4	19	11.4	43	12.9
20 – 35	1	85.6	148	88.6	291	87.1
Maternal Education						
Low	15	9	9	5.4	24	7.2
High	152	91	158	94.6	310	92.8
Maternal Parity						
Multipara	95	56.9	87	52.1	182	54.5
Primipara	72	43.1	80	47.9	152	45.5
Pregnancy Spacing						
< 2 years	23	13.8	10	6	33	9.9
≥ 2 years	144	86.2	157	94	301	90.1
Pregnancy Care						
< 4 times	0	0	0	0	0	0
≥ 4 times	167	100	167	100	334	100

Table 2 shows that the majority of birth asphyxia occurred in mothers with multiparity (95 cases/56.9%), aged less than 20 years old or more than 35 years old (24 cases/14.4%), and pregnancy spacing less than two years (23 cases/13.8%)

Table 3. The Relationship Between Independent and Dependent Variables

Independent Variable	OR	95% CI	P-Value
Antepartum hemorrhage	0	1,80 – 2,23	1,00
Pre eclampsi	2,54	0,48 –13,31	0,445
Low birth weight	1,53	0,76 – 3,07	0,296
Premature birth	3,04	1,16-7,91	0,031
Premature rupture of membrane	3,19	1,68-6,04	0,000
Meconium stained amniotic fluid	4,15	0,86-19,84	0,108
Labor type	2,87	1,82-4,54	0,000
Anemia	2,65	1,51-4,65	0,001

Table 3 above illustrated about the relationship between dependent and independent variable which were tested by using chi-square test analysis and the calculation of odds ration with confidence interval (95%) and the significant level ρ ($<0,05$). The results of statistical test on the table showed that there was no significant relationship between antepartum hemorrhage, pre-eclampsia, low birth weight and meconium stained amniotic fluid with asphyxia due to the range of CI value exceeded 1 and ρ value $>0,05$, which means that women with pre-eclampsia antepartum hemorrhage, low birth weight and meconium stained amniotic fluid have no impact on asphyxia that occurred in PKU Muhammadiyah Hospital, Bantul, in 2014.

The bivariate analysis against the premature birth variable with asphyxia showed a significant relationship (OR=3,04, 95% CI=1,16-7,91) with ρ value 0,031. The relationship is statistically significant because the range of CI value does not exceed 1 and ρ value $<0,05$, which means that infants with premature birth are three times mostly found in asphyxia than those who are not born prematurely. The premature rupture of membranes (PROM) showed a significant relationship against asphyxia (OR=3,19, 95% CI=1,68-6,04) with ρ value $<0,00$, which means that the infants who were born in asphyxia are three times mostly found in a group of mothers with PROM than mothers who were not experiencing PROM.

Meanwhile, on the variable of labor types, the analysis results showed a significant relationship between labor types with asphyxia (OR=2,87, 95% CI=1,82-4,54) with ρ value 0,00. It showed that the infants who experienced asphyxia are mostly found in abnormal labor than the normal labor. The variable of mothers with anemia showed a significant relationship with asphyxia (OR=2,65, 95% CI=1,51- 4,65) with ρ value 0,01, which means that the infants who were born in asphyxia are two times mostly found on mothers with anemia than the mothers who were not anemic.

Table 4. The Relationship Between External and Dependent Variables

External Variable	OR	95% CI	P-Value
Maternal age <20 yo and > 35 yo	1,30	0,68 – 2,49	0,513
Low education	1,73	0,73-4,07	0,289
Multiparity	1,21	0,78-1,86	0,445

Pregnancy spacing < 2 year	2,15	1,15-5,44	0,028
Pregnancy care < 4 times	-	-	-

Table 4 above illustrated the relationship between external variables and dependent variables by using chi-square test analysis and the calculation of odds ratio with confidence interval (95%) and the significance level p ($<0,05$). The results of statistical test on the table showed that there was no significant relationship between maternal age, maternal education, and parity with asphyxia because the range of CI value exceeded 1 and p value $>0,05$, which means that the maternal age, education and parity had no impact on asphyxia in Muhammadiyah Hospital, Bantul in 2014. While on the pregnancy spacing < 2 years variable showed a significant relationship with asphyxia (OR=2,15, 95% CI=1,15-5,44) with p value $<0,05$. It showed that the infants who were born in asphyxia were 2 times mostly found in pregnancy spacing < 2 years compared with the pregnancy space > 2 years.

Table 5. Multivariate Analysis with Condition Logistic Regression Test

Variabel	OR	95% C.I	P-value
Premature delivery	2,033	0,715 - 5,780	0,183
Abnormal delivery	2,304	1,402 - 3,787	0,001
Premature rupture of membrane	2,040	1,019 – 4,083	0,044
Anemia	1,426	1,182 – 1,720	0,000
Pregnancy spacing < 2 year	2,458	1,060 – 5,698	0,036
Constanta	0,000	-	-6,556

As can be seen in Table 3, there were four variables that had dominant relation with birth asphyxia. These variables were pregnancy spacing < 2 years, abnormal delivery, premature rupture of membranes (PROM) and anemia. Meanwhile, premature delivery was not a risk factor of birth asphyxia in PKU Muhammadiyah Hospital, Bantul in 2014.

DISCUSSION

The analysis result shows that mothers with premature rupture of membranes (PROM) had 2.0 more risk to have infant with birth asphyxia compared to mothers with normal membrane rupture. Common complication in PROM is asphyxia that occurs to 10-40% newborns. Birth asphyxia in this case is generally caused by umbilical cord compression due to oligohydramnios. Umbilical cord compression causes hypoxia to the fetus [10]. Biarge *et al* also state similar result where mothers with PROM had 4.81 more risk of birth asphyxia than mother with normal membrane rupture [11].

Abnormal delivery had 2.3 more risk to birth asphyxia compared to normal labor. Partus pathology (abnormal) is a pervaginam delivery with the help of medical instruments or by abdomen wall (caesarean section). Complications for the mother and the fetus that could occur from abnormal delivery are infection, mother's fatigue, fetal distress and hemorrhage [12]. Konishi *et al* state that caesarean section increase the risk of birth asphyxia by 3.24 times compared to normal delivery [13].

Mothers with anemia had 1.4 more risk of birth asphyxia than mothers who did not have anemia. Hemoglobin concentration decrease causes decline of oxygen transformation from lungs to peripheral tissues. The loss of oxygen transformation ability subsequently causes inadequate oxygen consumption that leads to complications on the mother and the fetus such as decreased immune function, fatigue, fetal growth restriction, prematurity, fetus hypoxia, stillbirth,

disablement, and low birth weight. Kiyani *et al* similarly explain that mothers with anemia had 58.84% higher incidence of birth asphyxia compared to mothers who did not have anemia [14].

Pregnancy spacing less than 2 years was a risk factor of birth asphyxia. Pregnancy spacing is the interval between the delivery dates of one infant to the following infant. Proper pregnancy spacing is two to three years. Delivery of pregnancy with interval less than 24 months has high risk of hemorrhage, maternal and neonatal mortality [15]. In this study, there was no relation between independent variables (antepartum hemorrhage, pre-eclampsia, LBW, premature delivery, meconium stained amniotic fluid) and external variables (maternal age, maternal education, parity and pregnancy care) on birth asphyxia. Regular and proper pregnancy care could reduce the risk of various disruption to mother and the fetus, including asphyxia.

CONCLUSION

Abnormal delivery had 2.3 more risk of birth asphyxia than normal delivery. Premature rupture of membranes had 2.0 more risk of birth asphyxia than normal membrane rupture. Mothers with anemia had 1.4 more risk of birth asphyxia than mothers who did not have anemia. Pregnancy spacing < 2 years had 2.4 more risk of birth asphyxia than pregnancy spacing \geq 2 years. Antepartum hemorrhage, pre-eclampsia, LBW, premature delivery, meconium stained amniotic fluid, parity, maternal education, and pregnancy care were not risk factors of birth asphyxia. After completing this study, we would like to suggest for policy makers to improve the mother and children care, particularly in Emergency Unit by providing resuscitation kit and staffs who are proficient to treat asphyxia and to improve the quality of pregnancy care and counseling regarding the importance of nutrition for pregnant mothers by involving husband during the counseling.

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ICASH-A47

CORRELATION BETWEEN MOTIVATION AND STUDENTS' ACHIEVEMENT IN MIDWIFERY CARE AND DELIVERY PROGRAM IN AISYIYAH UNIVERSITY YOGYAKARTA

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ABSTRACT

Background: Universitas Aisyiyah Yogyakarta is one of the universities that has implemented Competence Based Curriculum (CBC) system. One of the courses that used CBC system is Midwifery Care in Delivery course, which relates directly to the main job of a midwife. However, there are many students who only obtained C (Unsatisfactory) grade, and they need to retake the course meet the standard grade as determined by Universitas Aisyiyah Yogyakarta. One of the factors influencing study achievement is motivation.

Aims: to analyze the relation between study motivation of fourth semester students (academic year 2012/2013) of DIII Midwifery Program, Universitas Aisyiyah Yogyakarta and their achievement in Midwifery Care in Delivery course.

Method: This was a quantitative study with analytical survey method and cross sectional approach. Study population was all 223 fourth semester students (academic year 2012/2013) of DIII Midwifery Program, Universitas Aisyiyah Yogyakarta. 143 of them were selected as study subjects. Data was analyzed using Spearman's Rank Correlation.

Results: The majority of fourth semester students of DIII Midwifery Program had medium motivation in Midwifery Care in Delivery course, with the number reached 96 students (67.1%). Most of fourth semester students of DIII Midwifery Program obtained C (Unsatisfactory) grade in Midwifery Care in Delivery course, with the number reached 67 students (46.9%). There was a significant relation between fourth semester students of DIII Midwifery Program motivation and their achievement in Midwifery Care in Delivery course, where the result of Spearman's Rank Correlation test shows the value of correlation coefficient $\rho = 0.723$ and p value (0.000) $< \alpha$ (0.05).

Conclusion: There was a relation between learning motivation and their achievement in midwifery care in delivery course with a strong degree of correlation. However, further research is expected to discuss all factors that affect the learning achievement such as environment, interests, talents, intelligence, health, learning way, and other variables that can affect.

Keywords: motivation, midwifery care, study achievement

INTRODUCTION

Study achievement is one of the parameter of students' competence in their field of study. One of the indicators of study achievement is the grade achieved by students in their courses as a parameter of how they comprehend their learning in the forms of cognitive, affective, and psychomotor [1]. In the field of medicine, particularly in Midwifery Academy, midwives competence in performing comprehensive midwifery care is one of the required professional competences in the field. One of the courses in the topic of Midwifery Care is Midwifery Care in

Delivery, which relates directly to the main job of a midwife. This course is substantial for midwives to perform their job properly in the field [2].

Midwifery Care in Delivery is one of the courses in Universitas Aisyiyah Yogyakarta that used competence based curriculum system. The data of class A, B, and C academic year 2011/2012 students' grades in this course shows that the number of students who achieved the grade A, B, C, D, and E were 14 (6.3%), 107 (48.0%), 101 (45.3%), 1 (0.4%), and 0 (0%), respectively. This data showed the high number of students who achieved grade C and needed to retake the course to meet the standard grade as determined by Universitas Aisyiyah Yogyakarta [3].

Soraya (2012) states that student's study achievement is influenced by various factors, from the student himself (internal factors) and external factors. Internal factors comprised of physiological and psychological factors, while external factors are including environmental and instrumental factors. Physiological factor related to physical functions such as health, faculty, and other functions. Meanwhile, one of the topics in psychological factors is motivation. Student motivation in every learning activity is substantial in improving his grade [4].

Student motivation is necessary in creating positive learning development. Therefore, authors aimed to analyze the relation between study motivation of fourth semester students (academic year 2012/2013) of DIII Midwifery Program, Universitas Aisyiyah Yogyakarta and their achievement in Midwifery Care in Delivery course.

METHODS

This was a quantitative study with analytical survey method and cross sectional approach [5,6]. Data was collected using questionnaire. This study used proportional random sampling, where the samples were distributed proportionately in each class based on the total samples. The study population was all 223 fourth semester students (academic year 2012/2013) of DIII Midwifery Program, Universitas Aisyiyah Yogyakarta. Data was analyzed using Spearman's Rank Correlation.

Learning motivation is measured by using questionnaire in the form of Likert scale and consist of favorable and unfavorable questions with the category of High (76%-100%), medium (60%-75%), and low motivation (<60%). While learning achievement is viewed and measured from the value of final semester evaluation from midwifery care in delivery course by the category of Excellent ($\geq 80,00$), Good (70,00-79,00), Unsatisfactory (55,00-69,00), Poor (41,00-54,00) and Failure (<41,00). Before the questionnaire used, the researcher carried out the validation test by using Pearson Product Moment correlation technique and reliability test by using Alfa Cronbach technique.

RESULTS

Overview Research Subjects

The study subjects were fourth semester students (academic year 2012/2013) of DIII Midwifery Program, Universitas Aisyiyah Yogyakarta who took Midwifery Care in Delivery course. There were 143 students who took this course, which comprised of 48 students from Class A, 48 students from Class B, and 47 students from Class C. The grades of Midwifery Care in Delivery course were obtained from second semester, when these students took the course. The number of samples was taken from all population who was agreed to participate as respondent. The total respondents were calculated based on random technique to obtain 143 students.

Students' motivation to academic achievement

Relation between study subjects' motivation and their achievement is displayed in the following table:

Study Motivation	Study Achievement										Total	
	A (Excellent)		B (Good)		C (Unsatisfactory)		D (Poor)		E (Failure)			
	f	%	f	%	f	%	f	%	f	%	f	%
High	12	54.5	10	45.5	0	0	0	0	0	0	22	100
Medium	2	2.1	51	53.1	43	44.8	0	0	0	0	96	100
Low	0	0	0	0	24	96.0	1	4.0	0	0	25	100
Total	14	9.8	61	42.7	67	46.9	1	0.7	0	0	143	100

As can be seen in the table, majority (54.5%) of the students with high motivation had A (Excellent) grade, while most of the students (53.1%) with medium motivation had B (Good) grade. However, 96% of students with low motivation only received C (Unsatisfactory) grade. To analyze relation between study subjects' motivation and their achievement, we used Spearman's Rank Correlation in Statistical Program for Social Science (SPSS) for Windows version 15.0 software. Study hypothesis was determined by comparing p value from statistical test with significance level $\alpha = 0.05$.

		Motivation	Achievement
Spearman's rho	Motivation	Correlation Coefficient	1.000
		Sig. (2-tailed)	.723**
		N	143
	Achievement	Correlation Coefficient	.723**
		Sig. (2-tailed)	1.000
		N	143

** . Correlation is significant at the 0.01 level (2-tailed).

The result of Spearman's Rank Correlation test shows the value of correlation coefficient $\rho = 0.723$ and p value (0.000) $< \alpha$ (0.05), which means that there was a significant relation between study subjects' motivation and their achievement.

DISCUSSION

From 143 students in this study, the number of students with high, medium, and low study motivation were 22 (15.4%), 96 (67.1%), and 25 (17.5%), respectively. Students with low motivation did not actively participate in the learning process as they seemed uninterested to improve themselves. The majority of students in this study had medium motivation.

Winkel (2000) states that study motivation is a non-intellectual psychological factor that affects a person's interest in learning something. Students with high motivation will actively participate in the learning process. Teacher can improve study motivation by encouraging the students, engaging their curiosity, using various strategies in the class, stating clear expectation, and providing positive feedback [7].

The study subjects' achievements were assessed by observing their grades. From 143 students, there were 14 of them (9.8%) who received A (Excellent) grade. Meanwhile, the number

of students who received B (Good), C (Unsatisfactory), and D (Poor) grades were 61 (42.7%), 67 (46.9%), and 1 (0.7%), respectively. No student received E (Failure) grade.

During the learning process, a person is expected to experience an improvement in himself. Study achievement is a product of learning process and can be considered as its aim [8]. Generally, learning process can be defined as a comprehensive behavioral process in experiencing improvement in integration of cognitive, affective, and motoric aspects [9].

Usman Effendi translates learning as an individual activity. Every activity requires a stimulus in forms of motivation and the predetermined objective. Optimal result can be obtained by the influence of high motivation and clear objective. This affirms the substantial role of motivation in learning process as it encourages student to actively engage in learning activities to achieve his objective [10].

The result of Spearman's Rank Correlation test shows the value of correlation coefficient $\rho = 0.723$ and p value $(0.000) < \alpha (0.05)$, which means that there was a significant relation between study subjects motivation and their achievement. The correlation coefficient between study subjects motivation and their achievement showed the value of $\rho = 0.723$. This number is categorized as strong correlation as it is in the interval of 0.60-0.799.

Study motivation is one of the factors that affects the success of learning process [11]. Study motivation itself is influenced by student's aspiration, his ability, his environmental condition, dynamic factors and teacher's effort in the learning process. The factors can be classified into internal factors, which include student's aspiration, ability, and condition, and external factors that include student's environmental condition, dynamic factors and teacher's effort in the learning process. The mutual interaction between internal and external factors will improve student motivation, which will lead to the improvement in his study achievement [12].

Sadirman similarly states that study motivation is significant in generating better mood in learning process. This is in line with Choosri and Intharaksa (2010) study, where they found positive and significant correlation between motivation and English proficiency ($r = 0.184$, $p < 0.05$) [13].

However, the results of this study cannot be used as an absolute result in learning process because factors that were not examined have the same impact or influence or may be even greater than the learning motivation. Therefore, to overcome such limitations, further research is needed related to the results of this study by combining the motivation with environment, interests, talents, intelligence, health, learning method or other variables so that the contribution of each variable can be known clearly.

CONCLUSIONS AND RECOMMENDATION

There was a significant relation between fourth semester students of DIII Midwifery Program motivation and their achievement in Midwifery Care in Delivery course, where the result of Spearman's Rank Correlation test showed the value of correlation coefficient $\rho = 0.723$ and p value $(0.000) < \alpha (0.05)$. This study can be used as a reference for Universitas Aisyiyah Yogyakarta especially for DIII Midwifery Program to improve student motivation by optimizing learning principles, learning dynamic factors, utilizing student experience and skills, and developing student's aspiration, and to create a conducive learning environment by improving learning facilities and book collection in the library to improve student motivation. However, the further research is expected to discuss all factors that affect learning achievement such as

environment, interests, talents, intelligence, health, the way of learning, and other variables that can affect.

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ICASH-A50

THE RELATIONSHIP BETWEEN KNOWLEDGE OF HEPATITIS B-0 IMMUNIZATION AND HEPATITIS B-0 IMMUNIZATION TIMING IN JETIS PRIMARY HEALTH CENTRE, YOGYAKARTA, INDONESIA

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ABSTRACT

Background: Hepatitis B, one of dangerous communicable diseases, causes outbreak and death. Jetis Public Health Center, moreover, had lowest immunization scope compared to other public health centers in Yogyakarta, that only at 89.46%.

Aims: This is to determine the relationship between the level of mother's knowledge on Hepatitis B0 immunization and time of Hepatitis B0 immunization in Jetis Public Health Center Yogyakarta.

Methods: A semi-qualitative research was employed with an analytical survey and cross-sectional time design. A total of 69 mothers who immunized their infants in Jetis Public Health Center, Yogyakarta, was selected by accidental sampling technique. The data was then analysed by Chi-Square statistical test.

Results: The research result showed a relation between the level of mother's knowledge on hepatitis B0 immunization and time of hepatitis B0 immunization in Jetis Public Health Center, Yogyakarta.

Conclusion: The findings highlight the importance of knowledge improvement among the mothers to Hepatitis B0 immunization. The local health providers may need to conduct socialization to encourage mothers to visit health center for infant Hepatitis B0 immunization

Keywords: Hepatitis B0 Immunization, mothers, knowledge, immunization.

INTRODUCTION

Hepatitis B is caused by hepatitis B virus resulting in hardening of the liver (Cirrhosis Hepatis), liver cancer (Hepato Cellular Carcinoma), and causing death [1]. There are 350 million people in the world suffering positive HBsAg (Hepatitis B Surface Antigen) as carriers, and 220 million (78%) are in Asia, including Indonesia. 25-45% patients with hepatitis B are estimated as infants and children transmitted by the mothers, of which it has risk by 3.9% during pregnancy [2].

In the first and second trimester of pregnancy, the fetus has a risk of infection with hepatitis B by 8-10%, and increased to 67% in the third trimester [3]. Transmission of hepatitis B from mother to child is a spread of the infection with a high prevalence [4]. The children infected by hepatitis B from the mothers with positive HBsAg have risk by 90% of becoming chronic, the children aged 1-5 years have risk by 30-60%, and adults have risk by 2-6%. In infants born to mothers with positive HBsAg and Hepatitis B0 immunization is not given, they have risk by 90% of suffering chronic hepatitis B. Hepatitis B0 immunization given when the infants aged 0-7 days has risk of suffering chronic hepatitis B by 23%, and if Hepatitis B0 immunization is given after

aged 7 days, then the risk to become chronic hepatitis B increased to 40%. Hepatitis B vaccine has 85-95% effectiveness to prevent hepatitis B disease [5]. Treatment of hepatitis B disease is still difficult. In Indonesia, 460 babies die every day because of diseases that can largely be prevented by vaccination [6]. To prevent transmission of hepatitis B from mother to child, Hepatitis B transmission chain needs to be terminated by HBsAg screening on every pregnant woman. HBsAg screening method could use a rapid test. This screening should be followed by all pregnant women in the first trimester of pregnancy. This is to prepare the actions required by the positive HBsAg mothers [7].

Hepatitis B0 Immunization is one basic immunization must be given to newborns [7]. Implementation of Hepatitis B Immunization contained in the Regulations of Minister of Health of the Republic of Indonesia Number 42 of 2013 [8]. The role of midwife in immunization is giving immunization to newborns to toddlers up to pre-school ages. Hepatitis B0 immunization is given to newborns aged 0-7 days in the right thigh [9].

Hepatitis B immunization can be done well due to several factors, i.e.: birth attendants, health workers service, and perception of the severity of the disease [3]. The problems affecting Hepatitis B0 immunization are the family members do not want the baby to be immunized due to the side effects and an understanding of the family that “in the past, baby remains healthy even though not immunized,” and there are people who still doubt the halal status of immunization [10]. This is in accordance with the *fiqhiyah* principle, i.e.:

الْحَاجَةُ تَنْزِلُ مَنزِلَةَ الضَّرِّ

Which means: “*The needs occupy the place of emergency*”

Based on the *fiqhiyah* principle above, hepatitis B disease is one disease considered emergency [11]. The treatment of hepatitis B infectious diseases that is still difficult, especially the chronic one, makes the prevention of hepatitis B disease important [12].

In Yogyakarta City Health Profile (2014), the percentages of complete basic immunization of children in Kulonprogo: 89.7%, Bantul: 80.4%, Gunung Kidul: 74.6%, Sleman: 92.2%, and Yogyakarta City: 75.5%. Hepatitis B0 immunization percentages in Kulon Progo: 100%, Bantul: 94.5%, Gunung Kidul: 98.3%, Sleman: 100%, and Yogyakarta: 100% [13]. Complete basic immunization score in Yogyakarta in 2014 wasn't 100%. From 3.881 babies born alive, only 3.762 babies (96,93%) received complete basic immunization. From 3.881 babies born alive in 2014, 3.831 babies received Hepatitis B0 immunization <7 days (98,76%). The incomplete scope of immunization in Yogyakarta was caused by parents who refused immunization and high mobilization of the people of Yogyakarta [21]. Yogyakarta has 18 community health centers including Community Health Center of Jetis of which had the lowest percentage of complete basic immunization coverage compared to other health centers, i.e. 89.46% [13]. The previous study in Community Health Center of Jetis, Yogyakarta on April 6, 2015, showed that two children are not immunized because they refused to be immunized. In January-December 2014, the total children immunized was 218 children. The aims of this study was to determine the relation between mother's level of knowledge on hepatitis B0 immunization and time of Hepatitis B0 immunization in Jetis Public Health Center Yogyakarta.

METHODS

This study used analytic survey method with cross sectional approach. Sixty-nine (69) mothers who brought their children to Community Health Center of Jetis, Yogyakarta were selected by using accidental sampling design from May to June 2015 in Community Health Center of Jetis, Yogyakarta. Inclusion criteria for this study is All the mothers who were willing to be

respondents and filled the approval can read, write, and brought a maternal and child health book. The exclusion criterion was child taken to Jetis Public Health Center Yogyakarta by their biological mother.

The respondents got true-false questionnaires consisting of 28 questions related to hepatitis B0 immunization knowledge. The percentage of correct answers obtained by each respondent was calculated and clarified to determine the mother's knowledge level about Hepatitis B0 immunization with good category when the score is 75-100%, 56-75%: sufficient, and < 56%: less [14]. The schedule of Hepatitis B0 immunization can be seen in Growth Chart (*Kartu Menuju Sehat*) on maternal and child health book. Thus, whether it is right or not can be known by the date specified on the Growth Chart by matching it with the child's date of birth.

Chi-Square test was conducted to determine mother's knowledge about hepatitis B0 immunization and the relationship between mother's knowledge about hepatitis B0 immunization and schedule of B0 hepatitis immunization. To see the relationship between mother's knowledge about Hepatitis B0 immunization and schedule of Hepatitis B0 immunization, contingency coefficient formula was used [15].

RESULTS

Respondents in this study were mothers getting immunization for their children required by the children, consistent with the respondent criteria in the working area of Jetis Public Health Center, Yogyakarta in 2015.

Table 1. Characteristics of Respondents Research

No	Characteristics	Frequency	Percentage (%)
1.	The age of mother:		
	a. < 20 age	2	2,9
	b. 20-35 age	62	89,9
	c. > 35 age	5	7,2
	Total	69	100,0
2.	The Education:		
	a. College	16	23,2
	b. Senior High School	38	55,1
	c. Junior High School	13	18,8
	d. Primary School	2	2,9
	Total	69	100,0
3.	The occupation :		
	a. trader	2	2,9
	b. entrepreneur	1	1,4
	c. government employees	3	4,3
	d. private employees	2	2,9
	e. does not work	61	88,4
	Total	69	100,0
4.	The gender of the child :		
	a. male	27	39,1
	b. female	42	60,9
	Total	69	100,0

5.	The birth location :		
	a. group was private midwife	2	2,9
	b. Public Health Center	59	58,5
	c. hospital	8	11,6
	Total	69	100,0
6.	The birth attendant :		
	a. midwife	65	94,2
	b. Doctor	4	5,8
	Total	69	100,0

The age of mother column shows that most mothers who take their children to Jetis Public Health Center were 20-35 years old (62 mothers or 89,9%), while the smallest age group of mothers taking their children was <20 (2 mothers or 2,9%). The education column shows that most mothers who take their children to Jetis Public Health Center, Yogyakarta had high school education (38 people or 55,1%), while the smallest education level group was elementary school (2 people or 2,9%).

The occupation column shows that most mothers who take their children to Jetis Public Health Center for immunization didn't work (61 people or 88,4%), while the smallest occupation group was entrepreneur (1 person or 1,4%) orang. The gender column shows that most children taken by their mothers to Jetis Public Health Center for immunization were female (42 children or 60,9%), while the smallest gender group was male (27 children or 39,1%).

The birth location column shows that most mothers who take their children to Jetis Public Health Center gave birth in public health center (59 mothers or 85,5%), while the smallest birth location group was private midwife (BPS) (2 mothers or 2,9%). The birth attendant column shows that most mothers who take their children to Jetis Public Health Center were helped by midwives (65 mothers or 94,2%), while the smallest birth attendant group was doctor (4 mothers or 5,8%).

Knowledge about hepatitis B0 immunization

The knowledge level can be determined by using questionnaires containing 28 items of questions answered by 69 respondents. Every question had chance of zero score (wrong answer) and 1 score (correct answer), so each respondent could have maximum score of 28 and minimum score of 0. The percentage of correct answer of each respondent was calculated and clarified to determine mother's level of knowledge on hepatitis B0 immunization, with good, adequate, and poor categories. The measurement results of knowledge about Hepatitis B0 immunization in mothers who brought their children for immunization in accordance with the needs of the children in Community Health Center of Jetis, Yogyakarta in 2015 are presented in the following table:

Table 3. Frequency of Knowledge Level about Hepatitis B0 Immunization in Community Health Center of Jetis, Yogyakarta

Mother knowledge about Hepatitis B0 Immunization	Frequency	Percentage (%)
Good	27	39,1
Adequate	37	53,6
Less	5	7,2
Total	69	100,0

Table 3 shows that mother's knowledge about Hepatitis B0 immunization in Community Health Center of Jetis are mostly sufficient by 37 (53.6%) mothers, while the least is less knowledge by 5 (7.2%) mothers. Hepatitis B immunization is intended to provide immunity against hepatitis B disease, i.e. a disease that attacks liver. Hepatitis B0 immunization is an immunization that can prevent hepatitis B disease, and the first immunization is given to infants aged 0-7 days [15].

Schedule of hepatitis B0 immunization

Schedule of Hepatitis B0 immunization can be seen in the Growth Chart on maternal and child health book. Thus, whether it is right or not can be known by the date specified on the Growth Chart by matching it with the child's date of birth. The measurement results of schedule of Hepatitis B0 immunization on the mothers who brought their children for immunization in accordance with the needs of the children in Community Health Center of Jetis, Yogyakarta in 2015 are presented in the following table:

Table 4. Frequency of Schedule of Hepatitis B0 Immunization in Community Health Center of Jetis, Yogyakarta

Schedule	Frequency	Percentage (%)
Right	67	97,1
Not exactly	2	2,9
Total	69	100,0

Table 4 shows that schedules of Hepatitis B0 immunization are mostly proper by 67 (97.1%) mothers, while the least, those who had improper schedule of immunization are 2 (2.9%) children. Children who are not immunized against Hepatitis B0 have risk by 90% of suffering chronic hepatitis B. If Hepatitis B0 immunization is given when the babies aged 0-7 days, they have risk by 23% of suffering chronic hepatitis B, and when Hepatitis B0 immunization is given after aged 7 days, there is a risk of becoming hepatitis B disease [5].

The findings taken at the schedule of immunization service in maternal and child health room every Monday starting on 1-8 June 2015 showed that the schedule of Hepatitis B0 immunization were mostly proper by 67 (97.1%) children, while those who had improper schedule of Hepatitis B0 immunization were 2 (2.9%) children. Immunization is an information of when a particular type of vaccination or immunization should be given to children [15].

Mother's knowledge and schedule of hepatitis B0 immunization

A Relationship between knowledge level about Hepatitis B0 immunization and schedule of Hepatitis B0 immunization. Cross tabulation and statistical test of the relationship between mother's knowledge about Hepatitis B0 immunization and schedule of Hepatitis B0 immunization in Community Health Center of Jetis, Yogyakarta in 2015 are presented in the following table:

Table 5. Relationship Between Knowledge about Hepatitis B0 Immunization and Schedule of Hepatitis B0 Immunization in Community Health Center of Jetis, Yogyakarta

The level of knowledge	Schedule		Total	χ^2 Count	p-value	Count Coeff
	Right	Not exactly				
Good	F	27	0	6,007	0,050	0,283
	%	40,3	0			
Adequate	F	36	1	53,6		
	%	53,7	50,0			
Less	F	4	1	7,2		
	%	6,0	50,0			
Total	F	67	2	100		
	%	100	100			

Table 5 shows that in most children who had proper schedule of Hepatitis B0 immunization, there were 36 (53.7%) mothers with sufficient knowledge, while the least, there were four (6.0%) mothers. In improper schedule of Hepatitis B0 immunization, there was a mother (50.0%) with sufficient knowledge, and a mother (50.0%) with less knowledge.

From the results of statistical calculation using Chi-Square as presented in the table, p-value of 0.050 was obtained. So, it can be concluded that there was a significant relationship between mother's knowledge level about Hepatitis B0 immunization and schedule of Hepatitis B0 immunization in Community Health Center of Jetis, Yogyakarta. Contingency coefficient value of 0.283 indicated the low relationship between mother's knowledge about Hepatitis B0 immunization and schedule of Hepatitis B0 immunization.

DISCUSSION

The findings showed that there were 27 (39.1%) respondents who had good knowledge about Hepatitis B0 immunization, while there were 37 (53.6%) respondents who had sufficient knowledge about Hepatitis B0 immunization, and there were 5 (7.2%) respondents who had less knowledge about Hepatitis B0 immunization. These results indicated that most respondents had sufficient knowledge about Hepatitis B0 immunization.

The factors affecting knowledge were education, experience, information, cultural environment, and socio-economic factors. The respondents who had good knowledge about Hepatitis B0 immunization indicated that most mothers had been informed about hepatitis B0 immunization. This good knowledge may be due to the process of providing information or health education to the mothers previously, related with Hepatitis B0 immunization [16]. Knowledge is the result of knowing and happens after one sense using human senses, i.e. seeing, hearing, smelling, tasting, touching. Most human knowledge is obtained from eyes and ears and is important in forming one's action. A total of 27 (39.1%) mothers had a good knowledge level about Hepatitis B0 immunization. This means that the respondents had been used the senses owned by the respondents to improve knowledge, especially regarding to Hepatitis B0 immunization [24].

Vertical (perinatal) transmission or maternal-neonatal transmission is a transmission of hepatitis B virus infection that occurs in uterus, in childbirth, and post childbirth. Newborns get the infection at birth from infected mothers [17]. Horizontal transmission occurs in materials containing HBsAg virus, entering the body through the skin and mucous membranes. Injection with unsterile needles causes transmission through the skin. Hepatitis B virus is spread through contact with body fluids (blood, saliva, semen) of the patients, or from mother to child in childbirth [18].

Immunization in infants is a vaccination necessary to prevent transmission of the disease from mother to baby. Immunization is useful to provide immunity against certain diseases by stimulating the formation of antibodies in the body [19]. A child who is not immunized against Hepatitis B0 has risk of suffering chronic hepatitis B by 90%. If Hepatitis B0 immunization is given when a baby aged 0-7 days, he/she has risk of suffering chronic hepatitis B by 23%, and when Hepatitis B0 immunization is given after aged 7 days, there is a risk of becoming hepatitis B disease [5].

The findings taken at the schedule of immunization service in maternal and child health room every Monday starting on 1-8 June 2015 showed that the schedule of Hepatitis B0 immunization were mostly proper by 67 (97.1%) children, while those who had improper schedule of Hepatitis B0 immunization were 2 (2.9%) children. According to [15], immunization is an information of when a particular type of vaccination or immunization should be given to children.

Knowledge about immunization will form positive attitudes towards immunization activity. It is also a dominant factor in the success of immunization with a good knowledge and awareness to immunize their babies. Such knowledge will lead to mothers' trust on health, and will affect their infants' immunization status [20]. Birth attendant is one factor in the accuracy of Hepatitis B0 immunization due to the availability of HB prefilled injection device that is practical (easy to store and carry). All infants assisted by health workers get Hepatitis B0 immunization at the age of 0 days [3].

Based on Table 4, most of the mothers have sufficient knowledge by 36 mothers (53.7%), and there is one child (50.0%) who has improper schedule of hepatitis B0 immunization. A person who has sufficient knowledge is not necessarily proper in giving hepatitis B0 immunization to her baby. Knowledge is the result of knowing, and this occurred after a person performs sensing on a specific object. Knowledge or cognitive is an important domain in shaping one's action [16].

There were only four (6.0%) mothers with less knowledge, and there was one child (50.0%) with improper schedule of hepatitis B0 immunization. One's knowledge level to others' is different, thus, it affects the schedule of hepatitis B0 immunization. One's knowledge level consists of six levels, i.e. remember, understand, apply, analyze, synthesize, evaluate. In addition to the knowledge level that can affect action, there are the factors affecting a one's knowledge level, i.e.: education, experience, information, cultural environment, socio-economic [16].

Most respondents with proper schedule of Hepatitis B0 immunization had sufficient knowledge level by 37 (53.6%) respondents, and most of them had last education of Senior High School by 38 (55.1%) respondents. One's education level would affect one's knowledge level. The higher one's knowledge level will affect the behavior [22].

The research of Wati (2013) shows that there is a significant relationship between knowledge and the completeness of immunization in children aged 1-5 years. The results of analysis showed that there was a relationship between knowledge level about Hepatitis B0 immunization and schedule of Hepatitis B0 immunization in Community Health Center of Jetis,

Yogyakarta. It was obtained from the calculation by Fisher's Exact test, and p-value obtained was $0.050 \leq 0.050$, then H_0 was rejected. So, it can be concluded that there was a significant relationship between knowledge about Hepatitis B0 immunization and schedule of Hepatitis B0 immunization in Community Health Center of Jetis, Yogyakarta. Contingency coefficient value of 0.283 indicated the low level of relationship between knowledge level about Hepatitis B0 immunization and schedule of Hepatitis B0 immunization [23].

CONCLUSIONS AND RECOMMENDATIONS

There was a relationship between mother's knowledge level about Hepatitis B0 immunization and schedule of Hepatitis B0 immunization. The relationship was considered weak. The health workers in community health centers were expected to keep maintaining and improving the provision of information through counseling in integrated service post of infants and toddlers conducted by midwives at the working area of community health centers. The mothers were expected to improve knowledge about Hepatitis B0 immunization by following counseling in integrated service post of infants and toddlers conducted by midwives at community health centers in the working area of Community Health Center of Jetis, Yogyakarta, and the next researchers can further enhance this study by looking for recent references, thus, the study of hepatitis B0 immunization be more up to date.

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ICASH-A51

**INFLUENCE OF KEGEL GYMNASTICS ON PRIMIGRAVIDA
PREGNANCY TOWARDS THE INCIDENCE OF A PERINEAL
RUPTURE IN BASIC ESSENTIAL OBSTETRIC CARE NEONATES
SURAKARTA, INDONESIA**

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ABSTRACT

Background: *Kegel gymnastics can strengthen pelvic floor muscles and improve blood circulation and posture so that the perineal muscles and the perineal floor muscles become elastic. Perineal rigidity is the maternal factor which can lead to perineal rupture.*

Aims: *The objective of the study is to determine the effect of Kegel gymnastics for primigravidas on the incidence of perineal rupture.*

Method: *This study employed the quasi-experimental method with the control group design. Its samples were determined through the quota sampling technique. The subjects of the research were primigravidas as many as 40. They were divided equally into two groups – intervention group and control group. The data of the research was collected through observation sheet for evaluation of Kegel gymnastics for at least three weeks and pantograph sheet. They were analyzed by statistical analysis with the Chi-square formula aided with the computer program of SPSS Version 16 for Windows.*

Result: *Only 40% mothers experienced a perineal rupture if exercised kegel gymnastics. It was significantly lower compared to their counterpart in the control group with no exercise (p-value = 0.001).*

Conclusion: *Kegel gymnastics may lower the incidence of perineal rupture among the primigravidas.*

Keywords: *Kegel gymnastics, primigravida, perineal rupture*

INTRODUCTION

Kegel exercises created by Dr. Arnold Kegel in 1984 with the aimed at controlling the postpartum incontinence and to improve the inability to hold urine. Kegel exercises strengthen the pelvic floor muscles to improve sphincter function. Thus, Kegel exercises are important for the improvement of blood circulation, posture, and pelvic floor muscles [1].

Pelvic floor forms the pelvic base, which consists of fascia, levator ani deep and coccygeus muscles and perineal muscles. With Kegel gymnastics, perineal muscles and pelvic floor muscles become elastic and can stretch maximally so that the perineum is not rigid [2].

Perineal rigidity is the maternal factor that can inevitably lead to the perineal rupture. A perineal rupture is the second leading cause of postpartum hemorrhage. Approximately 70% of women who give birth vaginally experienced perineal trauma. Approximately 50% of these cases produced a very broad laceration, namely: Level II and Level III [3].

The result of study by the Center for Research and Development (Research) of Bandung from 2009 to 2010 in several provinces of Indonesia shows that one of five mothers died due to perineal rupture [4].

The impact of the perineal rupture of in the mother includes infection of the wound sutures which can propagate in the bladder or the birth canal that can result in the emergence of complications of bladder infections or infections in the birth canal. Bleeding can also occur because the blood vessels close imperfectly so that the bleeding occurs continuously. The slow management of complications can lead to mortality in post-partum mothers as their physical conditions are still weak [5].

Based on the preliminary study at the Department of Essential Neonatal Obstetric Services, Community Health Center of Surakarta, 9 of the 10 primigravidas who did not perform the Kegel gymnastics experienced the perineal rupture during childbirth. Kegel gymnastics offer so many benefits for pregnant women and thus the researcher is interested in conducting research that aims to determine the effect of Kegel gymnastics on the incidence of perineal ruptures among primigravidas.

METHOD

This study employed the quasi-experimental research method with the control group design. It was conducted at the Department of Essential Neonatal Obstetric Services, Community Health Center of Surakarta from December 2013 to July 2014. The samples of the research were determined through the quota sampling technique. They consisted of 40 mothers with trimester pregnancy. They were grouped into two, namely: 20 in the experimental group and the rest in the control group. The data of research were primary and secondary ones, namely: pantographs, which were taken from the Maternal Register Book.

Respondents in the experimental group were obtained from the data on ANC visits at public health centres, then house calls to their respective houses were administered and the intervention on how to do the Kegel gymnastics correctly was given. Follows-up on how to do the gymnastics were given every day in the course of its administration with the provision that they had to do it 3 times a day for at least 3 weeks. For the control group or the group to be compared with which did not receive any intervention, the respondents were obtained from the maternity register data of the public health centres.

Descriptions of the ruptures were given to health workers at public health centre offering the *Basic Emergency Obstetric and Neonatal Care* so that in the event of a mother giving birth, they would have the same perception of the incidence of ruptures in the event of childbirth. Pregnant mothers who were about to give birth were asked to contact the researcher in order that the researcher could directly observe her in the course of the childbirth. It was done as a control for the experimental group to reduce bias in the research.

Instruments used to measure research data were Kegel gymnastics observation sheets filled in every day and partograph sheets. Univariate and bivariate analyses were employed to analyze the data.

RESULTS

Characteristics of Respondents

Table 1. Characteristics of Respondents at the Department of Essential Neonatal Obstetric Services, Community Health Center of Surakarta

Parameter	Frequency (N)	Percentage (%)
<u>Age interval (years)</u>		
< 20	3	7.5
20-35	37	92.5
Total	40	100
<u>Education</u>		
Below Secondary School	18	45
Secondary School	19	47.5
Higher education	3	7.5
Total	40	100
<u>Occupation</u>		
Unemployed	19	47.5
Private	15	37.5
Laborers	6	15
Total	40	100
<u>Kegel exercises</u>		
Yes	20	50
No	20	50
Total	40	100
<u>Duration of Kegel Exercises</u>		
3 Weeks	4	20
4 Weeks	6	30
5 Weeks	5	25
6 Weeks	5	25
Total	20	100
<u>Incidence of Perineal Rupture</u>		
Rupture	26	65
No Rupture	14	35
Total	40	100

Table 1 shows the characteristics of respondents including information of age, education, occupation, Kegel exercise status and duration and incidence of perineal rupture. It also shows that 37 respondents (92.5%) were in the age group of 20-35 years old. The primigravidas had a higher risk to experience the perineal rupture than the multigravidas as their birth canal had not been passed by an infant's head, and the perineal muscles had not been stretched [6]. At the age group of 20-35 years, it is possible to train the strength of the pelvic floor muscles, which is very essential when there is a stretch by the head of the infant during the labor. This is in line with a notion which claims that a healthy reproductive age ranges from 20 to 35 years old [4].

Most of the respondents, namely: 19 mothers (47.5%) held the latest education background of Senior Secondary School. Notoatmodjo [7] claims that knowledge is influenced by one's formal education. Education is a process of empowerment so as to build a better life [8].

Sufficient knowledge of primigravidas facilitated the learning process of Kegel exercises conducted by the researchers.

Most respondents, i.e. 19 primigravidas were unemployed (47.5%). Corwin [9] claims that if not used, muscle mass and strength can generally decrease. Jobs can affect one's activity patterns. Monotonous daily routines allow the muscles to be frequently used for domestic activities. This can maintain the strength of the muscles in primigravidas.

Twenty respondents (50%) performed Kegel exercises during their third trimester of pregnancy, and twenty respondents (50%) did not perform Kegel exercises during pregnancy as a control group. Thus, there were twenty respondents in the group treated with Kegel exercises during the third trimester of gestation, and there were 20 respondents as the control group who did not perform the Kegel exercises during their third trimester of pregnancy.

Table 2. The Effect of Kegel Gymnastics on the Incidence of Perineal Rupture

		Rupture		Total
		Rupture	No rupture	
kegel	Kegel exercises	8 20.0%	12 30.0%	20 50.0%
	No kegel exercises	18 45.0%	2 5.0%	20 50.0%
Total		26 65.0%	14 35.0%	40 100.0%

Based on Table 2, the highest number of ruptures was found in the group that did not do the Kegel gymnastics, i.e. 18 respondents, followed by the group that did the Kegel gymnastics and did not undergo ruptures, i.e. 12 respondents. Furthermore, the group that did the Kegel gymnastics but underwent ruptures consisted of 8 respondents while the group that did not do the Kegel gymnastics and did not undergo ruptures consisted of 2 respondents.

Table 3. Chi-Square Test of Kegel Exercises with the Incidence of Rupture

	Value	Df	Asymp. Sig. (2-sided)
Pearson's <i>Chi Square</i> Test	10.989 ^a	1	.001
Number of Valid Samples	40		

The result of the Chi-Square test shows that the p-value was 0.001 which was less than 0.05. This indicates that the Kegel exercises have a significant correlation with the perineal rupture. The Kegel exercises have effects on the pelvic floor muscles. They make the pelvic floor muscles more elastic, which later help the delivery process and reduce the incidence of perineal rupture especially in a primipara. According to Prawirohardjo [10], the laceration of the birth canal may occur as a result of episiotomy, spontaneous perineal rupture, trauma or forceps or vacuum extraction for removal version. There are many factors influencing the incidence of perineal rupture, including parity, pregnancy-spacing, infant's weight, and history of childbirth.

DISCUSSION

Kegel exercises are exercises to strengthen the pelvic floor muscles (pubococcygeus muscles) or PC muscles that serve to support the vital organs, such as uterus, bladder, and rectum to function properly [2]. Kegel exercises when performed during pregnancy may make the pelvic floor muscles supple or elastic, and can boost the blood circulation in the area around the vagina, which may help during pregnancy and childbirth [11].

At the time of delivery where the membranes have ruptured, changes take place in the pelvic floor entirely caused by the pressure of the presenting part. In the natural labor, when the presenting part is the head, the vagina and vulva take the largest diameter in opening (crowning), which causes the perineum and anus to simultaneously become very stretched and prominent. As a result, this can lead to spontaneous rupture. The untimely deflection of the infant's head can cause perineal rupture [12].

The perineal rupture can give such great effects as physical, emotional, and sexual ones for a woman for the rest of her life [13]. It can also cause postpartum hemorrhage, which can lead to mortality. Therefore, the perineal rupture, which is a physical trauma of labor should be prevented during the maternal birth process, so as to make the birth process last excitingly and so as to provide enjoyable experiences for the mothers. Labor without any physical injury, especially the perineal rupture will make the mothers feel more comfortable when having the next delivery compared with those who previously experienced the perineal rupture. They feel scary to experience the bad ones in their next delivery.

CONCLUSION AND RECOMMENDATION

The results of this study make clear that in the third trimester pregnancy, 12 primigravidas (60% than 20 sampel) of the group treated with Kegel exercises had no perineal rupture. The statistical test with the Chi-Square shows that the p-value = 0.001, meaning that the Kegel exercises affect the incidence of perineal rupture.

Thus, pregnant mothers are expected to perform the Kegel exercises regularly for at least three weeks, and should realize the importance of the Kegel exercises for labor. In addition, the shortfall of this study can be remedied by further studies, and other variables such as maternal, fetal, and auxiliary factors, which contribute to the problems discussed need to be investigated.

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RELATIONSHIP BETWEEN KNOWLEDGE, ATTITUDE, AND PRACTICE WITH APPLICATION DOCUMENTATION PARTOGRAPH BY MIDWIFERY STUDENTS OF BUNGA KALIMANTAN BANJARMASIN

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ABSTRACT

Background: Partograph is one of the useful tools in monitoring the progress of labor as the recommendation of the Ministry of Health and WHO (World Health Organization) to prevent delays in handling. Midwives as caregiver and monitoring in labor must be skilled in the use of partograph. Results of preliminary study that involved 8 midwifery students of Bunga Kalimantan Banjarmasin who were observing labor, shows none of them had initiative to make partograph.

Aims: The purpose of this study is to find the relationship between knowledge, attitude, and practice of midwifery students of Bunga Kalimantan Banjarmasin to the partograph documentation.

Methods: This research was an analytical study with cross-sectional approach. There were 80 respondents of Level II Midwifery students of Bunga Kalimantan Banjarmasin selected randomly and involved in this study.

Results: The result showed that the respondents has good knowledge and positive attitudes to partograph documentation, but never experienced on it. We found that there were positive correlation between the partograph documentation with students' knowledge (p value < 0.001), attitudes (p value < 0.01), and practices (p value < 0.01).

Conclusion: The data suggests that students' knowledge and attitudes to partograph documentation are not enough to increase their initiative to make partograph during observation in labor room. Practice to the partograph documentation will higher their performance.

Keywords: Knowledge, attitudes, practice, documentation partograph

INTRODUCTION

Level degrees health of mothers and children are still very concerned. It can be seen from the maternal mortality rate (MMR) and IMR (Infant Mortality Rate) that are still high. MMR and IMR in Indonesia are still higher than other ASEAN countries and the ten countries that contribute to the slow pace of reducing maternal mortality in the world. According to IDHS 2009 MMR it was 266 / 100,000 live births and IMR 29 / 100,000 live births [1].

Based on data from the Health Department Banjarmasin within a period of three years, recorded MMR and IMR have increased. In 2011 the figure reached 67 cases in 2012, 84 cases in 2013, and 88 cases in 2014. Lack of initiative examined during pregnancy and belated handling, as

well as lack of skilled workers in helping labor made a major factor in maternal mortality and infant increased [2].

An estimated 90% of maternal deaths occur during labor and approximately 95% of the causes of maternal mortality are obstetric complications that often cannot be predicted in advance. Therefore when giving care to labor of mothers, health professionals should always be wary of any problems or complications that may occur since it is estimated that 15% pregnancy and labor will experience complications. Most of these complications can be life-threatening, but most complications can be prevented and dealt, e.g., health professionals (midwives) perform the appropriate handling procedures, including the use of partograph to monitor the progress of labor [3,18].

Partograph is a chart which can be used to monitor the progress of labor, assess mother condition and fetal during labor, according to WHO (1994) the introduction partograph as the protocol in labor management can reduce prolonged labor from 6.4% to 3.4%, cesarean surgery from 9.9% to 8.3%, and intrapartum death from 0.5% to 0.3%. WHO strongly recommends the use of partograph in the delivery room [5].

Midwives in monitoring labor must be skilled in the use partograph because partograph is one tool that can be used in monitoring the progress of labor, so that each labor is expected to detect possible complications as early as possible [3].

Based on research about the assessment of the use of partograph midwife PONE in Medan 2010 showed that 23% of the midwives did not record consistently and correctly on the form of partograph or did not apply partograph, where the competence of midwives who are not in accordance with the standards led to use of partograph not optimal. In addition, research by Novie E . Mauliku 2008 had concluded that almost all of DIII midwives were good knowledge, positive attitude and they always used partograph in monitoring labor, while most of DI midwives were lack of knowledge, has negative attitude, and did not monitor labor using partograph [4].

DIII Midwifery Bunga Kalimantan Banjarmasin is one of the institutions that will produce a midwife. In the third semester, students are taught how to make partograph, but in practicing many students do not use partograph as it should be. Partograph is only used as documentation requirements in completing academic education. Whereas, main job of midwives is to be able to do clean and safe aid labor and should be able to monitor the progress of labor to detect complications in labor as earliest as possible and using partograph.

Based on the results of preliminary studies on 8 Midwifery students of Bunga Kalimantan Banjarmasin who were observing labor in "BPM X", the students said that they have been taught to make partograph in level II, but all students did not have the initiative to make partograph and they did not understand how to make partograph very well. Therefore, the researcher was interested in conducting research on "Relationship Between Knowledge, Attitude, and Practice with Application Documentation Partograph by Midwifery Student Bunga Kalimantan Banjarmasin"

METHODS

The type of research was analytical and the approach was cross sectional. The population was taken by total sampling method namely 80 respondents of level II midwifery students of Bunga Kalimantan. Data collection techniques in this study were conducted by collecting primary data and secondary data. Primary data was data about the knowledge and attitudes of Midwifery Student Bunga Kalimantan Banjarmasin from their answer in questionnaire about regarding

documentation partograph that have been shared directly with the students of level II assisted by local lecturers where previously trained first how to fill out the questionnaires, while secondary data was data taken from data on the number of Midwifery Students of Bunga Kalimantan Banjarmasin which could be used to complement and support the primary data.

Analysis of the data for a study was a gradual procedure. The data were analyzed using SPSS statistical test by using univariate and bivariate. This analysis can be done using a statistical test Chi Square [6,7,13,14].

RESULTS

Table 1. Distribution of knowledge, attitude and practice of midwife student Bunga Kalimantan on Documenting Partograph

Variables	Number of students (N)	Percentage (%)
<u>Knowledge</u>		
Good	54	67,5
Less	26	32,5
Total	80	100
<u>Attitude</u>		
Positive	50	62,5
Negative	30	37,5
Total	80	100
<u>Practice</u>		
Yes	35	43,8
Never	45	56,2
Total	80	100

From the table above, it can be seen that the majority of respondents was knowledgeable (67.5%) and had positive attitude (62.5%), and most respondents did not do documentation partograph (56.2%).

Table 2. Distribution of test score on knowledge, attitude, practice of midwife Student Bunga Kalimantan on Documenting Partograph

	Test Score				Total		p value
	Good		Less		N	%	
	N	%	N	%			
<u>Knowledge</u>							
Good	44	81,5	10	18,5	54	100	0,000
Less	1	3,8	25	96,2	26	100	
Total	45	56,2	35	43,3	80	100	
<u>Attitude</u>							
Good	35	70	15	30	50	100	0,003
Less	10	33,3	20	66,7	30	100	
Total	45	56,2	35	43,8	80	100	
<u>Practice</u>							
Do	26	74,3	9	25,7	35	100	0,008
Never	19	42,2	26	57,8	45	100	
Total	45	56,2	35	43,8	80	100	

From Table 2. It can be seen that the respondents who were knowledgeable and very good in using partograph were 81.5% of respondents. Respondents who were less knowledgeable and

good in using partograph were 18.5%. Respondents who were lesser knowledgeable respondents and bad in using partograph were 3.8%. Respondents who were less knowledgeable respondents and very bad in using partograph were 96.2%. After the analyzed with the aid of a computer program SPSS through the chi-square test where $P = 0.000 < \alpha = 0.05$, it could be said that H_0 rejected and H_a accepted. So, there was a significant relationship between knowledge and the application documentation on partograph Midwifery Care of Level II midwifery student at Bunga Kalimantan.

Table 2 showed that students who had positive attitude to partograph documentation and were good in using partograph were 70%. Only 33.3% of respondents who had negative attitude to the documentation had good result. After analyzed with the aid of a computer program SPSS through the chi-square test, where $P = 0.003 < \alpha = 0.05$, it showed that H_0 rejected and H_a accepted. So, there was a significant relationship between attitudes to the application of documentation on partograph Midwifery Care of Level II midwifery students of Bunga Kalimantan Banjarmasin.

The present study also represented the benefits of experiencing partograph documentation to the test score. Table 2 showed that 74.3 % respondents with experience to partograph documentation obtained good score in the test. Only 42.2 of respondents got good score and they have no experience to the partograph documentation. After analysis with the aid of a computer program SPSS through the chi-square test where $P = 0.008 < \alpha = 0.05$ showed that H_0 rejected and H_a accepted. So, there was a significant correlation between the practice of the application documentation to the partograph testing among Midwifery Care of Level II midwifery students of Bunga Kalimantan Banjarmasin.

DISCUSSION

Many respondents who were knowledgeable had had higher education since they were in the process of finishing their third diploma (D3) in midwifery program. The higher education the respondents have, the more knowledge the respondents will have. People who are educated will be more knowledgeable. Their mindset is not conservative and will accept more to the things that are considered as good one, in this case is having competence in using partograph documentation which is one of the important things that should be possessed by students diploma three midwifery as prospective midwives.

Good knowledge will affect the documentation of partograph since it is good to have knowledge in using partograph so the student knows the importance partograph, benefits of partograph, and procedures for filling partograph. Corresponding to research by Novie E . Mauliku, it had been concluded that almost all of DIII midwives were good knowledge, positive attitude and they always used partograph in monitoring labor, while most of DI midwives were lack of knowledge, has negative attitude, and did not monitor labor using partograph. DIII midwives considered to have better knowledge than DI midwife [4].

Midwives' attitudes have been said as a good midwife if they are brave enough and has a big responsibility to every risk of their decision. Notoatmodjo said that the highest level of character of midwives is the responsibility of what they have decided and believed [9]. Someone who has decided one attitude based on his/her belief, he/she has to be brave of the risks [9].

The number of respondents who have positive attitude and using documentation partograph is important in monitoring labor. A positive attitude is not just coming from internal only, for example, awareness of the importance of making partograph on monitoring the delivery,

but also is influenced by external, for example, because of the demands of educational institutions, habits are embedded or as a result of the influence of people who are considered a role model.

Corresponding to research by Pitria Wulandari that said there is a meaningful relationship between motivation and the loyalty of the midwives on the use of partograph in doing labor [8]. Midwives is a helper of labor that should realize the use of partograph that is suitable with the recommendation of Ministry of Health (2008). It said that normal labor should be done and should be the first concern in order to keep the lives and give the higher degree of health of mothers and the baby with integrated and complete ways and as minimum complications as possible [19].

Attitude is the tendency to act (practice). Attitude is not necessarily manifested in action. For the realization of the actions necessary for other factors include a lack of facilities or infrastructure. The more the student's practice, the more trained to perform partograph documentation. On contrary, if it is not applied to a practice / action then the habit to make partograph / documentation partograph will not be ingrained. The number of students / respondents who do document partograph influenced by internal and external factors, internal factors, for example, due to lack of knowledge, motivation is not strong to do something much better in labor, there is no intention, and negative attitudes, while external factors, for example on the experience, facilities, or culture. Because the land student in practicing is not asked to make partograph in monitoring labor or culture of senior midwives who usually do not make partograph, so that students assume if they do not make partograph, it is not a problem. Since there is no assertion to do that, the motivation is not increased and there is no intention to act. Finally, there was no such intention embodiment in the form of behavior [10,12,16,17].

CONCLUSIONS

The research results are obtained and by the specific purpose to determine the distribution of each variable that relationship with partograph documentation which includes knowledge, attitudes, and practices. It can be concluded that most results are knowledgeable good, positive attitude and practice of documenting partograph

Based on the analysis Bivariate, it showed that all the studies variables had no significant relationship between knowledge and application documentation partograph with P Value = 0,000, there was a significant relationship between attitudes to the application of documentation partograph with P Value = 0.003, and there was a significant relationship between practice with application documentation partograph with P Value = 0.008. It is expected that the students should have more understanding in every single thing related to partograph since partograph is the tool to monitor labor and to inform and to help the clinic to decide everything about the labor of mothers. It is used to the documentation of the labor and to look after the condition of mothers and her baby, so that it is very useful for midwives, especially midwifery students who have been practiced to be the real midwives.

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KNOWLEDGE OF SIDE EFFECTS AND ITS ASSOCIATION TO COMPLIANCE IN IRON TABLETS CONSUMPTION AMONG THIRD TRIMESTER PREGNANT WOMEN

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ABSTRACT

Background: To improve the quality of teaching, teachers should be able to plan the preparation of teaching and at the same time also be able to do so in the form of teaching and learning interactions. The success of learning is influenced by several factors, one of them is the motivation. The motivation will affect the success of learners. A student who has a high enough intelligence can fail due to lack of motivation.

Aims: The purpose of this research is to determine the relationship of students' perception about the use of teaching method and learning motivation and achievement of midwifery D III in midwifery care in pregnancy course.

Methods: Observational analytic research with cross sectional approach was conducted in the Diploma Program of Midwifery of Universitas RESPATI on May 29, 2014. The sampling technique was a proportional random sampling with a sample of 138 college students. Statistical data analysis was Spearman rank test.

Results: The data shows there is no relationship between students' perception on teaching method and students' achievement (p value >0.05). However, a very significant relationship (p value <0.01) was found between students' motivation and their academic achievement.

Conclusion: The findings suggest that among the midwifery students in Diploma Program of Universitas Respati, to achieve better academic performance, the students need motivation (internal or external) to easier understand the academic subject. It is expected to the teachers, especially lecturers to develop the teaching methods and materials in accordance with student motivation in learning.

Keywords: Teaching method, learning, student, motivation, academic performance, achievement.

INTRODUCTION

Pregnancy is an emotional and physical changes in the mother as well as the social changes in the family [1]. All the physical changes experienced by a woman during pregnancy is associated with some of the system caused by the hormonal effects. The aim of this change in preparation for development of the fetus, the mother's body prepares for childbirth, breast development and milk production for the establishment during the postpartum period [2].

Pregnancy is physiology and it would be pathological if there were disorders which associated with pregnancy that can cause death, Maternal Mortality Rate (MMR) is the number of maternal deaths due to pregnancy, childbirth, and postpartum in every 100.000 live births in the region and time. In the developing countries the maternal mortality rate is quite high at 440 per

100.000, in Africa amounted to 830 per 100.000, in Asia amounted to 330 per 100.000 and South-East Asia at 210 per 100.000. For the State - ASEAN countries, MMR (per 100.000 live births) is variety such as Malaysia, Brunei Darussalam, Singapore, Cambodia, Laos, the Philippines, and others [3] (untuk survey tahun berapa).

Based on the survey demographics and Healthy Indonesia 2012, the maternal mortality rate in Indonesia is still high at 359 per 100,000 live births, the rate is slightly decreased when compared to the Demographic and Health Survey 1991, which amounted to 395 per 100.000 live births [4]. Maternal mortality rate in the province of East Nusa Tenggara (NTB) Indonesia in 2010, 113 people and in 2011 from January to June 2011 the number of maternal deaths as many as 72 people. One of the main causes of the high maternal mortality rate in NTB is bleeding [5].

One indirect factor that causes death is anemia. Pregnant women with anemia increases the risk of maternal death, miscarriage, birth prematurity, antepartum hemorrhage, intrauterine death, prolonged labor, postpartum hemorrhage, shock, the rate of prematurity, low birth weight (LBW) [6]. The frequency of pregnant women with anemia in Indonesia on 2002 is relatively high at 63.5%. Ministry of Health launched a decrease in the prevalence of anemia in pregnancy from 63.5% in 2002 to 40.1% in the period of time from 2004 to 2010 (SKRT 2004). Anemia is common in pregnant women due to iron deficiency (80%) and folic acid deficiency [7]. Based on preliminary data obtained by researchers in 2008, the number of pregnant women who are anemic as much as 26.2%. While in 2009 there were 19.3% (246) of pregnant women are anemic. Pregnant women who are anemic during the first trimester as many as 196 people and 70 third trimester pregnant women from a total of 1277 people [5].

The incidence of anemia in all pregnant women with anemia was highest in Ampenan. A preliminary study conducted by researchers at the interview on 10 primigravida trimester III who are anemic, disobedience primigravida drinking iron tablet in because of the side effects of iron tablet that can interfere with the comfort, noncompliance also occurred because primigravida forgotten and lack of knowledge about the tablet Fe. The importance of pregnant women consumes iron tablet regularly to prevent possible complications. This study was led to determine relationship of knowledge of women in the third trimester of pregnancy about the side effects of iron tablets on obedience of consumption iron tablet in Ampenan Health Center in 2012.

METHODS

This study using correlational analytic with approached cross-sectional approach. A total of 31 primigravida in the third grade of pregnancy who checkup at health centres Ampenan in August 2012 is the study population. The samples in this study using the total population ($n = N$) are all primigravida trimester III checkups at health centres Ampenan in August 2012 amounted to 31 people. The sample in this study selected with the criteria. The criteria used are respondents willing, primigravidas third trimester, can read and write. Exclusion sample in this study: Pregnant women primigravidas women in the first and second trimester, can not read and write, not willing to become respondents Knowledge of Third Trimester Pregnant Women about the Side Effects the Iron Tablets and Obedience Consume Iron Tablets was collected using a questionnaire.

The univariate analysis in this research to distribute the frequency characteristics of respondents [8]. And the level of knowledge of primigravida about the side effects of compliance with taking iron tablets and analysis bivariate using Chi-Square (X^2) statistic Test is to determine the relationship between knowledge of the third trimester pregnant women about the side effects the iron tablets and obedience consume iron tablets.

RESULTS

Knowledge of Side Effects and Its Association to Compliance in Iron Tablets Consumption among Third Trimester Pregnant Women.

This research was conducted at Ampenan Health Centres in August 2012 which amounted to 31 people. The sample in this study selected with the criteria. The criteria used are respondents willing, primigravidas third trimester, can read and write. Exclusion sample in this study: Pregnant women primigravidas women in the first and second trimester, can't read and write, not willing to become respondents Knowledge of Third Trimester Pregnant Women about the Side Effects the Iron Tablets and Obedience Consume Iron Tablets was collected using a questionnaire.

Table 1. Knowledge Level about The Effect Of Iron Tablets and The Obedience Iron Tablet Consumption of Pregnant of Women in The Third Grade of Pregnancy.

No	Knowledge level	Obedience				Total		P Value
		Obedient		Not Obedient		n	%	
		n	%	N	%			
1	Well	11	100	0	0	11	35,4	0,002
2	Sufficient	10	62,5	6	37,5	16	51,6	
3	Lack	0	0	4	100	4	13	
	Total	21	67,7	10	33,3	31	100	

Table 1. From 31 respondents who are knowledgeable are obtained 11 respondents who obedient taking iron tablets as many as 11 people (100%), no respondents (0%) of not obedient consuming Fe tablet. Respondents were knowledgeable enough as many as 16 people consisting of 10 (62.5%) of respondents who obedient taking iron tablets and 6 (37.5%) of respondents were not obedient in taking iron tablets. Meanwhile, there was no respondent 0(0%) who had less knowledgeable and obedient consumed iron tablets, while 4 (100%) of pregnant women were less knowledgeable and disobedient taking iron tablets.

From 31 respondents who are knowledgeable enough good and obedient are more likely to consume iron tablets compared to respondents who are less knowledgeable. Test Results Using Chi-Square statistics obtained p-value of 0.002 (<0.05), which means that there is a relationship between the level of knowledge about side effects of iron tablet with obedience to consume iron tablets.

DISCUSSION

The study was conducted in the working area of public health center Ampenan to determine the relationship of knowledge of women in the third trimester of pregnancy to obedience consumption of iron tablets. Based on Table 1, the results of research conducted be obtained 31 (35.4%) of respondents who had good knowledge consisting of 11 people (100%) of pregnant women who are obedient to consume iron tablets and no respondents 0 (0%) of pregnant women who disobedient consume tablets iron. Respondents were knowledgeable enough as many as 16 people (62.5%), which consists of 10 (62.5%) of pregnant women who are obedient and 6 (37.5%) of pregnant women who do not comply in taking iron tablets. While respondents were in less knowledge as many as four (13%) consisting of 0 (0%) of pregnant women who are obedient to consume iron tablets and 4 (100%) of mothers who do not comply consume iron tablets.

From the statistical test using chi square test obtained by p value = 0.002 or $p < 0.05$, it indicates that H_0 is rejected and H_a accepted. The result showed that there were a significant relationship between the level of knowledge of primigravida women about the side effects on the obedience consumption Iron at Ampenanhealth center. There is a positive relationship between the level of knowledge with obedience in consuming, it means that the higher of the level of knowledge of the third grade of pregnancy the more submissive in drinking or consuming Iron tablet.

Respondents who have knowledge about the impact of consumption of iron tablets tend to be more obedient to consume iron tablet compared to respondents who are less knowledgeable, obedience consume iron tablets is influenced by several factors. Knowledge is one of the factors that influence obedience someone taking iron tablets, the higher a person's knowledge, the more obedient to consume iron tablet [11].

Iron tablets consumption is strongly influenced awareness and obedience pregnant women. Consciousness is a supporting factor for pregnant women to adhere well to consume iron tablets [9]. There are several factors that have contributed substantially in obedience affects pregnant women consume iron tablets, including the knowledge, motivation, health care, and the role of the family. In addition, side effects are also greatly affect the obedience pregnant women consume iron tablets. The side effects of iron tablets consumption are causing abdominal pain, nausea, vomiting, constipation, and diarrhea [9]. High compliance to consume iron tablets as well as the motivation for the achievement of better health after consuming iron tablets [10].

Based on the results of research on the factors affecting the level of compliance multigravida mothers consume iron tablets at the health center on Polanharjo, Klaten using analytic methods and using cross sectional study design. Obtained results of the study of the 80 respondents indicated that the factors affecting the mother multigravida consume iron tablet is knowledge, while the educational and motivational factors had no effect [11]. The study was conducted to determine the knowledge primigravida pregnant women about the side effects of iron tablets to compliance of taking iron tablets, while the limitations of this study is there are some women who are not willing to be the respondent.

CONCLUSION

The level of knowledge of women in the third trimester about side effects of iron tablets consisted of 31 respondents with sufficient knowledge and tend to be obedient to consume iron tablets. Results found that There is a relationship of knowledge level of women in the third grade of pregnancy about side effect of iron tablet on obedience consumption of iron tablet of the third-trimester drinking iron tablet in Ampenan Health Center in 2012.

The presence of this study, expected health facilities can provide counseling to pregnant women by involving the family of iron tablet and how to prevent side effects from iron tablets. Midwives can provide education on iron tablet to primigravida especially about the side effects iron tablet and benefits of the iron tablets. Midwives should also provide information on how to consume iron tablets in order to reduce the side effects of iron tablets.

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**THE RELATIONSHIP BETWEEN FAMILY SUPPORTS TOWARDS
THE EARLY COMPLEMENTARY FEEDING FOR 0-6 MONTHS
BABIES
IN PUBLIC HEALTH CENTER, SEWON I BANTUL, INDONESIA**

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ABSTRACT

Background: *Early Complementary Feeding (ECF) is a critical period in which the baby's digestive system is not perfect yet. If an inappropriate food is being given, the food won't be digested well and will cause digestive problems. The high intensity of complementary food is one of the causes occurs by family support.*

Research Purpose: *The research purpose was to identify the correlation between family support and complementary food feeding in 0-6 months babies in Public Health Center, Sewon I Bantul, Indonesia.*

Research Method: *The researchers used analytical survey method with Cross Sectional time approach. The subjects of the research were mothers who have 7-12 months babies with 34 respondents and used Non-Probability Sampling with total sampling technique. The data were analyzed using Chi Square correlation test.*

Research Result: *The results were obtained from 34 respondents, who provide early complementary feeding with 21 respondents (61,76%), and the majority of women who have a high level of support that provide early complementary feeding with 10 respondents (8,6%).*

Conclusion: *The research showed that there is a correlation between early complementary food feeding and family support with the significance value p value = 0.012 ($\alpha < 0.05$). Information sharing with family about the importance of mother's support especially in feeding the breast milk is very essential so that mothers could give a good and adequate nutrition for their babies.*

Keywords: *Family Support, Early Complementary feeding*

INTRODUCTION

The baby's delivery is the most important and happiest moment for all the parents. They want their baby healthy by having a decent emotional and physical environment; therefore after the baby is born the parents want to give the essential nutrients for the healthy growth of their baby. Breast milk is the best food for babies because it contains a complete nutrition for them up to the age of the first 6 months after their birth, while exclusive breastfeeding is that the babies are only breastfed for 6 months without other liquids, such as formulas, oranges, honeys, teas, and waters as well as without the addition of substantial foods such as bananas, milk porridges, biscuits, rice and rice porridge team [1].

Babies (0-11 months) are in a period of a rapid growth and development which reached its peak at the age of 24 months, which is usually termed as the golden period as well as the critical period. The golden period can be achieved if they obtain appropriate nutrition for optimal growth

and development in their infancy period. Where at the ages around 6-11 months, babies can begin to be fed with complementary feeding aside from the breastfeeding, because at that age they already have a chewing reflex with a more powerful digestion [2].

Baby feeding needs to be noticed especially in its timing, frequency, type, quantity of food, and process in making it. One of the bad baby feeding habits is feeding them too early. Feeding too early can cause digestive disorders in the babies such as diarrhea, constipation, as well as vomiting and allergies. It can also affect children's intelligence level such as triggering several diseases like obesity, hypertension, and coronary heart disease in their adulthood later [3].

The body of a baby has no complete protein digestion yet. The amount of gastric acid and pepsin only increase when the baby is 3-4 months old. The amount of enzyme produced by the pancreas around the age of 6 months is not enough to digest a rough food. Enzymes such as maltase, isomaltase, and sucrase have not reached the level of adults yet before the babies aged 7 months. Before the age of 6-9 months, the amount of lipase and bile salts are also low so that the fat digestion has not reached the level of adults, therefore if solid foods are given before the baby's digestive system is ready to digest them, it may result in improperly digested foods that may cause indigestion to gas, constipation, etc. [4].

According to the WHO study in 2009 early complementary feeding increased along with the decrease of exclusive breastfeeding for about 2%, the number of early complementary feeding caused the deaths of 1.3 million people worldwide, including 22% of death after birth because of that. According to UNICEF (United Nations International Children's Emergency Fund) exclusive breastfed saved 30,000 baby deaths in Indonesia and 10 million baby deaths in the world, they could be saved through exclusive breastfeeding [5].

Provision of complementary feeding (<6 months) in Indonesia by Indonesian Demographic Health Survey (IDHS) in 2012, babies who received complementary foods around 0-1 months are 9.6%, at the age of 2-3 months are 16.7%, and the age of 4-5 months are 43.9%. According to the Basic Health Research (Riskesdas) 2010, pre-lacteal feeding for newborns in Indonesia, 3.2% is bananas, rice and porridges is 2.2%, and 19.8% is honeys. While for the province of Yogyakarta pre-lacteal feeding in the babies are; bananas 2.6%, rice and porridges 5.3%, and 7.9% honeys. Giving late complementary foods (> 6 months) in Indonesia occurred only on a small number of mothers who give complementary feeding for babies over the age of 6 months.

Because of this WHO, UNICEF and the Ministry of Health of the Republic of Indonesia establish a recommendation of exclusive breastfeeding for 6 months through Decree of the Minister of Health No. 450 / Men.Kes / SK / IV / 2004 on April 7, 2004. In that recommendations it is explained that to achieve the growth, development, and optimal health, the babies should be exclusively breastfed for the first 6 months; then the mothers began giving complementary foods and breast milk till the baby is 2 years old for the sake of adequate nutrition. The government also arranges complementary foods in the rules no 237/1997 which states that complementary foods are not breast-milk substitutes [4].

Midwives as one of the practitioners in aiding delivery have a very significant role in the success of the exclusive breastfeeding practice. In this case is supported by the Indonesian Midwives Association (IBI) which establishes the standardization of service delivery assistance for carrying out the early initiation of breastfeeding and exclusive breastfeeding. IBI members may not promote formulas for babies who are younger than 6 months. In the practice places there are should not any promotional images as well as cans of formulas, because with the early initiation of

breastfeeding it is expected that the number of infant mortality due to infectious diseases will be considerably decreased, the rate of infant malnutrition will also be reduced, and then a generation that grew healthy and smart will be born [6].

According to Ginting research [7] that the provisions of early complementary feeding are influenced by the characteristics of the mother, internal factors, and external factors. Mother's characteristics are jobs (71%) and their parity (32%). Internal factors are the level of knowledge (49%) and the attitude of mothers (67%). External factors are family support (76%), the role of health workers (68%), and socio-cultural (58%). According to Asdan research [8], family support and the habits of baby feeding affect the complementary feeding for 89.8%. The role of the family in the provision of complementary foods at the age of 6 months is needed, especially the culture of Indonesian people are still collective, the family plays a role in the children supervision patterns, especially in the baby supervision in terms of providing complementary feeding.

The culture influence in the society that has a habit of giving the baby food is because the breastfeeding is not sufficient enough for the child's needs. Besides, the feeding after the baby is born is a part of a custom that has passed down through the generation of the families like giving honey to the newborn babies, give fruits before the baby born (bananas, oranges) and if it is not done properly, it is considered as a breaking the habit in the family [9]. The society identifies that the provision of complementary feeding as the concern for the mother and her baby only, hence it is important to have family support for the provision of supplementary feeding, especially motivations, perceptions, emotions, and attitudes [10].

Based on the result of the interview on 8 mothers who have babies there are six mothers who are giving complementary foods to their 2-3 months babies. The types of complementary foods that are given are such as porridges, formulas, honeys, and waters. The giving of the weaning food is because there is no breast milk yet in the first and second day, the lack of knowledge of the mothers about complementary feeding, as well as the advice from the family to give the early weaning foods. There are two mothers who only give exclusive breastfeeding without complementary feeding milk.

METHODS

This research is an analytical survey to explore the events and phenomena that happened, using cross-sectional approach. The dynamics study of the correlation between the dependent variable (dependent), and independent (free) as well as data collection is done at the same time, and the measurement can only be performed one time only [11]. The populations in this research are all mothers with babies aged between 7-12 months in the working area of Sewon I health center. Based on data from health centers an average number of mothers with babies aged 7-12 months during the study amounted to 34 respondents. The sampling technique in this research is total sampling. According to Arikunto [12] subject samples of less than 100, better taken all so that the result is more representative. Researchers took samples of the population of 34 respondents which are all mothers with babies aged 7 to 12 months, have an equal opportunity to be selected as a sample and willing to become respondents. The populations in this research are all mothers with babies aged between 7-12 months in the working area of Sewon I health center with 34 respondents.

Respondents are given yes-no-questionnaire that consists of 20 questions relating to family support and one question on the provision of complementary feeding. There are four indicators in the questionnaire of family support: informational support, appraisal support, instrumental support and emotional support The questionnaire has previously tested in the validity

and reliability of the 20 respondents outside the study sample, that are the mothers with babies aged 7-12 months in Sewon I Health Center who has almost the same characteristics. There is one question of the questionnaire in the validity test results which is invalid therefore it is not used in the study. Reliability test with Cronbach alpha values is $(r_{11}) > 0.6$ so that the variables in the study can be said reliable.

Variable early complementary feeding is divided into two categories: coded (0) for yes and coded (1) for no giving it and not giving it. Family support is assistance in the form of opinion and action is given by the family to the respondent either in the form of informational support, appraisal support, instrumental support and emotional support to motivate respondents in implementing health behavior. Questionnaire questions of family support were measured using criteria Guttman scale with yes and no answers to the following provisions: favorable questions with answers yes = 1 and no = 0, unfavorable questions with answers yes = 0 and no = 1. This research method is scoring, as shown in Arikunto [12], to classify low family support (score $< 60\%$), medium (score ranged from 60-75%) and higher (scores $> 75\%$). The writer classifies the family support into three categories: high (score value: $> 75\%$), average (60-75%), and low ($< 60\%$).

Analysis of the data is using Univariate and Bivariate towards each variable of the research results. Analysis of the relationship is using the chi-square test with significance level of 5% (0.05) [13].

RESULTS

Early Complementary Feeding

Based on Table 1, it can be seen that from 34 respondents, 21 respondents (61.8%) give early complementary feeding to the babies aged 0-6 months. One of the causes of the failure in breastfeeding is that the baby is already received complementary feedings since aged < 6 months. In corresponding with the results of Setyawati research, it is showed that 64 (68.8%) infants were given early complementary feeding and 29 (31.2%) infants were not given early complementary feeding. Giving complementary foods too early is not right because it would lead to infant satiety and reduces the amount of breast milk. Moreover the babies won't get interested in breast milk because they already get food or drink beforehand [14].

Table 1. Frequency Distribution of Family Support and Early Complementary feeding

(N = 34) in Sewon I Health Center

Parameters	Frequency	Percentage
<u>Early Complementary Feeding</u>		
Yes	21	61,8%
No	13	38,2%
Total	34	100%
<u>Family support</u>		
High	14	41,2%
Medium	11	32,4%
Low	9	26,5%
Total	34	100%

Family support

Family supports as verbal or non-verbal information, advice, real assistance or behavior that are given by people who are familiar with the subject in its environment in the form of presence and the things that can provide emotional supports are affecting the behavior of the recipient. The support given by the family of the respondent's behavior raises a disadvantage because the initial provision of complementary feeding is not recommended. Supposedly in this family provide meaningful support which prevent giving early complementary feeding. Table 1 shows the majority of the mothers with the babies who are aged 7 to 12 months in Sewon I health center, have a high family support which is 14 respondents (41.2%) from 34 respondents.

Relationship Between Family Support Towards The Early Complementary Feeding

According to the Chi Square result analysis between the independent variables (family support) with the dependent variable (the provision of early complementary feeding), significant value of P Value is 0.012, it shows that there is a relationship between family support and the early complementary feeding as $p\text{-value} < \alpha$ ($0.012 < 0.05$). This may imply if someone does not have the support of their families to provide exclusive breastfeeding it will increase the provision of complementary feeding to the premature infants.

Table 2. Relationship between family support towards the early complementary feeding (N = 34) in Sewon I Health Center

Parameter	Early Complementary Feeding
Family Support	
Chi-square correlation (X²)	0,05
P value	0,012

According to the theory of Bussard and Ball (1966) in Setiadi [15] family is a social environment that is very close with someone. People grew up in the family, live in, interact with each other, establish the values, thinking patterns, and the habits which serve as a witness to all the foreign culture, and mediating the relationship between children and their environment.

From Table 3, it can be seen that the majority of respondents who have family support is high at 41.2% (14 respondents). There are four types of family support which are informational support, valuation support, instrumental support, and emotional support. High family support towards the provision of complementary foods causes negative effects on the health of the baby. It is clear that if the family gives a right support it will encourage the mothers to not give complementary foods to their babies at the age of 0-6 months [13]. High family support for the provision of complementary foods causes negative effects on the health of the baby. This is proven by the family that provides support to mothers to provide early complementary feeding in infants aged 0-6 months [1].

Table 3. Cross tabulation of family support with the provision of early complementary feeding (N = 34) in Sewon I Health Center

Family Support	Giving Early MP-ASI			
	Yes		No	
	F	%	F	%
High	10	8,6%	4	5,4%
Average	3	6,8%	8	4,2%
Low	8	5,6%	1	3,4%
Total	21	100%	13	100%

DISCUSSION

Family support affects the provision of early complementary feeding. If the mother has been correctly informed about the right breastfeeding and try to implement it, however because of the unimplemented environment about the breastfeeding the mother becomes a stranger in the community and it is most likely possible she will go back with the wrong breastfeeding which is giving early complementary foods before the baby reaches 6 months. It gives a meaning that if we want to improve the practice of complementary feeding > 6 months, then the family support need to be changed by providing a better understanding to the families with the pattern and timing of a good complementary feeding.

The society identifies that the provision of complementary feeding as the concern for the mother and her baby only, hence it is important to have family support for the provision of supplementary feeding, especially motivations, perceptions, emotions, and attitudes [10].

According to Asdan research, family support and baby feeding habits affect the complementary feeding of 89.8%. The role of the family in the provision of complementary foods at 6 months is needed, moreover the culture of Indonesian people are still collective, the family plays a role in the children management patterns, especially in the management of the babies in the terms of providing complementary feeding [8].

Also In accordance with the results of the research conducted by Ginting [4] that the provision of early complementary feeding is influenced by characteristics of the mothers, internal factors, and external factors in which the external factor is family support (76%) [7].

CONCLUSIONS AND RECOMMENDATION

The results of this study showed a significant relationship between family supports with the early complementary feeding in Puskesmas Sewon I, Bantul. The majority of the mothers who provide early complementary feeding has a high family support. The role of the family in the provision of complementary foods at 6 months is needed, especially the cultures of Indonesian people are still collective, and the family plays a role in the children management patterns, especially in the management of the babies in the terms of providing complementary feeding. The results suggest that it is important for the role of the parents to play in this case by providing the support for the breastfeeding mothers in order to assist the exclusive breastfeeding program and not to give complementary feeding to the premature babies.

This result is also expected for the profession in order to be able to provide and improve the frequency of obstetric service, especially on breastfeeding mothers in the form of counseling about the importance of breastfeeding and the dangers of giving early complementary feedings to babies at Sewon I health center.

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ICASH-A55

**RELATIONSHIP BETWEEN LEARNING MOTIVATION TO
LEARNING ACHIEVEMENT AMONG MIDWIFERY STUDENTS IN
IN 'AISYIYAH UNIVERSITY YOGYAKARTA, INDONESIA**

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ABSTRACT

Background: Teaching and learning is a process of conscious purpose. Goals can be informed an attempt to give students the formulation of the expected results after implementing a learning. High-performance students have a good indication to their knowledge. One of the factors that affect student achievement is motivation. The motivation will make students study harder, tenacious, diligent and have full of concentration in teaching and learning. Encouragement in education is one thing that needs to inform to learning in school.

Aims: The purpose of this study was to seek the relationship between learning motivation to learning achievement among midwifery students in Universitas 'Aisyiyah Yogyakarta.

Methods: It was an analytical study with cross-regional approach. A total of 122 students, invited from the two classes of Diploma IV Program of Universitas 'Aisyiyah Yogyakarta, was selected using proportional random sampling. A questionnaire related to students' motivation and performance was used. The collected data was then analyzed by Spearman test.

Results: By the data analysis, we highlight a significant relationship between learning motivation and academic performance in the subjected population (p value < 0.001).

Conclusion: The finding alarms a need to pay attention to what can motivate the students to be involved in learning activity. Motivation is one of the key factors to reach high academic performance in Diploma IV Program of Universitas 'Aisyiyah Yogyakarta, Indonesia.

Keywords: Learning, midwifery student, motivation, academic performance, achievement

INTRODUCTION

The education system is said to be qualified when executed interactively learning the process, inspiring a pleasant atmosphere, challenging, and motivating learners to participate actively, creatively and independently according to their talents and interests. The success of the learning process at various levels of education influence by several factors, one of which is the motivation to learn [1]. Teaching and learning is a process of conscious purpose. Goals can be informed an attempt to give students the formulation of the expected results after implementing a learning [2]. Implementation or otherwise of teaching purposes one of which is visible in the achievement of learning achieved by students. With high performance, students have a good indication aware. Students have a good indication knowledgeable.

One of the factors that affect student achievement is motivation. With the motivation, students will study harder, tenacious, diligent and have and have full concentration in teaching and learning. Encouragement in education is one thing that needs to inform to learning in school. Wasty Soemanto states, recognition of one's academic achievement is important, because by

knowing the results that have been informed, the students will be trying to improve their academic achievement. Thereby learning performance can be improved and optimized because students feel motivated to improve learning achievement that has informed previously [3]. Learning motivation of the students in each learning activity plays an important role to improve student achievement in certain subjects [1].

Students are motivated to learn to allow all get the results of learning is also high, meaning that the higher the motivation, the intensity of the efforts and the efforts made, the higher the expected learning achievement gained. On the basis that the author chose the University 'Aisyiyah Yogyakarta as research objects which, in the university' Aisyiyah his individual student midwife educators undergraduate courses the first semester of the 2011/2012 academic year the number of students is 174 people. Where the daily lot of students who choose to live in the environment dorm and there are pick the pace of home for some reason, with diverse areas of origin, this indicates that the university 'Aisyiyah Yogyakarta is one that counts campus existence.

Preliminary studies conducted on ten undergraduate students midwife educators to see the results of final exams and grades obtained are still a lot of subjects that are still unresolved or less than the value determined as follows < 70.00 with a grade point average of them were still below the standard unfavorable ratings are < 2.00 by 1%, cumulative grade point 2.00 to 2.75 as much as 38% while with a cumulative grade point 2.76 to 3.50 as much as 55% and a cumulative grade point $> 3, 5$ as much as 6% In this portrait that is still quite a lot of students who must repeat to improve the results that have been obtained at this time and given that they have gone through a long process that informed as a graduate, student midwife educator university 'Aisyiyah Yogyakarta necessarily the result of learning achievement expected would be better.

Another fact addressed that some undergraduate students of the 1st half of midwife educators also have learning difficulties. They tell their learning ability so declined and lazy to learn the state of those who live far from parental supervision, so as to make them more like play, walks, spending time in front of the computer and more interested in the virtual world than utilizing the internet as a medium to increase Science. When viewed from the study habits vary, there are learning at a time when dawn, there were examined while listening to music and the other way. Likewise, with classroom lectures environmental conditions they tend to like the atmosphere of a tutorial than expert tuition for the class conditions are less comfortable with college student amount is too much, make them learn The concentration to be decreased, so that make them into lazy to pay attention to the lessons given by lecturers. Not only is it a lot of students who was informed to college just because of the encouragement of parents, their ideals, fiancé, girlfriend, sister, friends, and just because one major in, so because some problems which impact on learning achievement they.

METHODS

This study is a cross sectional study. This model will provide an overview of the research questions that informed to determine whether there is correlation with learning achievement motivation student midwife educator Semester undergraduate university 'Aisyiyah Yogyakarta Academic Year 2011/2012. The population of this study was all of undergraduate students midwife educator university Aisyiyah Yogyakarta academic year 2011/2012 with the number of 175 students. The amount of sample determined by calculating the sample is from 175 the number of the population after do calculation sample showed 122 after it enacted sampling technique in this research is proportional random sampling, In this case, the number of samples will be divided proportionately to each class in agreement with the number of students. With the above formula,

the result of calculation of the number of samples of each class some 61 students. Data collection instrument was used a questionnaire.

The analysis employed in this study were univariate and bivariate. In this study, the variables were analyzed using univariate learning motivation and learning achievement. In this study, statistical analysis using product moment correlation analysis but before analyzing the data, it first tested the review requirements is normality experimental data using the Shapiro-Wilk normality test [4]. If the sample data are not normally distributed then test hypotheses using correlation analysis Spearman rank correlation (ρ) through the program as SPSS.

RESULTS

Subjects in this study were student midwife educator Semester undergraduate university 'Aisyiyah Yogyakarta Academic Year 2011/2012, amounting to 175 students by the number of students per class A kelasnya that as many as 86 students and class B as many as 89 students. But for GPA taken is the result at the time of the 1st half, while the number of samples taken from all the population willing to become respondent and has been calculated based on simple random sampling so that the number of respondents is 122 people.

Table 1. Distribution of the frequency of the level of motivation to learn.

Learning motivation level	Frequency	Percentage (%)
Good	24	19,7
Enough	62	50,8
Less	36	29,5
Total	122	100

The table 1 shows that studies level of Midwife Educator Program Graduate students learning motivation on learning achievement as many as 24 students (19.7%), enough motivation as many as 62 students (50.8%) and less motivation as many as 36 students (29.5%).

Based on the result showed that the performance index during the 1st half of the respondents, the data obtained as follows:

Table 2. Distribution of the frequency of learning achievement

Level of Achievement	Frequency	Percentage (%)
Satisfy	37	30,3
Very Satisfying	78	63,9
Cum Laude	7	5,7
Total	115	100

As for the level of achievement of students in undergraduate courses midwife educator first half can be seen from the value of the average a Grade = 2.91, sd = 0.37 and = 3.95 while the maximum value of the minimum value = 2.09. While the level of academic achievement is satisfactory (2.00 to 2.75) is 37 students (30.3%), very satisfying (2.76 to 3.50) 78 students (63.9%) and the cum laude (3, 51- 4.00) is as much as seven students (5.7%).

Table 3. The frequency distribution table influence learning motivation on learning outcomes.

Learning motivation	Learning outcomes						Total	
	Satisfy		Very Satisfying		Cum Laude			
	f	%	f	%	f	%	f	%
Good	20	16,4	15	12,3	1	0,8	38	100
Enough	15	12,3	46	37,7	1	0,8	62	100
Less	2	1,6	17	13,9	5	4,1	24	100
Total	37	30,3	78	63,9	7	5,7	122	100

Based on the above table, it is known groups of the table 3 shows that students with good learning motivation and academic achievement satisfactory (2.00 to 2.75) for two students (1.6%). Students who have the motivation to learn enough to satisfy the learning achievements of 15 students (12.3%) To lack motivation and academic achievement satisfy as many as 20 students (16.4%).

Based on the obtained data normality test p-value (0,000) $< \alpha$ (0,05) distribution data is not normal, then use the test Rank Correlation Spearman (ρ) obtained a correlation coefficient of 0.407 and p-value (0,000) $< \alpha$ (0,05). The data analysis shows that there is a correlation of learning motivation to learning outcomes.

DISCUSSION

Based on the results of research on Learning Motivation Relationship with Learning Achievement Student Midwife Educator undergraduate university 'Aisyiyah Yogyakarta Academic Year 2011/2012, showed that there was correlation between achievement and motivation. It acquired from the analysis results obtained through the formula of Spearman Rank correlation coefficient V-value of 0.407 and p-value (0,000) $< \alpha$ (0,05) so H_0 rejected, which means there is a significant correlation between learning motivation towards student results. The success of the learning process at various levels of education specified by several factors, one of which is the motivation to learn [5]. While the elements that influence the motivation to learn them is Ideals student, the student's ability, the condition of students, students of environmental conditions, dynamic elements in learning and efforts of teachers in teaching students.

Results for motivation to learn good learning outcomes satisfy (2.00 to 2.75) for two students (1.6%), due to various factors that affect learning as internal factors and external factors. The motivation in students can become weak, the lack of motivation or lack of motivation to learn will weaken the activities so that the quality of learning outcomes will be low. Hence the motivation to learn on students needs to be strengthened continuously, with the aim that students have a strong motivation to learn so that the results can be available optimal learning. Motivation to learn is possessed by students in each learning activity plays an important role to improve student learning outcomes in subjects.

Students who have a high motivation to learn to get the learning achievement is very satisfying (2.76 to 3.50) as many as 17 students (13.9%). Student learning achievement Cum Laude (3,51- 4,00) by five students (4.1%) for students who highly motivated in either category (high) and pretty (being) in learning enables learning outcomes will obtain high, however meaning that the higher the motivation, the higher the learning results obtained. Students do various attempts or efforts to increase the success in learning so as to achieve the success that was satisfactory as expected. This matter accord on Wasty Soemanto researches, learning performance

can be improved and optimized because students feel motivated to improve learning achievement that has informed previously [3].

CONCLUSION

Based on research that has done, the researchers conclude that students who have the motivation to learn enough or are currently as many as 62 students (50.8%). While the views of a Grade is to learn a very satisfying achievement as much as 78 students (63.9%) and there is a Learning Motivation Relationship With Learning Achievement Student Midwife Educator Semester undergraduate university 'Aisyiyah Yogyakarta Academic Year 2011/2012. Supported by the analysis of test results obtained Spearman Rank correlation coefficient ρ value of 0.407 and p -value $(0,000) < \alpha (0,05)$.

Based on research that has been done can be summarized is students of DIV Regular Midwife Educator Program Study in Semester II STIKES 'Aisyiyah Yogyakarta Academic Year 2011/2012 are motivated to learn enough or are currently as many as 62 students, students with high GPA have very satisfied achievement learn as much as 78 students (63.9%), and there is relationship between learning achievement and learning motivation.

Recommendation for this research are: Teachers are expected to direct learners to be more motivated to optimize further the application of the principle of learning, teaching and learning a dynamic element, the use of the experience and abilities of students and the development of the ideals and aspirations of learning. Creating a conducive learning environment by completing a variety of learning resources and complementary bibliography reference books to support the progressive increase student motivation.

Students are Expected always improve learning motivation by trying to please all subjects so that learning objectives can be active and there is no longer that scored less well studied and other researchers for other researchers hoped to address all of the factors that influence the motivation to learn as the environment, interest, talent, intelligence, health and learning to increase knowledge, especially about the factors that influence the motivation to learn.

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ICASH-A56

THE RELATIONSHIP BETWEEN WEIGHT INCREASES WITH UPPER ARM CIRCUMFERENCE AMONG THIRD TRIMESTER PREGNANT WOMEN IN YOGYAKARTA, INDONESIA

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ABSTRACT

Background: The incidence of Indonesian pregnant women who suffer from Chronic Energy Deficiency (CED) reached 21.6%. In Yogyakarta, the presentation of CED reached 22.69%. Chronic Energy Shortage (CES) is mainly caused by nutrient intake imbalance that influences the weight gain in pregnant women.

Aims: This is to know relationships between body weights among third-trimester pregnant women with their upper arm circumference.

Methods: The study was a quantitative analytical study with cross-sectional approach. This research employed an accidental sampling method to select the 40 third-trimester pregnant women who visited health Centre in Yogyakarta. The data was then analysed using Chi Square test.

Results: There was a significant relationship between weight gain with upper arm circumference among third-trimester pregnant women (p value = 0.012). As a note that, the weight gain of the participated pregnant women and their size upper arm circumference were in the regular group.

Conclusion: The significant relationship between weight gain and higher arm circumference among third-trimester pregnant women alarm the needs to provide an advice for nutrition intake balance during pregnancy in Yogyakarta.

Keywords: Weight Loss, upper arm circumference, Third Trimester Pregnant women

INTRODUCTION

The prevalence of women of childbearing age (WUS) suffering from Chronic Energy Deficiency (CED) in 2012 in Indonesia is 17.6%. Central Java province for the year 2012 based on reports from county or city CED pregnant women who have reached 18.45%. The prevalence of Chronic Energy Deficiency in Yogyakarta reached 22.69%. The prevalence of CED in Sleman regency reached 2.82% [1].

Nutritional problems play a significant role in pregnancy because the gestation period will determine the quality of human resources in the future because the development of the child is determined by the current condition of fetal life in the womb. In Indonesia, there are a variety of nutritional problems that Chronic Energy Deficiency (CED), Iodine deficiency disorders (IDD), Vitamin A Deficiency (VAD) and Iron Nutritional Anemia (AGB) [2].

The cause of malnutrition in some communities in Indonesia are caused by two things: directly, through the quality and quantity of food intake and infectious diseases as well as the

indirect object through families in meeting their food needs, parenting is not right, health care and environmental sanitation poor, The dominant factor that is causing widespread state of unbalanced nutrition is the weight gain is not healthy in the community [3].

Food in pregnant women is imperative because the food is a source of nutrients needed for the development of the fetus of pregnant women and their bodies. But the food consumed by a pregnant woman is not the only factor affecting the nutritional status of pregnant women. The factors that could influence the nutrition of pregnant women including the socio-economic factors, biological factors, factors consumption patterns and factor maternal behaviour [4].

Small LILA community in Indonesia can be seen from various nutritional problems that arise, such as malnutrition, iron deficiency anaemia, iodine deficiency disorders and lack of vitamin A. This is certainly an impact on the quality of human resources, because MUAC influence intelligence, endurance against disease, infant mortality, maternal mortality and productivity. The problem is a very complicated issue, because many factors that can cause, such as the level of food consumption, infectious diseases and other factors that relate to aspects of the production and supply of food, economics, education and culture [2].

Pregnancy poses some changes on women, one of which is the physical changes is an increase in weight. These changes often occur until after delivery. For women who are slim and very concerned about body shape, weight gain is a big problem. This research aims to mengidentifikasi weight gain with upper arm circumference in pregnant women.

RESEARCH METHODS

This research forms an analytic research. In this study, researchers describe the study site and the characteristics of the respondent within a specified timeframe and analyse the relationship between weight gain and upper arm circumference at third-trimester pregnant women. This research is quantitative done by examining the data collected by Statistics. The approach used is cross-sectional measurement means where the independent variable is the weight gain in the third-trimester pregnant women and dependent is LILA in the third-trimester pregnant women do at the same time.

This research was conducted in Public Health Yogyakarta Indonesia from 18 to 25 July 2013. The study population was the whole third trimester pregnant women who checkups in Puskesmas Yogyakarta Indonesia are totaling 58 people. The sample in this study were pregnant women Trimester III checkups in Public Health Yogyakarta Indonesia is about 40 people who meet the inclusion and exclusion criteria using accidental sampling technique. The independent variables in this study were weight gain in pregnant women in the third trimester Public Health Yogyakarta Indonesia. The dependent variable in this study is LILA the third-trimester pregnant women in Public Health Yogyakarta Indonesia.

Type Data collected included primary data and secondary data. Primary data in this study using observation sheet that data on weight gain in pregnant women and LILA Trimester III obtained from direct measurement at the time of the survey. Secondary data in this study have been achieved from the register book visit Antenatal Care in Public Health Yogyakarta Indonesia. Data collection techniques weight gain collected with documentation technique to determine the patient KIA book records the respondent's prepregnancy weight, as well as the method of weighing to determine the final weight of respondents at the time of data collection. Furthermore, the data collected by LILA upper arm circumference measurement techniques using MUAC tape. The research instrument used to determine the weight of respondents are scales of departure,

while to know the upper arm circumference of respondents using MUAC tape. The measurement results are then inserted in the observation sheet.

The data in this study carried out by the steps: Editing the data, Coding, Data Entry, Tabulating. Analysis of the data in this study include the univariate analysis were used to explain or describe the characteristics of each of the variables considered, such as frequency distribution and percentage of the data of weight gain and the data LILA respondents, and bivariate analysis using Chi-square test with an error rate $\alpha = 0.05$.

RESULTS

This research was conducted in Public Health Yogyakarta Indonesia is located in Jl. P. Diponegoro No. 9 Yogyakarta on 18 to 25 July 2013. The working area of Public Health Yogyakarta area of 156,000 hectares, with a population of 36 642 inhabitants spread across three villages namely region Bumijo Village, Village Cokrodiningratan, and Sub Gowongan. Type of health services in Public Health Yogyakarta Indonesia consists of six types of basic services, namely treatment, Prokes, environmental health, nutrition, communicable disease control and KIA which includes antenatal care, immunisation and family planning. The results of data processing and analysis can be seen in the tables below:

Table. 1 Frequency Distribution Characteristics of Respondents in Public Health Yogyakarta Indonesia June 2013

Characteristics of Respondents	Frequency	Percentage
Age		
a. < 20 year	4	10.0
b. 20-35 year	30	75.0
c. 35 year	6	15.0
Parity		
a. 1-3 person	37	92.5
b. > 3 person	3	7.5

Table.2 Distribution Frequency Weight Gain in Pregnancy Trimester III in Public Health Yogyakarta Indonesia June 2013

No	Variables	Frequency	Percentage
1	<i>Weight</i>		
	Abnormal	10	25.0
	Normal	30	75.0
	Total	40	100.0
2	<i>Upper arm circumference</i>		
	Abnormal	3	7.5
	Normal	37	92.5
	Total	40	100.0

Table.3 Relationship with Size Weight Gain Upper Arm Circumference in Pregnancy Trimester III in Public Health Yogyakarta Indonesia June 2013

Weight	Upper arms circumference				Total		cc	P-value	X ²
	Abnormal		Normal		f	%			
	F	%	F	%					
Abnormal	3	30.0	7	70.0	10	100			
Normal	0	0.0	30	100	30	100	0.442	0.012	9.730
Amount	3	7.5	37	92.5	40	100			

The results of the frequency distribution are known that the majority of maternal weight changes included in the category of standard as many as 30 people (75.0%), and strange banal ten people (25.0%). A pregnant woman of average weight gains from 12.5 to 17.5 kg during pregnancy.

DISCUSSION

Factors affecting maternal weight gain include the nutritional status of pregnant women, prenatal care, disease during pregnancy and socioeconomic. These four factors are factors that significantly affect maternal weight gain interrelated. The adequacy of nutrition of pregnant women are affected by the socio-economic status of the family in the fulfilment of basic needs, and regular pregnancy tests can detect morbidities during pregnancy and diet program that is appropriate for pregnant women. Based on the description above can be concluded that the weight gain in pregnant women is a common thing for their growing fetus, but more weight gain or excessive weight loss can be a complication of pregnancy and can be dangerous for mother and baby.

Results of unknown size frequency distribution LILA pregnant women in the standard category as many as 37 people (92.5%), and strange as many as 3 people (7.5%). LILA size is not average (7.5%) due to not experience healthy weight gain in pregnant women. MUAC measurements on a group of women of childbearing age (WUS) is one of the ways of early detection is easy and can be done by ordinary people, to know the risk group Chronic Energy Deficiency (CED).

Upper arm circumference is an indicator of nutritional status that is used primarily for the detection of protein-energy malnutrition in children and is an excellent tool for detecting women of childbearing age and pregnant women at risk of having a baby with low birth weight. MUAC measurements on a group of women of reproductive age (WUS) and pregnant women is one of the ways of early detection is easy and can be done by ordinary people, to know the risk group of chronic energy deficiency (CED). MUAC measurements can not be used to monitor changes in the nutritional status in the short term. MUAC measurement is used for analysis is very easy and fast.

In pregnant women, Upper Arm is used to predict the likelihood of babies born with low birth weight. Pregnant women are known to suffer KEK seen from MUAC measurements, with a threshold LILA WUS (pregnant women) have a risk of KEK in Indonesia is 23.5 cm. If the size of MUAC of less than 23.5 cm or in part LILA red tape, that the woman at risk of KEK and is expected to give birth to lower birth weight (LBW). LBW have a risk of death, malnutrition, impaired growth and impaired child development. Based on the above description can be concluded that MUAC measurements in pregnant women are one of the risk groups early detection of chronic energy shortages that can be prevented with proper nutrition and normal birth.

Based on the statistical test using chi-square known the value $X^2 = 9730$ and $p\text{-value} = 0.012$, where the $p\text{-value} < 0.05$ so that it can be concluded that there is a relationship between weight gain and the size LILA the third trimester pregnant women in Puskesmas Yogyakarta Indonesia with the value $cc = 0.442$, which means that the weight gain was followed by a change in the size of the upper arm circumference in pregnant women. Results of cross tabulation between weight by size LILA known that as many as 10 women experience weight gain is not normally consists of six people with less weight, two people experience weight loss and 2 are overweight.

Excessive weight gain can be harmful to pregnant women such as: risk babies during childbirth difficulties, in the third trimester of pregnancy is a possibility of danger signs of preeclampsia, can be a symptom of diabetes mellitus. While the risks of excessive weight loss can be harmful to the fetus does not develop, malnutrition, anaemia so that the difficulties in childbirth.

Weight gain in the first trimester is relatively small, does not rise or even decreases due to the physiological discomfort that often occurs. The increase in weight quite rapidly occurs in the second and third trimester, in this period that other monitoring is necessary to weight gain. Weight gain in the third-trimester pregnant women considered normal if the range > 1 and < 2 kg per month.

Women with small category, increased their ideal weight while pregnant is 12.5 to 18 kg, while for women with a BMI (Body Mass Index) is normal, ideal body weight gain during pregnancy is 11.5 to 16 kg and for females with a BMI (Body Mass Index), increased weight between 7 to 11.5 kg. Maternal weight gain is recommended around 1-2.5 kg in the first trimester and then an average of 0.5 kg per week. Until the end of pregnancy, weight gain is recommended depending on the initial nutritional status of mothers (less than 14-20 kg Mrs BB, BB ordinary mothers and mothers from 12.5 to 17.5 kg more BB / obesity from 7.5 to 12.5 kg).

The results of the frequency distribution are known that most mothers have a lifespan of 20-35 years. Age 20-35 years old is the ideal age for a woman in the reproductive system because at that age the reproductive organs have matured when compared with pregnant women with age < 20 years or > 35 years who are at risk of pregnancy. Age a person will experience changes in physical and psychological aspect (mental). This change occurred because of the maturation of organ function. In the aspect of moral or spiritual, the level of thinking has become increasingly mature and immature.

Based on the parity is known that most mothers have 1-3 children, as many as 37 people (92.5%). Parity (number of children) is the state of women relating to the number of children born. Parity is also one of the factors that affect the nutritional status of pregnant women. Parity is a factor that significantly affects the outcome of conception. Need to watch out because the mother had been pregnant or gave birth to children four times or more, then it is likely that many will encounter circumstances such as anaemia, malnutrition, sagging in the abdominal wall and uterus wall. Parity is also associated with the mother's ability to prepare first food intake during pregnancy that can affect weight gain is normal during pregnancy.

Excessive weight gain or weight loss disproportionate influence on fetal development and delivery process. When women experience weight loss is an indicator of malnutrition in pregnant women affect the mother, the birth and the fetus. Efforts to determine malnutrition in pregnant women can be detected by measuring LILA. The results are consistent with research Yuliati (2011) concluded that there is a relationship a relationship nutritional status of pregnant women with MUAC measurements and weight in The results are consistent with research Yuliati (2011)

concluded that there is a relationship a relationship nutritional status of pregnant women with MUAC measurements and weight in Hospital Panti Wilasa Citarum Semarang.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the study, the researchers gave some advice that is for health center staff especially nutritionists to provide counselling to pregnant mothers about balanced nutrition in pregnant women as well as explain the dangers of malnutrition during pregnancy in a community service program. The need for further research on this study by examining the relationship between economic, educations, employment with weight gain in pregnant women.

Limitations of this study include: (1) This study only examined the nutritional status is calculated based on anthropometric seen from the register book visit Antenatal Care and weight measurements and measurements of upper arm circumference directly at the time of the study, there are several other techniques related to nutritional status has not been considered as: calculate BMI (Body Mass Index) to determine the nutritional status of pregnant women. (2) The study involved a limited number of research subjects, as many as 58 people, so the results can not be generalized to the group of topics with a significant amount.

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ICASH-A57

**THE DURATION OF PERINEAL WOUND HEALING BETWEEN
BASTE AND INTERRUPTED SUTURE AMONG POSTPARTUM
MOTHERS IN BANTUL, YOGYAKARTA, INDONESIA**

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ABSTRACT

Background: Suture is a most used technique to heal perineal wound after delivery baby. Midwives often offer baste and disconnected suture for the healing process.

Aims: This study aimed to determine the duration of perineum wounds healing between the two suture techniques, baste and disconnected suture.

Methods: The study employed a quasi-experimental methods with a longitudinal approach. A total of 24 postpartum mothers who suffered perineum wounds degree II, no smoking, 20-35 years old, no obese, no DM, and no infections, was taken using random sampling. Seven validated parameters in assessing the perineum wound healing process were asked by the researchers during the observation including the status of the stiche, openness, festering, swollen, redness in the skin around the stiches, pain, and smell. The data was then analyzed by independent T-test.

Results: The results showed that the average length of the perineum wound healing in a private midwife clinic BPM Umu Hani by baste suturing technique was 7.42 days, and it was significantly shorter (p value = 0.003) than the healing by interrupted suturing technique (9.33 days).

Conclusion: Disconnected suturing technique can be a preference for perineal wound healing after delivery baby. However, the midwifery should pay attention to the needs of the postpartum mothers before propose the technique.

Keywords: Postpartum mother, wound healing, baste suturing techniques, disconnected suturing techniques.

INTRODUCTION

Most maternal deaths can be prevented if these women obtain help from a qualified healthcare professional and get adequate health facilities. Ministry of health launched Normal Delivery Care (NDC) which aimed to maintain the viability and provide a high level of health for mother and baby [1,2]. NDC training has been conducted since 2002 until now, the last revision was in 2008, in which there were material about prevention and immediate treatment of childbirth complications, such as prevention of rupture, episiotomy indications and treatment of bleeding due to perineal wound lacerations. The perineal wound treatment was performed by suturing the wound, and the training has taught baste sewing techniques [3].

Perineal wound occurs when the perineum tissues torn during the childbirth. According to Cioffi Jane (2009), 65% of the perineum wounds happened on primigravida [4]. These wounds can occur spontaneously or these happened due to the episiotomy. According to the Royal College of

Obstetricians and Gynaecologists (RCOG) (2004), 85% of women who give birth will experience perineum injuries and 60-70% of the wounds were resolved by perineum repairs / suturing [5]. Wound care aimed to improve the tissue healing process and also to prevent infection [6].

The perineum wound healing process is influenced by nutrition, smoking, coexisting diseases, and suturing techniques [7,8]. There are still many myths in the society that affect the health of the postpartum mothers, for instance that the postpartum mothers should not eat food such as eggs, meat, shrimp, sea trout and catfish, snail. the myths said that it will aggravate the stitches. Some people today still think that suturing the perineum wound is not necessary. They still regard that the present situation is the same as the previous one when mothers gave birth; their wounds were not sutured [9].

The government through the ministry of health also has policy of the service for the postpartum mother in accordance with the health basic of the postpartum mother, i.e. at least four visits during the childbirth. The policy goals are to assess the health of mothers and infants, to prevent possible health disorders in the mothers and the infants, to detect the presence of the events during postpartum. The surveillance was conducted to assess perineum wound laceration [10].

In this case, the midwife can provide midwifery care to patients, families and the community that there are no food restrictions during postpartum and to recommend them to eat lawful and good food and to avoid overeating. The above statement is in accordance with the role of the midwife. According to IBI (2006), midwives act as executor and educator. As the executor, midwives can provide midwifery care to patients as preventing any injury/perineum rips, repairing perineum wound, ensuring the wounds healing, and provide iron tablet. As the educators, midwives inform and teach patients how to take care the wounds so the treatment can be maximized and the wound healing is not disturbed then the mothers would feel comfortable [3,11].

In a private midwife clinic (BPS) Umu Hani, the number of labors from January to February 17 was 20 mothers. Of these labors, 14 mothers get perineum wound suturing. This case should warn midwives in doing perineum wound suturing to help the wound healing is the best. This study aimed to determine the differences the duration of perineum wounds healing between baste and disconnected suture, after that midwives know about the best wound suturing to help the wound healing.

METHODS

This study is a comparison research using experimental method, the research procedures were conducted to reveal a causal relationship between the two factors deliberately caused by the researchers by eliminating other interfere factors, then they were compared [12,13]. The design of experiments used quasi-experimental, there were the treatment group and control group for the comparison. The samples taken using random sampling. The treatment group is group of mothers who get the perineum wound suturing with baste technique to 12 respondents, while the control group is group of mothers who get disconnected suturing techniques dengan jumlah 12 respondents. The study used longitudinal approach, data were collected by forward, the recording time of each respondent was the same, it will remain between the independent and dependent variables [12]. The respondents were observed at the same time, starting at 7 days until the wound healing declared in accordance with the checklist that contains seven parameters for wound healing.

There are seven parameters in assessing the perineum wound healing process compiled by the researchers and they have been validated by a specialist. The 7 parameters were contained in

the monitoring checklist including: the stitches were closed or not open, no festering, no swollen, no redness in the skin around the stitches, painless, and no smell [14].

The population of this study was all post partum mothers who gave birth in BPS Umu Hani and get perineum scarred/rips due to episiotomy or spontaneous rupture. Control of confounding variables with the samples taken met the inclusion criteria for the postpartum mothers, namely: no smoking, aged 20-35 years old, no obese (with a BMI calculation), no DM (diabetes mellitus), having normal hemoglobin level and no infection. They were 24 mothers. Several factors that were not controlled were nutrients for everyone eats diverse food, the use of corticosteroids, wound stress for it cannot be measured, and the type of wound for the selection was based on the degree of wound. The data processing used t-test independent sample. This study used a significance level of 0.05. H_0 is rejected and H_a is accepted if p-value < 0.05 (15,16,17).

RESULTS

The Data Collecting in this study was conducted according to the inclusion criteria predetermined by the researcher. In the study, the researcher and the assistant collect data and observe the check list in accordance with the manual charging. From the data processing, it was obtained the following results:

Table 1 Respondents' characteristic among postpartum mothers in BPS Umu Hani in 2012

Characteristic	Frequency	% (Percentage)
<u>Age</u>		
20-25 years old	8	34
26-30 years old	8	33
31-35 years old	8	33
Total	24	100
<u>Education level</u>		
SD	1	4
SMA	19	79
D3	2	9
S1	2	8
Total	24	100
<u>Type of jobs</u>		
House wife	13	54
Laborer	2	9
entrepreneur	2	8
employer	6	25
Lecturer	1	4
Total	24	100
<u>Parity</u>		
1	13	54
2	6	25
3	5	21
Total	24	24
<u>Hb content</u>		
< 11 gr%	0	0
>11 gr%	24	100
Total	24	100
<u>Nutrition status (BMI)</u>		
<18,5 kg/m ²	0	0
18.5 – 24,9 kg/m ²	13	45,83
>24,9 kg/m ²	11	54,17
Total	24	100

Type of wound		
Episiotomy	11	45,83
Spontaneous	13	54,17
Total	24	100

Table 2 Frequency distribution of the perineum wound healing duration with baste suturing techniques among postpartum mothers in BPS Umu Hani in 2012

Healing duration	Frequency	%
7 days	8	66,7
8 days	3	25
9 days	1	8,3
10 days	0	0
11 days	0	0
12 days	0	0
total	12	100

Based on the Table 2, the study results showed that duration of perineum wound healing with baste suturing technique was at the most at 7 days, there were 8 respondents (66.7%).

Table 3 Frequency distribution of the perineum wound healing duration with disconnected suturing techniques among postpartum mothers in Bps Umu Hani in 2012

Healing duration	Frequency	%
7 days	3	25
8 days	1	8,3
9 days	2	16,7
10 days	3	25
11 days	1	8,3
12 days	2	16,7
Total	12	100

Based on table 3, the results showed that the duration of the perineum wound healing with the disconnected suturing technique was at the most at 7 days and 10 days, there were three respondents (25%), but there were respondents who recovered on the twelfth day, is 2 respondents (16.7%).

Table 4 The differences of the perineum wound healing duration between the baste suturing and the disconnected suturing among the postpartum mothers in BPS Umu Hani in 2012

Type of suture Healing duration	baste		disconnected		Total	
	F	%	F	%	f	%
7 days	8	33,3	3	12,5	11	45,8
8 days	3	12,5	1	4,2	14	16,7
9 days	1	4,2	2	8,3	3	12,5
10 days	0	0	3	12,5	3	12,5
11 days	0	0	1	4,2	1	4,2
12 days	0	0	2	8,3	2	8,3
Total	12	50	12	50	24	100

Based on Table 4, it can be seen that the duration of the perineum wounds healing was at the most at the seventh day in the baste suturing technique, there were 8 respondents (33.3%), while the respondent who experienced healing at least on the eleventh day was respondent who get disconnected suturing technique, there was one respondent (4.2%).

Table 5. The comparison of the perineum wound healing duration between the baste suturing group and the disconnected suturing group.

	baste N = 12 Mean (SD)	Disconnected N = 12 Mean (SD)	T	df	P	Sig (2-tailed)
Wound healing duration	0,668	1,825	-3,415	22	0,003	0,002

The results showed the statistical test using t-test that counted twas -3.415 with the probability of 0.003, which means that there are differences in the duration of the perineum wound healing between the baste suturing and the disconnected one.

DISCUSSIONS

Based on the Table2, the study results showed that duration of perineum wound healing with baste suturing technique was at the most at 7 days(66.7%).Baste suture is suturing using one thread to the entire wound and the node is at the end of the suture and it is cut after creating node [8]. The perineum wound suturing using the baste technique can accelerate healing because fewer nodes are created.According to Rurh& Taylor Wendy Johnson, any foreign objects in the body tissues always provoke a reaction. Fewer knot and suturing material, the faster the healing process. The perineum wound healing duration could be unequal although the suturing is done by the same technique. It is influenced by the individuals, for instance, due to the nutrition intake.The varied characteristics of the respondent's age, uneven, no one dominating others can affect the wound healing duration, although the age of the selected respondent is at the reproductive age, 20-35 years [8,18]. According to Maureen Boyle (2008), increasing age effects on all phases of wound healing in connection with the circulation and coagulation disorders, slower inflammatory response and decreased activity of fibroblasts [19]. The wound healing process at the old age is

much longer than one at young age. This happen because of the degeneration process, inadequate food intake, decreased immunity, and decreased circulation [20].

Based on table 3, the results showed that the duration of the perineum wound healing with the disconnected suturing technique was at the most at 7 days and 10 days, there were three respondents (25%). The equal duration on the disconnected and the baste suturing technique at the 7th day is caused by not only the type of stitch affecting the duration of the perineum wound healing [21]. Nutrition is a factor that can affect the duration of wound healing. According to Maureen Boyle, nutrient which affects the wound healing are protein, vitamin A and C, copper, zinkum, and adequate iron. Protein supplies the amino acids required for the tissue repairing and regeneration. Vitamin A and zinkumis needed to epitelialisasi, and vitamin C as well as zinkumis required to synthesise collagen and capillary integration. Iron is needed for hemoglobin synthesis and oxygen is needed to deliver oxygen throughout the body [22].

Based on Table 5 means that there are differences in the duration of the perineum wound healing between the baste suturing and the disconnected one. The wound healing is a complex process involving many cells [8]. The average length of the perineum wound healing at the group of the baste suturing was 7.42 days, while the average length of the disconnected suturing group was 9.33 days. In the previous study by the Kristiani (2004), the duration of the wound healing was 7 to 11 days [21]. This indicated that the duration of wound healing could occur 7 days if there was no infection, as described by Suriadi [20].

The perineum wound suturing using the baste technique can accelerate healing because fewer nodes are created. According to Rurh & Taylor Wendy Johnson, any foreign objects in the body tissues always provoke a reaction. Fewer knot and suturing material, the faster the healing process. For example, the baste suturing technique uses only one same thread in all layers of the perineum wounds, while the disconnected suturing technique uses not only one thread but also more puncture [8]. The number of punctures will make medical devices (needles) often impale the skin, the number of nodes even more and more, so that muscle tension is higher. While in the baste stitches technique, the muscle tension is weaker [22]. It is supported by Maureen Boyle, he found that severe tension in the wound tissue could inhibit the formation of collagen and connective tissue so that the wound healing would be longer [7].

Based on the differences in the negative independent sample t-test, it is -3.415, then the increasing of baste suturing techniques will lead to the declining of disconnected suturing technique, and the duration of the perineum wound healing will be faster. The significance value is 0.002, It indicates that H_0 is rejected, which means there is a significant average difference in the duration of the perineum wound healing between the baste and the disconnected suturing technique. The little significance value indicates that the difference level or strength is low or weak [9].

The characteristics of the respondent is varying from age, education level, occupation, parity, obesity (as seen from IMT), and oxygenation disorders (as seen from Hb). The respondents obtain the same information about nutrition and the perineum wound care that may affect the duration of the perineum wound healing. Fatty tissue in obesity causes unadequate blood supply, resulting in the long process of healing and decreased resistance to infection. It can also be caused by different kinds of wounds between the spontaneous rupture and episiotomy. Some studies show that rip will heal better than episiotomy [7].

According to Midwifery Manual of Maternal Care and Varney's Midwifery, 3rd edition (JPNK-KR, 2008), the wound caused by an episiotomy recovers longer because the amount of blood lost increases and there is risk of hematoma, the incidence of third or four degree laceration

occurs more, the postpartum pain increase in the perineum area and the risk of infection also increase (especially if the PI procedure is ignored) [3]. According to Ruth & John Taylor Wendy, if the hematoma or blood clot is sewn, it can be used as a place for germs to breed so that it can cause infection and the failure of the wound healing process [8]. It is not supported by the journal written by Sri fortune & Ernawati, entitled factors that affect the perineum wound healing among the postpartum mothers. In this study, it was stated that there was no relationship between age, education level, occupation, and parity with the duration of perineum wound healing [23].

The perineum wound care taught by the midwives was not different namely by using betadine for all respondents, since there was no antiseptic better to accelerate the perineum wound healing process [25]. According to the previous research by Endang Susilowati, there was no difference in the length of the episiotomy wound healing by using alcohol and betadine among the normal postpartum mothers in Muntilan local hospital, Magelang regency [24].

All respondents have obtained the same information from the midwife about good nutrition for healing the stitches [25]. Information is not only delivered to the respondents but also to the respondent's family, it is conducted since many people still consider the nutrition that contain many nutrients, such as eggs, meat, shrimp, sea trout and catfish, snail, should not be consumed because it will aggravate the wound stitches. The midwife explained to respondents and families that the prohibited food is haram food and overeating [26]. The family must not restrict the respondents to consume nutritious food [11]. The commands for humans to eat halal food can be obtained in Al-Quran surah An-Nahl verse 114 [27].

CONCLUSIONS AND SUGGESTIONS

The average length of perineum wound healing in baste suturing technique was 7.41 days. The average length of one in disconnected suturing technique was 9.33 days. There were differences of the perineum healing duration between the baste suture and disconnected suture among the postpartum mothers in BPS Umu Hani in 2012, with the result of p-value <0.05 was 0,003. The significant value of 0.002 indicated that the level of the differences was low or weak. The suggestion for Umu Hani clinic was to create SOP (Standard Operating Procedure) for perineum wound suturing using baste technique. The midwives were suggested to suture perineum wound using baste techniques always to improve their skills in conducting perineum stitches. For further researchers, it was suggested to develop other experiments related to the perineum wound healing process by giving attention to the variables control influencing the perineum wound healing.

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ICASH-A58

**THE RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE
AND ACADEMIC ACHIEVEMENT OF MIDWIFERY STUDENTS IN
STIKES MEDIKA CIKARANG, INDONESIA**

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ABSTRACT

Background: Educational success can be evaluated or viewed from students' academic achievement. Academic achievement is influenced by several factors, such as intelligence and emotional intelligence. Intelligence only contributes roughly 20% of the success, while emotional intelligence may influence the other 80%. Emotional intelligence comprised of 5 indicators including self-awareness, self-control, self-motivation, empathy, and social skill. Low emotional intelligence leads to undesirable student academic achievement.

Aims: This study aimed to determine the relation between emotional intelligence and academic achievement among DIII Midwifery Programme's student at third grade in College of Health Science Medika Cikarang 2014.

Methods: This research is a quantitative analytical research with cross sectional approach. A total of 83 students from DIII Midwifery Programme at third grade were selected randomly and be involved as participants. A questionnaire covered students' Grade Point Average (GPA) and their emotional intelligence scale was employed. The data was then analysed by statistical Chi-Square test.

Results: The result of the study indicates that there is a significant relation between emotional intelligence and academic achievement. Students who have high emotional intelligence tend to obtain higher academic achievement than students who have low emotional intelligence.

Conclusion: The findings of the study is carrying an expectation to an improvement in academic programme planning, materials or other activities to be designed as the consideration to emotional intelligence development in order to optimize academic achievement's students.

Keywords: Intelligence, emotional intelligence, academic achievement.

INTRODUCTION

One indicator of the level of human development in a country is the Human Development Index (HDI). HDI is the average achievement of a country in three basic dimensions of human development, namely in the fields of economy, health and education. According to The United Nations Development Programme (UNDP) in 2011 announced the HDI rank Indonesia is ranked 124 of 187 countries in the world [1]. This shows that education in Indonesia is still lagging behind other countries.

Education has an important role to ensure the development and continuity of a nation through human resource quality. Educational institutions as a means of formal institutions in order to achieve these objectives. The results of the learning process is reflected in academic

achievement. One benchmark is the value of learning achievements (Grade Point Average). Grade Point Average (GPA) is a picture of the success rate of students in a certain period of time prior to completing the entire program, derived from dividing the sum of the weighted value of the course multiplied course credit by the number of credit courses that have been taken [2].

In education, the learning process is a process that is complex and comprehensive, there are many factors that influence it. Intelligence Quotient (IQ) and Emotional Quotient (EQ) are the two things that are needed in the learning process. According to Binet cited Winkel essence of intelligence is the ability to establish and maintain a goal to make adjustments in order to achieve that, and to assess the state of self-critically and objektif [3]. Emotional intelligence by Goleman (2010) is the ability to regulate emotional life with keep the harmony of emotions and disclosure through the skills of self-awareness, self-control, self-motivation, empathy and skills social [4]. According to Goleman, intelligence quotient (IQ) only contribute for 20% of our success, while 80% is the contribution of other factors, one of which emotional intelligence (EQ) [4]. IQ can not function properly without the participation of the emotional appreciation of the lessons delivered in schools. Both intelligence it should complement each other in order to create a balance between IQ and EQ is the key to success for students at school [4].

Education in Indonesia is still emphasize on academic values and sheer intelligence [5]. Education that teaches emotional intelligence include learning about integrity, honesty, commitment, vision, creativity, mental endurance, the ability to empathize, to control one's emotions, ability to cooperate, and other still rare [5]. Intellectual ability is more considered to answer the problem of education more than the emotional ability. Learning paradigm is expected to be changed, because intelligence is not enough for students but also should consider the emotional quotient (EQ), which is basically owned by every human being [5].

Similarly with education midwife, midwife education geared to prepare specialists or professional midwives needed by the people who are able to develop the knowledge, skills and attitudes needed in carrying out the duties of a midwife. It is apparent that not only knowledge and skills, but also the attitude of professionalism midwife is indispensable in carrying out its duties. The attitude of professionalism shown by the attitude of midwives capable of empathy, self-control, open and midwives the ability of self-awareness so that it can take the right decision is a reflection of a midwife who have emotional intelligence.

A previous study by Qurniyawati (2009) show the positive influence between emotional intelligence with DIV student learning achievement in Obstetrics Faculty of Medicine, State University Surakarta [6]. The research was also supported by research Wahyuningsih (2004), which prove the existence of a relationship between emotional intelligence and learning achievement in class II SMU Lab School, East Jakarta [7]. From the results of a preliminary survey conducted in College of Health Science Medika Cikarang, the average GPA of third level students were below the standard limit set graduating institution (> 2.75) is 2.69. Students with GPA below standar (2.75) by 57.8% while the student with a GPA above 2.75 at 42.2%.

The purpose of this study was to determine a relationship between emotional intelligence and academic achievement DIII Midwifery Programme Student in College of Health Science Medika Cikarang in 2014.

METHODS

This study uses a quantitative analytical research design with cross sectional approach. The research was conducted on College of Health Science Medika Cikarang on October 2014 to December 2014. The population in this research is all student Grade III Diploma III Midwifery

Programe College of Health Science Medika Cikarang academic year 2013/2014 which amounted to 83 people. Sampling technique used in this study is total population.

Data collection techniques in this study using primary and secondary data, to measure variables emotional intelligence using primary data, while for variable learning achievement using secondary data.

Instruments for measuring emotional intelligence questionnaire enclosed form of Likert scale with five alternative answers (Strongly Disagree, Disagree, Undecided, Agree, Strongly Agree). The questionnaire is a developing of 5 indicators emotional intelligence from Daniel Goleman, self-awareness, self-control, self-motivation, empathy and social skills.

In order to validate the instrument is used validity and reliability test. Validity test is done to measure whether the instrument being used is valid or not. Test is based on the construct validity, the instruments are made in non test form, based on the theory that are relevant to what will be measured. Data analysis using univariate and bivariate analysis. Univariate analysis is used to see the description of the frequency distribution of each variable in the study. Bivariate analysis is used to see the relationship between two variables, variables emotional intelligence and academic achievement [8]. In this study to prove a correlation between the variables used Chi Square test with Confident Interval 95%.

RESULTS

Based on the table 1, students with high GPA are more on students who have a good self-awareness than students who are less identify themselves ie 68.2%. From the analysis of statistical using Chi Square test obtained P value $<P$ table ($0.031 < 0.05$), it can be concluded that there is a relationship between self-knowledge and academic achievement. Value of OR (odds ratio) 3.061, it can be assumed that the students who has high self-awareness are three times more likely to obtain high GPA compared to students who has low self-awareness.

Table 1. Relationship Between Emotional Intelligence and Academic Achievement DIII Midwifery Programme Student in College of Health Science Medika Cikarang 2014

Variable	Low GPA		High GPA		Σ F	P Value	OR	CI 95%
	F	%	F	%				
Self-awareness								
Low	20	58,8	14	31,8	34	0,031	3,061	1,205 - 7,775
High	14	41,2	30	68,2	44			
Self-control								
Low	22	64,7	14	31,8	36	0,008	3,929	1,524 - 10,130
High	12	35,3	30	68,2	42			
Self-motivation								
Low	22	64,7	11	25,0	33	0,001	5,500	2,064 - 14, 654
High	11	35,3	33	75,0	45			
Emphaty								
Low	24	70,6	15	34,1	39	0,003	4,640	1,766 - 12,189
High	17	29,4	22	65,9	39			
Social skills								
Low	20	58,8	13	29,5	33	0,018	3,407	1,329 - 8,731
High	14	41,2	31	70,5	45			
Emotional Intelligence								
Low	26	76,5	11	25,0	37	0,000	9,750	3,426-27,744
High	8	23,5	33	75,0	41			

Students with high GPA are more on students who can control themselves than students who are less able to control themselves, ie 68.2%. Results of statistical Chi Square test analysis obtained P value $<P$ table (0.008 <0.05), it can be concluded that there is a relationship between self-control and academic achievement. Value of OR 3.929, it can be assumed that the student who has high self-control are three times more likely to obtain high GPA compared to students who has low self-control.

Students with a high GPA as much on students who have high motivation to learn than students who lack motivation, which is 75%. Results of statistical Chi Square test analysis obtained P value $<P$ table (0.001 <0.05), it can be concluded that there is a relationship between self-motivation and academic achievement. Values of OR 5,500, it can be assumed that the student who has high motivation to learning are five times more likely to obtain high GPA compared to students who has low motivation.

Students with a high GPA as much on students who have empathy better than students who lack empathy, ie 65.9%. Results of statistical Chi Square test analysis obtained P value $<P$ table (0.003 <0.05), it can be concluded that there is a relationship between empathy and academic achievement. Value of OR of 4.640, it can be assumed that the student who has high empathy are four times more likely to obtain high GPA compared to students who has low self-control.

Students with a high GPA as much on students who have good social skills than students who are less able to socialize, ie 70.5%. Results of statistical test Chi Square analysis obtained P value $<P$ table (0.018 <0.05), it can be concluded that there is a relationship between social skills and academic achievement. Value of OR 3.407, it can be assumed that the student who has high social skill are three times more likely to obtain high GPA compared to students who has low social skill.

Overall by accumulating each indicator of emotional intelligence can be concluded that students who has a high GPA also has a high level of emotional intelligence, based on the results of the statistical test obtained by value P value $<P$ table, 0.000 <0.05 , there is a correlation between the level emotional intelligence and academic achievement. Value of OR obtained for 9,750, it can be assumed that students who has a high level of emotional intelligence has a tendency of 9,750 times to obtain a GPA (grade point average) higher compared with students who has a low level of emotional intelligence.

DISCUSSION

Self-awareness

From the result research there is a relationship between self-knowledge and academic achievement. The results of this study are similar to studies Qurniyawati (2009) stating that the student is able to recognize her own emotions has the sensitivity over the decision-making personal issues. The ability of the students will be able to decide which right decision will be taken [6]. Sensitivity is explained by Goleman (2010) as knowing what is perceived at a time and use them to guide decision-making itself, have benchmarks that the reality on the ability and confidence strong that encourages students to optimize itself so as to be able to obtain the learning achievement which [4]. Students that have the ability to be able to recognize themselves, will know the boundaries of their ability, to the extent he have, so they would feel more confident with their abilities. With good self confidence will automatically push the students to actualize themselves so as to obtain a good learning performance.

Self-control

From the result research there is a relationship between self-control and academic achievement. Someone who can manage emotions well will be able to conduct stress management, cheerful, optimistic, calm in the face of any problem, and smart in determining the problem-solving strategies, so as to achieve optimal learning results, as presented in a study conducted by Trihandini (2005) [9].

This was confirmed by the statement of Daniel Goleman (2010) argue that students ability to manage their emotions in such a way would have a positive impact on the execution of duties, sensitive heart and could delay the pleasure before the achievement of a goal [4]. Agreed with the statement Goleman, midwifery student who is able to control herself will be consistent with the positive values he believed. She will not do things outside of the positive values espoused. She was able to manage her emotions appropriately included in negative feeling [4]. Students with good self-control to be able to prioritize which things are more important to do, especially in the field of education. As a student she knows that her main task is to learn as well as possible, and she would put it compared with other things even though it is personal enjoyment. Besides the student who can control herself, will be able to quickly get up when experiencing adversity or disappointment. She would not dissolved or washed feelings. When you fail in the exam, she will quickly rise and not long dissolve in disappointment.

Self-motivation

From the research there is a relationship between self-motivation and academic achievement. Purwanto (2006) in a statement states that motivation contributes to a person's success in achieving good learning performance, the motivation to encourage someone to do or act in achieving a goal or aspiration, then there will be a drive that provides energy to the students to perform tasks optimal [10]. This was confirmed by the opinion of Goleman (2010) that the achievement must be passed with its motivation in the individual, which means it has the perseverance to resist the gratification and control impulses, and to have a feeling of motivation is positive, that enthusiasm, positivism, optimism, passion, and self confidence [4]. The students of midwifery have high self-motivation, will have a desire to continue more advanced and better. This is clearly going to improve the achievement of learning outcomes. The will continue to try to improve the quality of self by continuing to upgrade knowledge with learning, to follow the activities or training support for it.

Empathy

From the research there is a relationship between empathy and academic achievement. According Wangmuba (2009) a person who is able to empathize will be able to think positively of others and encourage to study well and get results learning optimal [11]. Empathy affects the success in learning supported the suggestion Goleman (2010) that empathy is being able to feel what others feel, appreciate diversity, able to understand their perspective, foster a trusting relationship, do not try to make up others based on her own image, unwillingness to manipulate or manipulate others and able to harmonize difference [4]. Midwifery students who able to empathize, they will appreciate the difference, more tolerant, will not force other people's opinions and thoughts should be in accordance with the opinions and thoughts. This will directly influence social life. People who are better able to empathize with other people would be appreciated, so there is mutual trust and positivism in social life. Of course it will give their energy and positive emotions, so that it can optimize their ability to achieve good learning outcomes.

Social skills

From the research there is a relationship between social skills and academic achievement. Ability in fostering social relationships with other people in it requires skill to manage the emotions of others, it is necessary to support the popularity, leadership, and success is included in the academic field (achievement) of a student [12]. Midwifery students who have good social skills will easily adapt to the new environment and socialize with people from different backgrounds. Social skills is capital in developing leadership. People who have the leadership skills will make it easier in the learning process and achieve good results in the confronted face serious obstacles.

Emotional intelligence

Overall the results of research there is a relationship between emotional intelligence with academic achievement. Relationship emotional intelligence and the learning achievement are supported by research Wahyuningsih (2004) in grade II SMU Lab School Jakarta which showed correlation (r_{xy}) of 0.248 with $p = 0.002 < 0:05$. This suggests a correlation between emotional intelligence and academic achievement with the direction of the positive relationship [7].

Enforcement hypothesis is also supported by research Qurniyawati (2009) and Nuryanti (2010) of the student program of study DIV Midwifery Programme in Obstetrics Faculty of Medicine, University of Surakarta, which showed significant relationship between emotional intelligence and learning achievement. The results were obtained $r = 0.494$, and after being tested significance gained thitung price greater than t table namely $4.177 > 2.000$ [13].

According to Hartini (2004) an expert in psychology states that emotional intelligence can describe an individual's ability to manage the impetus that was in themselves. Besides the emotional intelligence is also associated with individual achievement. So someone who have a high emotional intelligence will be able to manage their inner urge both positive and negative manner appropriate to achieve the expected success or achievement in various field [14].

Emotional intelligence provides advantages in generating creativity, be honest about themselves, trusting relationships, provide guidance to those who have conscience. Besides that, it can effectively have the advantage in every area of life one push productivity itself so it will be able to do any work to achieve optimal results [4].

According to Ahmadi and Supriyono (2008) success in learning can be seen through the results of academic achievement. One's learning achievement can be related to psychological factors one of them by a factor of emotional intelligence [15]. According to Goleman who argued that the concept of intelligence associated with individual achievement one of them is emotional intelligence. Emotional intelligence refers to the ability to recognize their own feelings and the feelings of others, to motivate ourselves and the ability to manage emotions well in ourselves and in relation to others [4]. Each of the indicators of emotional intelligence are interrelated and inseparable, fifth synergize to optimize the positive forces within him to achieve success, both in the field of career, academic and social [4].

A person's life can not be separated from the emotional relationship, whether it is emotion that is positive and which is negative. It required their emotional intelligence in order to identify and manage emotions well.

Students who are able to direct the mind and effort to learn with the best will be able to achieve success or high academic achievement. Students who have high intelligence quotient is expected to have a better learning achievement than those who have a low intelligence quotient, if

it also has another supporting factor is emotional intelligence. In accordance with the statement Goleman which states that emotional intelligence includes the ability of different, but complementary to academic intelligence or intellect [4].

CONCLUSION

Based on the research results through the statistical test each indicators of emotional intelligence includes self-knowledge, self-control, self-motivation, empathy and social skills, then accumulated into variables emotional intelligence, it can be concluded that emotional intelligence has a relationship significantly with academic achievement. Students who has good emotional intelligence, will know the boundaries of her abilities, easier in making the right decision, also able to manage her emotions. She would pour her emotions in an appropriate manner so as not explosive or exaggerated, she will easily rise when experiencing adversity, not dissolved so long in the emotions. In terms of motivation, there is a strong urge in her to strive more advanced and better in improving herself. In social relationships with others, it will have a high tolerance, respect for differences, and able to socialize well including teamwork can work. These abilities are interrelated and work together to optimize her ability to achieve good learning performance. Based on the result of this study is expected in academic programme planning, can be developed into materials or activities programme related to emotional intelligence that can be improved in order to optimize academic achievement's students.

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ICASH-A59

**THE INFLUENCE OF DEEP BREATHING RELAXATION
TECHNIQUES TO DECREASE PAIN LEVELS IN THE MOTHERS
INPARTU ACTIVE PHASE OF THE FIRST STAGE AT KERTHA
USADA HOSPITAL SINGARAJA**

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ABSTRACT

Background: Pain is the body's defense mechanism which is unpleasant. Deep breathing relaxation technique is one of the non-pharmacological methods to relieve the pain felt by the mother during labor.

Aims: The purpose of this study was to determine the effect of deep breathing relaxation techniques to decrease the level of pain in the first stage the mother inpartu active phase.

Methodology: Pre Experimental Research. The design of this study used one-group pre-test-posttest design. The measurement of pain is done twice: before the experiment and after the experiment. The sampling technique in this research is total sampling method. The instrument used to measure the level of pain is a Visual Analog Scale (VAS). Giving intervention such as deep breathing relaxation techniques during the active phase of the first stage of contraction repeatedly from the start to the end of the contraction contractions performed during 10 cycles of contraction.

Results: the results of measuring the degree of pain the mother inpartu active phase of the first stage before being given a breath relaxation techniques in 30 respondents are located mainly in the category of severe pain as many as 19 people (63.30%).

Conclusion: deep breathing relaxation technique is one of the non-pharmacological techniques are most useful to treat pain by regulating the breath, with attention to respiratory expected conditions to be relaxed so that the mother can reduce pain.

Keywords: Breath Relaxation Technique, Pain Level, Visual Analog Scale (VAS)

INTRODUCTION

The maternal mortality rate (MMR), neonatal mortality rate (NMR), the infant mortality rate (IMR) and under-five mortality (UFM) are some health status indicators of this societies. Today MMR and IMR in Indonesia is still high compared to other ASEAN countries. According to data from Indonesia Demographic Health Survey (IDHS) in 2007, MMR in Indonesia amounted to 228 per 100,000 live births, IMR of 34 per 1,000 live births, NMR at 19 per 1,000 live births. UFM at 44 per 1,000 live births [1]. These indicators can be influenced by general health status, education and services during pregnancy and childbirth. Sensitivity MMR towards improvement of health services making it an indicator of success of health development [2].

Buleleng is one of regencies in Bali Province which has the largest area compared to other regencies. Regardless area of Buleleng Regency also ranks first in terms of maternal mortality rate

(MMR). Between the years 2009-2013, there were 51 mothers die in Buleleng [3]. The main causes of maternal death in Buleleng mothers are bleeding, heart, amniotic fluid embolism, infection/ sepsis/ shock perception, pre-eclampsia/ eclampsia, as well as pneumonia/bronchopneumonia. When viewed by age, maternal age distribution of maternal death is less than 20 years is 5.33%, 20-35 years old maternal mortality by 70.67% and maternal mortality in persons older than 35 years was 24.0% [3].

Childbirth is a series of events that ended with the expenditure-term infants followed by expulsion of the placenta and fetal membranes from the mother's body [4]. A mother who is facing the labor tend to feel afraid, but when a mother was very afraid then automatically the brain organizes and prepares the body to feel pain, so pain during labor may be more pronounced [5]. The fear of childbirth can cause the mother to experience stress. Body automatically issue of stress hormones those are adrenaline and *ketokolamin*. Mothers who cannot let go of anxiety and fear before giving birth will be releasing hormone *ketokolamin* in high concentrations. Physiologically can cause uterine contractions and so feel more aches and pains [6].

Currently, various methods are used to relieve labor pain. The way it is by the method of pharmacological and non pharmacological methods. Pharmacological pain management is the use of analgesics, epidural injections, Intractheal Labor Analgesia (ILA), and others. This method is very effective however, pain management, almost all have side effects on the mother and fetus [7]. Maternal side effects are nausea and dizziness, as well as the mother cannot rely on his stomach muscles and push when the contractions of the uterus, so that labor becomes longer [8]. Non-pharmacological methods can also improve satisfaction during labor because the mother can control the feelings and strength. Wherein the method can inhibit the brain to release the sensation of pain and increase the comfort of the mother during labor and to have effective influence on the experience of childbirth [9].

Breathing relaxation is one of the most useful skill to overcome the pain of labor. Breathing relaxation skills to cope with pain during labor can be used to resolve a labor well or did not panic when faced with a series of contractions. Mothers who use deep breathing relaxation technique do not feel pain than women who did not use deep breathing relaxation techniques [10]. Mastering the techniques of breathing properly can lead to a sense of relaxation so that labor can be lived quietly without pain. Mastering the techniques of breathing is also important because it is through good breathing, oxygen can enter the body optimally. Oxygen is the most important fuel for muscle performance - the muscles of the uterus and to the fetus [11].

Based on the preliminary study on 20-22 March 2015 in Kertha Usada Hospital data obtained in 2014, the overall numbers of mothers giving birth were 909 people. With the details, the numbers of primi gravida mothers giving birth during the year were 305 people and multi gravida mother 604 people. And the numbers of maternal physiologically were 396 people, with the number 128 primi gravida and the multi gravida 200 people [3]. Based on data from direct observation at 12 maternity, during the birth process known 4 people (33.3%) experienced severe pain, 4 (33.3%) had moderate pain, 2 (16.7%) experienced mild pain and 2 (16.7%) did not experience pain. But after being given a breath relaxation techniques at the time of contraction in the active phase of the first stage repeatedly from the start to the end of the contraction contractions performed during 10 cycles of contraction, a decline in the level of maternal pain, where one person (8.3%) continue to have severe pain, 3 (25%) experienced a decrease in pain from severe pain became moderate pain, 4 (33.3%) decreased from moderate pain becomes mild pain, 1 (8.3%) continue to experience mild pain, 1 people (8.3%) experienced a decrease in pain of mild pain becomes painful.

Maternal experience pain during inpartu active phase of the first stage and the large number of inpartu patients in Kertha Usada Hospital lead midwife cannot accompany the mother during the active phase of the first stage inpartu to teach mothers deep breathing relaxation technique to reduce the pain. The pain caused panic and screaming mothers and straining uncontrollably. Where the event of pain in childbirth midwife's role to provide breath relaxation techniques to birth mothers are needed as a non-pharmacological method to cope with labor pain. The purpose of this study was to determine the effect of deep breathing relaxation techniques to decrease pain levels in the mother inpartu active phase of the first stage in Kertha Usada Hospital Singaraja.

METHODS

This type of research used in this study is a pre experimental. The design of this research study by using one-group pre-test-posttest design. In this design the measurement of pain is done twice: before the experiment and after the experiment. The population in this study was the mothers' inpartu active phase of the first stage in the Kertha Usada Hospital. The sampling technique in this research was total sampling method. The sample in this study was that patient's inpartu active phase of the first stage (opening 4-10cm) on May 20-June 20 in Kertha Usada Hospital Buleleng regency as many as 30 people.

Characteristics of the subjects in this study was based on age and parity. To measure the level of pain, pain response was observed by using Visual Analog Scale (VAS) [15]. This score represents the level of intensity of pain reported by clients where if no pain (score 0), mild pain (1-3), moderate pain (4-6), severe pain (score 7-9), the pain is very severe (score 10) [16]. The intervention such as deep breathing relaxation techniques during the active phase of the first stage of contraction repeatedly from the start to the end of the contraction contractions performed during 10 cycles of contraction.

Preparation of data collection started after getting permission from a research site for data retrieval. The next step researcher seeks approval from survey respondents by informed consent. The intervention was the first step is to take the respondents in the sample based on inclusion criteria as the data source. The criteria for inclusion were women inpartu normal active phase of the first stage which can be proved by partograph sheet and pain, not having a chronic disease, uncomplicated and willing to become respondents. The second step is to Pre test is measurement of pain is done at the end of each contraction or the beginning of relaxation using observation sheet. The third step is to provide intervention doing deep breathing relaxation technique during the active phase of the first stage of contraction repeatedly from the start to the end of the contraction contractions performed during 10 cycles of contraction. The final step is to conduct a post test is measurement of pain is done at the end of each contraction or relaxation after the beginning of a given patient's breath relaxation technique in contraction for 10 times using observation sheet. Once the data was obtained prior to analysis statistical test then these data were tested for normality of data using the Skweness and Kurtosis [17]. This test is done by a computer program SPSS. If the data are normally distributed, the analysis used Paired t test and If the data are not normally distributed, the analysis used Wilcoxon Sign Rank Test [18].

RESULTS AND DISCUSSION

The characteristics of the respondents in this study are divided by age and parity can be seen in Table 1:

Table 1. Characteristics of Respondents

Characteristic of Age	Frequency(f)	Percentage (%)
<20 year	1	3,30
20-35 year	23	76,70
>35 year	6	20,00
Amount	30	100
Paritas		
Primipara	10	33,30
Multipara	20	66,70
Grande Multipara	-	-
Amount	30	100

Based on Table 1 shown at most respondents were in the age 20-35 years as many as 23 people (76.70%). Meanwhile, based on parity, most respondents in the category Multipara as many as 20 people (66.70%).

The Level of mother inpartu pain in the active phase of the first stage before awarded deep breathing relaxation techniques

Table 2. The Level of Mother Inpartu Pain in the Active Phase of the First Stage Before Awarded Deep Breathing Relaxation Techniques

Pain levels	Frequency(f)	Percentage (%)
Painless	-	-
Mild Pain	2	6,70
Moderate Pain	9	30,00
Severe Pain	19	63,30
Very Heavy Pain	-	-
Amount	30	100

Based on Table 2 above, the results of measuring the degree of pain the mother inpartu active phase of the first stage before being given a breath relaxation techniques in 30 respondents are located mainly in the category of severe pain as many as 19 people (63.30%).

The fear of childbirth can cause the mother to experience stress. Body automatically issue of stress hormones and adrenaline that is *ketokolamin*. Mother who cannot let go of anxiety and fear before giving birth will be releasing hormone *ketokolamin* in high concentrations. Physiologically can cause uterine contractions and so feel more aches and [12].

The level of mother inpartu pain in the active phase of the first stage after awarded deep breathing relaxation techniques

Table 3. The Level of Mother Inpartu Pain in the Active Phase of the First Stage After Awarded Deep Breathing Relaxation Techniques

Pain Levels	Frequency(f)	Percentage (%)
Painless	2	6,70
Mild Pain	11	36,60
Moderate Pain	15	50,00
Severe Pain	2	6,70

Very Heavy Pain	-	0
Amount	30	100

Based on Table 3 above, shows that the level of pain in the mother inpartu active phase of the first stage after being given a breath relaxation technique in the vast majority are in the category of moderate pain as many as 15 respondents (50.00%).

Relaxation breathing is one of the most useful skills to overcome the pain of labor. Breathing relaxation skills to cope with pain during labor can be used to resolve a labor well or did not panic when faced with a series of contractions. Mothers who use deep breathing relaxation technique do not feel pain than women who did not use deep breathing relaxation techniques [13].

Test results of normality data test in this study was not distributed normally, then using a nonparametric test. The truth of the hypothesis of the research is done by using the Wilcoxon Sign Rank Test. The analysis shows that the average pain level pre-test that is 3.57 while the average pain level post tests that is 2.57. Standard deviation scores at pre-test are 0.625 while the standard deviation in the post test was 0.728. The minimum value of the pre-test is 2 while the minimum value of the post test is 1. Results Wilcoxon Sign Rank Test using SPSS 16 for windows can be seen in Table 4 below.

Table 4. Results of Wilcoxon Sign Rank Test on the influence of deep breathing relaxation techniques to decrease pain levels in the mothers inpartu active phase of the first stage

Pain levels	<i>Wilcoxon Sign Rank Test</i>		
	Mean Rank	Z	Sig.
Pain before given a deep breath relaxation technique	14.50	5.135	.001
Pain after given a deep breath relaxation technique			

The data in Table 4 above shows the results of Wilcoxon Sign Rank Test where the significant value of 0.001. The significance value $0.001 < 0.05$, so H_0 which states that deep breathing relaxation techniques are not effective in reducing the pain of the mother inpartu active phase of the first stage was rejected, and H_a stating Award deep breathing relaxation technique is effective to reduce the level of pain in the mother inpartu the active phase of the first stage, be accepted.

DISCUSSION

Deep breathing relaxation techniques can reduce pain during the first stage of labor. From these two tests performed before and after the test is given in the breath of relaxation techniques was assessed by using a Visual Analogue Scale (VAS), showed that the level of pain of severe pain and fell to moderate pain of moderate pain fell to pain mild pain. Deep breathing relaxation technique can work reduce pain and provide tranquility to the mother so that the supply of oxygen to the baby can be fulfilled properly.

Based on the results of this study indicate that deep breathing relaxation technique is one of the non-pharmacological techniques are most useful to treat pain by regulating the breath, with attention to respiratory expected conditions to be relaxed so that the mother can reduce pain. Deep

breathing relaxation techniques began in the time of entering the active phase of the first stage of labor. How the deep breathing relaxation technique do was the beginning of a contraction in the first stage of labor to do with a deep breath through your nose, then exhale slowly through the mouth. This technique is done repeatedly from the start contraction until the end of the contraction. Mothers who do not use deep breathing relaxation techniques during labor may be more pain than mothers who use deep breathing relaxation techniques.

The level of pain on the mother inpartu active phase of the first stage before being given deep breath relaxation techniques are located mainly in the category of severe pain (63.30%). The level of pain on the mother inpartu active phase of the first stage after being given a breath relaxation technique in most or the majority are in the category of moderate pain (50.00%). Where in the category of severe pain is a significant decline from the prior (pre-test) in the category of severe pain (63.30%) and after (post-test) which uncategorized severe pain becomes (6.70%). Wilcoxon Sign Rank Test Based on the obtained results in which the value of significance value of (0,001). Significance value (0.001) <(0.05), so Ho stating that granting relaxation techniques deep breathing is not effective in reducing the pain of the mother inpartu the first stage of the active phase is rejected, so it can be concluded relaxation techniques deep breathing is effective to reduce the level of pain mother inpartu active phase of the first stage.

CONCLUSION AND RECOMMENDATIONS

The conclusions of this study include deep breathing relaxation techniques can be applied to all pregnant women who entered the first stage in labor. Deep breathing relaxation techniques can be done starting from the opening until the complete opening of labor. How the deep breathing relaxation technique do was the beginning of a contraction in the first stage of labor to do with a deep breath through your nose, then exhale slowly through the mouth. Is repeated until the contractions decreased and the pain is no longer felt. How to measure the level of pain felt by the mother in childbirth is by using a Visual Analog Scale pain scale (VAS). For further research is expected to continue her research on the effect of deep breathing relaxation techniques to decrease pain with variable involves more complex and more representative respondents and to develop experimental research design.

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ICASH-A60

THE IMPACT OF COMPLEMENTARY FEEDING TYPE ON THE NUTRITION STATUS OF INFANTS 6 TO 12 MONTHS OF AGE IN SUBURBAN SEMARANG INDONESIA

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ABSTRACT

Background: After 6 months, baby must be given complementary feeding. Many considerations behind the choice of the family on both types of weaning food, one of which is related to the impact of these foods on nutritional status and infant's healthy. Malnutrition increases as a result of complementary feeding are given to infants is not right, either type or quantity.

Aims: The research objective was to determine the commercial and local food practices in suburban areas, and determine the reason and analyze the impact of both types of weaning food on the nutritional status of infants 6-12 months.

Methods: This study was an observational study with a cross-sectional design. Location of research was in the work area of Kedungmundu Health Center, Semarang City Indonesia. The research samples were families with babies aged 6-12 months. A number of samples 94, selected by random. This type of analysis used was a different test.

Results: The results showed 55.3% of infants were fed with local weaning food, the rest were kind of commercial food. Almost all babies had been given a weaning food in less than 6 months, both derived from the type of local or commercial food. Families closed the type of commercial food, because this type was more practical, while the local food (homemade) chosen because it was more natural, safer and more economical. There were no differences in nutritional status among infants 6-12 months who had complementary feeding practices with commercial and local food.

Conclusion: It was concluded, infant complementary feeding practice with infant commercial and local food did not have a different impact on the nutritional status in infants 6-12 months.

Keywords: complementary feeding, weaning, nutrition

INTRODUCTION

Adequate nutrition during infancy and early childhood development is the foundation of every child to achieve human potential. The period from birth to age two years is "critical window" for the improvement of optimal growth and development, health and behavioral development. Longitudinal studies have consistently shown that this is the peak age for the occurrence of stunting, lack of certain micronutrients, and childhood illnesses such as diarrhea. Once the child reaches 2 years old, very difficult to reverse the situation stunting that has occurred earlier [1].

In order to fulfill the nutritional requirements of a rapidly growing child, additions of semi-solid and solid foods are essential for breast and milk formula-fed babies. WHO now recommends the introduction of complementary foods around the sixth month of life, instead of between the fourth and sixth month, as previously recommended. WHO provides guidelines for

exclusive breastfeeding from birth to 6 months of age, and introduce complementary/supplementary feeding in the age range 6-24 months while continuing breastfeeding until the age of two years or more [2]. Six months of age is the right age at which to introduce complementary foods. Giving complementary foods before 6 months of age tend to displace breast milk [3].

Weaning is described as the transitional period starting from 4 months onwards till the end of second or even third year in certain cultures so that the infant's diet progressively changes from milk alone to semi-solids and finally to the adult family food. The type of weaning foods or complementary feeding for infants generally consists of homemade foods and commercial foods [4]. This critical transitional period commences with the need to introduce food to complement breast milk and ends when the child is fully consuming the family diet. Mothers have traditionally used sugar water, barley water, rice water, corn starch, and other cereal with unfortunate consequences. With modernization, development, and opportunities or necessity for women to work outside of the home, the trend is toward earlier weaning. This is most pronounced among families migrating to, or already living in urban areas [5].

In Indonesian, weaning food in the form of local complementary feeding or so-called "complementary feeding of mother's kitchen", since 2006 encouraged and popularized by the Ministry of Health because of food was chosen is related to socio-cultural and empowerment aspects [6]. In addition to nutritional aspects, another important thing to consider in giving complementary foods is related to the impact of food on the health of the baby. The provision of safe and adequate amounts of local foods appropriate for 6 to 12-month-old infants who are just learning to eat is not as simple as it seems. Complementary foods fed to infants in the second six months of life (and beyond) are often inadequate in energy density, protein, and micronutrient concentration or quality and are often prepared, stored, or fed to children in ways that increase their risk of illness [7]. The research objective was to determine the commercial and local complementary feeding practices in sub-urban areas, and determine the reason and analyze the impact of both types of weaning food on the nutritional status of infants 6-12 months.

METHODS

This study was an observational study with a cross-sectional design. The research data consisted of primary data, include characteristics of the sample, the practice of breast milk, anthropometric data and complementary feeding consumption. Samples were families with infants 6 to 12 months who live in work area of Health Care Center Kedungmundu, Semarang City, Indonesia. Samples were randomly selected from samples frame. The sample size was determined to refer to a sample size formula for the survey [8]. Assuming the population size (N) was unknown or $(N-n) / (N-1) = 1$ then the sample size was calculated using the formula: $Z \alpha 2 n = pq/d^2$ Based on previous research unknown proportion of infants aged 6 to 12 months who had been given a local complementary feeding by 56% ($p = 0.56$ and the value of $q = 1 - p$, $q = 0.44$). With a limit of error (d) of 0.1 and the value of $\alpha = 0.05$ or $Z\alpha = 1.96$, then the minimum required a number of samples of 94 samples.

The dependent variable in this study was the nutritional status of infants, while the independent variables of research were: the consumption of complementary foods. As for how data collection was done as follows: study began with the screening stage, with established criteria. Based on the results screening was arranged a sampling frame, and from the sampling frame was then randomly selected sample. The follow-up to every infant who was elected as the

sample was first prompted willingness consent (informed consent) from their parents to participate in the study and underwent subsequent research stages.

Data characteristics of the sample: Data collected include infant characteristics (age and gender), family socioeconomic status. This data was taken from interviews with the help of a questionnaire. Nutritional status of infants was the condition or expression of one or more aspects of nutrition a baby as measured by anthropometric indices (weight, length), and was expressed in the value of the WAZ, WHZ, HAZ. Used of WHO-Anthro software to calculate the value of z-score. Data Provision of complementary feeding was collected through interviews with mother referring to a research questionnaire. The focus of questions to explore the complementary feeding practices such as commercial and local food. Diarrhea morbidity data were collected by interview with the mother of the sample. To collect the diarrhea incidence researchers conducted a recall of the presence or absence of symptoms of diarrhea, frequency occurred in one day and frequency as well as a long illness in the past month, based on data symptoms encountered so that researcher determined the number of episodes and duration of diarrhea suffered by the baby during the last month. For statistical analysis using SPSS and the type of test used the different test. For normally distributed data were tested by t-test, while for the data were not normally distributed were analyzed by Chi-Square test. To conclude whether there was a statistically significant relationship used $p = 0.05$.

RESULTS

Characteristics of Samples

The sample consisted of male and female as much as 46.8% and 53.2%. Age of samples according to predetermined criteria, i.e. aged 6-12 months. The education level of parents was quite good. The father who did not pass the 9-year basic education just as much as 12.8%, the remaining 87.2% passing 9-year basic education or more. Mothers, who did not pass the 9-year basic education as much as 14.9%, while 85.1% over 9 years of basic education remains or more. College-educated father reached 25.5% more than the mothers, 20.2%.

All fathers working status and most of their work in the formal sectors (68.1%) of them as civil servants, teachers, employees of private/factory, and rest as much as 31.9% were working in the informal sectors, as traders and laborers. While the number of working mothers as much as 38.3% (24.5% as much as in the formal sectors and 13.8% in the informal sectors), and the rest did not work or status as a housewife (61.7%). Judging from the level of family income, based on the criteria of the poverty line in Central Java province in March 2015 amounted to IDR 299.011, - per capita per month [9], there were 84,6 % of the families included in the criteria of poor and 15,4 % of families including the criteria were not poor. Poverty in the province of 11.85 %

Complementary Feeding Practices

The infants were grouped according to the type of weaning food items. Children in group one had local weaning items such as home-made cereals or porridge, egg, banana, fish, and vegetables. In contrast, children in group two were given commercial such as ready to-use cereals (such as Promina, Milna, Cerelac, SNM etc.), biscuits and milk (bottle). The infant proportion with commercial food was fewer than those who were given local food, as many as 44.7% versus 55.3%. Provision of complementary feeding for the first time in infants were mostly done when under 6 months In the infants who were given the type of complementary foods locally, as much as 80.77% had been given this kind at the age of fewer than 6 months, whereas in the infants who were given the type of commercial food, as much as 97.62% of the infants had been given these

kinds of in this age range (Table 1). In general, the frequency of the provision of complementary foods 2-3 times a day

Table 1. Age first complementary feeding

Age (month)	Weaning food Types			
	local food		commercial food	
	n	(%)	n	(%)
0	2	(3.85)	10	(23.81)
1 – 6	40	(76.92)	31	(73.81)
> 6	10	(19.23)	1	(2.38)
Total	52	(100.0)	42	(100.0)

The reason for the choice of weaning food

Reasons for choosing the type of local complementary feeding was the perception of this type was more economical, natural and safe because there were no preservatives and more filling and children did not get bored. While the reasons for choosing the type of commercial food because it was more practical and hygienic. The results of the statistical analysis of a number of factors associated with the provision of the type of complementary feeding, it was known that the factors of poverty status, education level of the father, and employment status of the mother with regard to the choice of weaning foods (Table 2).

Table 2. Results of analysis of the factors relating to the selection of the type weaning food

Social Economic	Weaning food Types				p*	
	Local food		Commercial food			
	n,	(%)	n	(%)		
Household income status	Poor (underline property)	44	(84,6)	28	(66,7)	0,035*
	No poor	8	(15,4)	14	(33,3)	
Highest level of completed education of father (%)	Low (< 9 years)	11	(21,6)	1	(2,4)	0,007*
	Middle and High	41	(78,8)	41	(97,6)	
Highest level of completed education of mother (%)	Low (< 9 years)	10	(19,2)	4	(9,5)	0,189
	Middle and High	42	(80,8)	38	(90,5)	
Father 's employment status	informal/unemployed	20	(38,5)	10	(23,8)	0,13
	Formal sector	32	(61,5)	32	(76,2)	
mother's employment status	informal/unemployed	45	(86,5)	26	(61,9)	0,006*
	Formal sector	7	(13,5)	16	(38,1)	

* x2 tests for categorical variables.(sig. p<0,05)

Nutrition intake

Based on the results of the recall of consumption, it was known that infants fed complementary foods locally, intake of micronutrients, especially vitamin E, vitamin B1, and zinc lower than the nutritional requirement (RDA). Table 3 shown the average intake of nutrients infants fed complementary foods locally almost all lower than commercial food (p <0.05), except for the consumption of vitamin A, vitamin E, and folic acid did not differ significantly (p > 0.05).

Table 3. Nutrition Intake based on weaning food type

Intake nutrients	unit	Weaning food Types		RDA*	p**
		local food	commercial food		
Energy	Cal	924.5	1329.6	725	0.004
Protein	g	33.5	54.4	18	0.002
Vit. A	RE	1001.4	814.5	400	0.476
Vit. E	mg	0.06	6.22	5	0.270
Vit.B1	mg	0.37	0,83	0,4	0.000
Vit.B2	mg	0.74	1.18	0,4	0.006
Vit.B6	mg	0.53	0.70	0,3	0.049
folic acid	ug	87.42	98.65	80	0.499
Vit.C	mg	40.57	75.75	50	0.001
Calcium	mg	671.52	1344.26	250	0.000
Magnesium	mg	106.77	198.07	55	0.000
Phosphor	mg	641.02	1243.63	250	0.000
Fe	mg	8.73	16.18	7	0.000
Zn	mg	4.38	7.74	3	0.000

* RDA for Indonesian (2013) (10).

** t-test for continuous variables; x2 tests for categorical variables.(sig, p<0,05)

The incidence of diarrhea

The incidence of diarrhea over the past month in infants presented in Table 4. Based on the results analysis, found no significant difference in the incidence of diarrhea among the two groups, so if viewed episode and duration.

Table 4. The incidence of diarrhea in the last month

	Weaning food Types				p*
	local food		commercial food		
	n	(%)	n	(%)	
Morbidity of Diarrhea					
Yes	14	(26.9)	15	(35.7)	0.359
No	38	(73.1)	27	(64.3)	
Total	52	(100.0)	42	(100.0)	
Episode (mean of frequency/month)	0.27	(± 0.490)	0.40	(± 0.734)	0.288
Duration (mean of days illness/month)	0.98	(± 2.364)	0.83	(± 1.513)	0.727

* t-test for continuous variables; x2 tests for categorical variables.(sig, p<0,05)

The impact of complementary feeding on nutritional status

Giving complementary feeding commercial and local did not have a different impact on the nutritional status of infants 6-12 months (Table 5). Judging from the average z-score of W/L, L/A, and W/A was not found significant differences between infants fed complementary feeding commercial and local food (p> 0.05).

Table 5. The impact of complementary feeding on nutritional status

Indicator	Weaning food Types		P*
	local food (n=52)	commercial food (n=42)	
WHZ	-1.0181 ± 1.87182	-0.7586 ± 1.75625	0,494
HAZ	0.0781 ± 2.20017	0.3338 ± 1.92670	0,555
WAZ	-0.8283 ± 1.15004	-1.0181 ± 1.87182	0,119

* t-test for continuous variables(sig. p<0,05)

DISCUSSION

One goal of this research was to determine the commercial and local food practices in sub-urban areas. The proportion of infants with commercial food were fewer than those who were given local food, as many as 44.7% versus 55.3%. A cross-sectional survey conducted in Pakistan also showed similar results, as many as 57.9% of the children were given food locally and the rest were given commercial food [4]. Location of the study had the characteristic mix of cultural towns and villages, some still attached to the custom of local food, while others were already adopting this kind of food commercial as an option to be given to the baby. In addition, the characteristics of the study sample were mostly from poor families, so that the choice of local food based on economic reasons. Whatever the reason for choosing commercial food or local food as baby food, could not be separated with the mother's perception and influence of local culture, and not based on scientific evidence. Based on the results of research conducted in Madura indicate that the choice of local food for infants was influenced by cultural factors and sometimes ended with the onset of growth faltering in children [11,12].

The practice of early feeding in infants was found in this study, and the case was quite a lot. This phenomenon could not be avoided, and this was a cause of low coverage of exclusive breastfeeding in the region. In the sample was found a number of mothers who could not breastfeed, who were unable to continue to do so for medical reasons, which really did not have sufficient milk, whose work or life circumstances of make continued breastfeeding impractical, or who choose not to breastfeed, require special consideration. For such mothers, the availability of a nutritious, safe substitute can be life-saving for the baby. In some situations this may be a substitute lactating mother or some form of locally available animal milk; in others, it may be a commercially produced infant formula. However, such proprietary products for feeding infants can, and should, be made available in ways that did not discourage breastfeeding for mothers who were willing and able to do so. To prohibit the production of such products, however, in some instances would force a return to the use of traditional cereal or starchy gruels as breast-milk substitutes with disastrous consequences for the health and survival of the infant due to an unbalanced nutritional composition [2].

The results of the statistical analysis showed family poverty status, education level of the father, and employment status of the mother with regard to the choice of complementary foods types. In the poor families more provide local food for babies, while in the wealthy families tend to be more commercial food. The low economic status will affect the quality or quantity of food consumed by the family. In general, if incomes rise, the more allocation of funds for the purchase of food, so food availability also improved and the amount and type of food tend to improve [13]. Social economic status, especially for father's education largely determines families' access to sources of income. With higher education would increase the likelihood of families earn higher incomes that would increase families' access to commercial food. High revenues would affect the availability of food at the family level. Father's education was associated also with parenting

including vitamin A supplementation, immunization is complete, good sanitation and the use of iodized salt. Education related to the father of the family income because almost family income derived from income generated ayah [14]. This study found mothers who worked in the informal sector or does not work, given their babies more local food than those who work in the formal sector. Mothers who did not work or work in the informal sector allows having more time to prepare complementary foods locally. Maternal factors are also very important, because of a research reveals that mothers who had no education had a higher risk for not introducing timely complementary feeding, not meeting the minimum dietary diversity, the minimum acceptable diet, and minimum meal frequency than the mothers who had secondary or higher education [15].

Judging from the composition, complementary foods derived from local foodstuffs was already quite good, it's just the material that comes from animal foods (as a source of zinc and iron) were still relatively inadequate. These results indicate a weakness in local food was but lacking in micronutrients contribution under the decree of the Minister of Health of the Republic of Indonesia No. 75/2013 that regulates the recommended RDA for Indonesia [10]. Based on Table 3, there were a number of nutrients that had the potential deficit in the group of infants who consume complementary feeding types of local, such as vitamin E, vitamin B, and vitamin C. This was because the local food manufacturing does not use a special material formulation and taking into account nutritional aspects. One way to overcome this, in addition to improved knowledge of the mother, is to give the complementary food supplements which of a number of studies had been promising for reducing multiple micronutrient deficiencies in infants and young children living in developing countries, in the form for example, sprinkles and tablets, convenient and practical [16]. This finding is consistent with another study, that their significant statistical difference was noted in the children weaned on nutritious home-made items compared to children having commercial foods [4].

This study found that the provision of complementary feeding commercial and local didn't have a different impact on the nutritional status of infants 6-12 months. This condition can occur because of consumption of energy and protein both in the group of infants fed local and commercial food are already relatively high and above the RDA (Table 3). It is mean the local foods given to infants contain energy and proteins are relatively high. Similar conditions also occur in Pakistan, where the calorie values of foods indigenous (local) high [17]. This is in contrast to traditional food items in West Africa that are known to be of low nutritive value and high bulk [18].

There are several limitations in this study. First, the author used cross-sectional data and so the analysis cannot provide evidence of a causal relationship between the type of complementary feeding stunting and nutritional status. The author had assumed that the variation of the infant daily consumption are relatively small but is actually happenings the nutritional status caused by the accumulation of daily consumption in the long term we did not have that data. The other disadvantages associated with the bias of the food recall. Although the author had used food models at the interview food recall, but there remains the possibility that poor respondents dishonest to expose their poverty through what was actually consumed by infants. Only through longitudinal studies, all of these weaknesses would be eliminated.

CONCLUSION

Nearly all the babies were given complementary foods at age 6 months, either in the form of a kind of commercial or local food. The reason families choose the type of complementary feeding commercial, because this type of food was the more practical, while the type of local food

been for more natural, safer and more economical. There were no differences in nutritional status and morbidity of diarrhea among infants aged 6-12 months by type of commercial and local food. It was concluded, the provision of commercial and local food did not have a different impact on the nutritional status in infants 6-12 months. Suggested to the holder of the program needs to more aggressively promote that local administration of complementary feeding can be a solution for the family cannot afford to keep giving nutritious complementary foods for infants. In addition, it was necessary to improve the nutritional quality and the way of presenting local complementary foods to the infant so that the quality of nutritional intake and better security so that the adverse impact on the health of the baby can be reduced

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ICASH-A61

FARMER EMPOWERMENT IN REDUCING EXPOSURE AND RESIDUAL PESTICIDES IN VEGETABLES: A CROSS SECTIONAL STUDY AT KUTAI KARTANEGARA DISTRICT, INDONESIA

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ABSTRACT

Background: Based on the success of a pesticide in to overcome the problem of pest attacks, more farmers tend to use pesticide in higherdoze.

Aims: The purpose of this research is to identify problems and looking for cause a problem so that obtained alternative problem handling food safety in products of vegetable planted farmers.

Methods: An observational study with cross sectional design. The total sample of 25 farmers with non-random sampling technique that is total population. Analysis of the data used univariate and bivariate analysis using Spearman correlation test and continued with a linear regression test

Results: All respondents in plant vegetable use pesticides. A kind of pesticides most commonly used is the type a fungicide. Doses pesticides used use a unit of cover pesticide per tank. one cropping the average 14 times at least 4 times and most widely 34 cases direction spraying done farmers most 96 % in line with the direction of the wind nutritional status of respondents most normal 64 % knowledge was 76 % knowledgeable either by rerata 90,72 attitude respondents 52 % be negative and rerata a score 84,24 .The majority of respondents in spraying 96 % used a personal protective equipment (PPE). PPE who rarely used the eyes of glass and a mitt tangan. seluruh respondents have not yet undergone poisoning pesticide because the an enzyme cholinestrace 87.5 - 100 % in the category of normal and 8 % of respondents decreasing levels of an enzyme of cholinesterase be 87.5 %

Conclusion: There was the influenced of knowledge of respondents to a decrease in levels of enzymes cholinestrace. Need to be conducted socialization / pesticide management training good and true should socialization and assistance to farmers on management of the purchase of pesticides, pengaplikasian , storage and disposal need to be managed and in continuous observation .

Keywords: Pesticides, empowerment, farmers, poisoning cholinesterase enzyme

INTRODUCTION

The use of pesticides on the farm been used since long good in developed countries and in these countries to increase productivity petanian .Around the world , more than 5 billion pounds pesticide is sprayed into plants every year, 1 and more than 75 percent of the us having a level detected organophosphate [1]. To agricultural workers, their children, and those who live in farming community, exposure to pesticide is the facts of life , but one who places their health in danger serious the impact of the use of psetisida there was either effect short and longer term that have occurred from exposure to pesticides. In the short term, exposure may causes a rash, blisters,

red eyes, blindness, nausea, dizzy, headache, coma, and death. In addition, farmers can be hit by cancer disease and non-cancers such as dermatology, neurological, reproduction, and effects genotoxic.

Poisoning pesticides in agriculture is a public health problem in developing countries, killing at least 250,000-370,000 people every year [2]. Cases of poisoning due to pesticides are rarely reported, but it is a global problem. Poisoning is a public health problem globally significant. According to WHO data, in 2012 it is estimated that 193,460 people died in the world from unintentional poisoning. From the dead, 84% were in the low-income and medium-income [3]. The death of pesticide poisoning among farmers is overall low, but for cancer it has steadily increased, showing that some agricultural exposure is a key determinant in the possibility.

Indonesia is an agricultural country in which most of the population works in agriculture. Pesticides are used intensively to support agricultural programs to meet food needs that are growing. In line with the intensification and extension programs, pesticides are shown to have an important role in improving the welfare of the people, especially in agriculture and public health. The facts show that agricultural products have increased in quality and quantity with the use of pesticides. However, pesticides are toxic and harmful materials which, if not managed wisely, can cause unintended negative impacts.

The negative impact will cause a variety of problems, because it will affect many aspects of life that eventually directly or indirectly affect human health and welfare, including farmers. Spraying pesticides that do not meet the rules will lead to many effects, including impacts on human health such as the incidence of poisoning to individual farmers [4]. Factors in pesticide poisoning are internal factors of the human body and external factors from outside the human body. The internal factors of the body include age, sex, nutritional status, hemoglobin level, and health status. While external factors from outside the body have a major role. These factors include the amount of pesticides used, type of pesticides, pesticide dose, frequency of pesticide, the last contact with pesticides, ambient temperature, spraying time, and the direction of the wind [5].

Pesticides widely recommended for agriculture are the organophosphate class, because this class is more easily broken down. Organophosphates affect neural function by inhibiting the enzyme cholinesterase, a chemical essential for delivering impulses along nerve fibers. With the intensification of agriculture, farmers may not be separated from the use of pesticides, especially if other means are no longer able to control the animal population / weeds. The use of pesticides can harm the health of the user community and surrounding communities for lead poisoning. Pesticide poisoning in Indonesia is not routinely reported, even if there is still very limited based on the reports received in the hospital. According to the Food and Drug Center BPOM in 2012 [6], cases of poisoning in East Kalimantan by 23 cases. However, this number could not be ascertained further due to a very wide area and many remote areas. Farmers' potential as a patient poisoned by pesticides used on agricultural land. Poisoning occurs due to lack of understanding of the dangers of pesticides by farmers, there are still many dangerous pesticides in circulation and easily available, lack of personal protective equipment that is safe, cheap and easy to use by farmers. Based on the success of pesticides in overcoming the problem of pests, there is a tendency of farmers to use pesticides continuously with a frequency high enough, is not uncommon even with less attention to the rules of its use. So there is a habit of farmers to spray pesticides on crops, although there were no pests. Besides spraying technique improper and unsafe, and did not realize farmers are slowly inhale pesticides [7].

People in Indonesia's greatest livelihood is agriculture. Similarly, in Kutai regency, the majority of communities are farmers of food crops and horticulture. In the community in

planting planting can not be separated from the pesticide allegedly even been cases of pesticide poisoning that causes death. Governments with integrated pest control team to provide guidance to the seller of pesticides and farming communities who use pesticides, to prevent unwanted side effect and provide maximum benefits. The risk of poisoning can be reduced if it is done how to work safe and not detrimental to health. Therefore, efforts should be encouraged occupational health program intended to prevent, monitor and treat the risk of health problems caused by work. Moving on from this it is necessary to study Farmer Empowerment in reducing Pesticide Exposure In Vegetables in the village Bangunrejo Tenggarong Sebrang Kutai Regency.

METHODS

An observational study with cross sectional design. The total sample of 25 farmers. data collection techniques with a questionnaire that has been tested for validity and reliability data Analysis of the data used univariate and bivariate analysis using Spearman correlation test and continued with a linear regression test

RESULTS

Respondents in this study is the Farmers Group Panca Karya planted vegetables and horticulture in the Village District of Tenggarong Sebrang Bangunrejo Kukar. The farmer groups including farmer groups are active. Every month, exactly on 15 there was a meeting to discuss things at the same gathering problems faced by group members. Members of the group totaled 25 people Panca Karya. Almost entirely 88% respondents' education level is primary school. Based on the age, weight and height can be seen in the following table:

Table 1. Characteristics of Respondents by Age, Weight, Height, Length of Work, Knowledge and Attitude

No	Variable	Mean	Median	Sd	Nilai min-max	95% CI
1	Age	55,52	55	9,038	39-80	51,79-59,25
2	Weigh	59,64	60	8,517	49-79	56,12-63,15
3	Height	159,52	159	6,856	144-174	156,69-162,35
4.	Length of work	28,36	39	7,117	20- 45	25,42-31,30
5.	Knowledgge	90,72	92,02	12,44	58-100	85.58-95,86
6.	Attitude	84,24	84	7,10	72-96	81,31-87,17

The results of table 1 the analysis obtained on average age, weight, height and length of the respondent as much as 55.52 years, 59.64 Kg, 159.52 cm and 28.36 years. Median 55, 60, 159 and 39. The standard deviation of 9.038. 8.517, 6.856 and 7.117. The smallest age 39 and 80. From the estimation is believed that the average age of between 51.79 to 59.25 years. Weight smallest and largest 49 79. From the estimation is believed that the weight average from 56.12 to 63.15 Kg. The smallest height 144 cm and 174 cm greatest. The estimation result is believed that the average height is between 156.69 to 162.35 cm.

Table 2. Distribution of Respondents According Directions Spraying, Spraying Time, the Old Time spraying

No	Direction Spraying	f	%
1	About the direction of the wind	24	96
2	Contrary to the wind direction	1	4
Total		25	100
No	Spraying time	f	%
1	Morning	21	84

2	Afternoon	4	16
Total		25	100
No	Spray a long day	f	%
1	One Hour	1	4
2	Two Hour	10	40
3	Three Hour	9	36
4	Four hour	4	16
Total		25	100

From tabel 2 most respondents to spray in the mornings. The reason for choosing the time in the morning because the air is still cool and fresh 15 (60%), pests still get together and cover 2 (8%), time effective for the target pest 1 (4%) and the process of assimilation is faster (4%) reason to choose a time afternoon adjust to the situation if no morning so the afternoon four people (16%) and oral plant could eat if not morning at 08:00 to 10:00 and 14:00 to 17:00 o'clock in the afternoon, as many as 2 people

Table 3. Completeness of Personal Protective Equipment (PPE)

No	Personal Protective Equipment	Yes	%	No	%	Total	%
1	Mask	19	76	6	24	25	100
2	Hat	24	96	1	4	25	100
3	Clothes Long Sleeve	24	96	1	4	25	100
4	Glasses	4	16	21	84	25	100
5	Gloves	8	32	17	68	25	100
6	Boots	18	72	7	28	25	100

Almost entirely 96% of respondents in the spraying using the PPE

DISCUSSION

Pesticides that have resulted in the binding properties of anti-cholinesterase cholinesterase thereby increasing the risk of poisoning one group organophospat. Some pesticides used are fungicides and insecticides respondents [8]. Pesticides that have resulted in the binding properties of anti-cholinesterase cholinesterasethereby increasing the risk of poisoning one group organophospat. Some pesticides used are fungicides and insecticides respondents. doses used using a variety of sizes, there is no cap pesticides or spoon and ml least 1 tablespoon of the greatest 40 ml per tank.

The results of the analysis obtained an average score of knowledge of respondents was 90.72,92.02 and the median standard deviation of 12.44. The smallest knowledge score of 58 and the largest was 100. From the estimation is believed that the average score of knowledge between 85.58 to 95.86. If the score of knowledge are categorized into two groups: the poor level of knowledge based on the cut-off point is not normal distribution data deficient ($<$ median = 92.02) and well (\geq median = 92.02). At table 16, obtained an average score of attitude as much as 84.24, a median of 84 and a standard deviation of 7.01. The smallest knowledge score of 72 and the largest was 96. From the estimation is believed that the average score of attitude between 85.58 to 95.86. If scores attitudes are categorized into two groups: the level of negative and positive attitude by the cut off point of normal distribution of data, the negative attitude categories ($<$ mean = 84.24), and a positive attitude (\geq mean = 84.24). As for the attitude of the respondents were largely negative 52%. The results of the analysis obtained on average frequency of spraying in one planting as many as 14 times, a median of 13.92 and a standard deviation of 8.5 times. The frequency of

spraying least 4 times and the highest is 34 times in one planting vegetables. From the estimation, it is believed that the average frequency of spraying between 10.89 to 17.91 times.

Spraying is good to be in the direction of the wind so that the spray mist is not blown toward sprayers and spraying should be performed at wind speeds below 750 m per minute. Measures to spray against the wind direction is the act of farmers when spraying crops with pesticides against the wind is blowing. Spraying is good when farmers facing the direction of the wind at the time of spraying. Farmers who do the spraying upwind will get more exposure to pesticide poisoning occurs making it easier especially if the plants are sprayed has a high form. The higher plants are sprayed farmers tend to get greater exposure [9]. Spraying was not considered wind direction will cause poisoning not only on farmers alone, these chemicals will be the accumulation of pesticide active ingredients that result in pollution of agricultural land. If it enters the food chain, the toxic nature of the pesticide can cause various diseases such as cancer, mutations, birth defects, CAIDS (Chemically Acquired Deficiency Syndrome) and so on. It was reported that 60-99 percent of pesticides applied will be left behind on the target or targets, while when used in powder form, only 10-40 percent of which hit the target, while the rest drifted along the wind flow or soon reach the ground [10].

Farmers who ware poor nutritional status has a tendency to get a greater risk of poisoning when working with organophosphate and carbamate pesticides because less nutrient affect the levels of enzyme material is essentially a protein. Based on body mass index was obtained The results of the analysis obtained an average body mass index (BMI) of respondents was 23.52 kg / m², median 22.31 kg / m² and a standard deviation of 3.72 kg / m². The smallest BMI 17.93 kg / m², and the largest was 30.92 kg / m². From the estimation, it i wasbelieved that the average BMI among 21,99-25.06 kg / m². Based on the analysis Rank Spearman statistical test IMT no effect on cholinesterase enzyme levels due to farmers' groups with a normal BMI is not normal not decreased cholinesterase enzyme levels. This study differs from Habib Mualim 2002 [7] research study by design Case Control concluded that nutritional status is the most influential factor (OR = 6.87) against organophosphate pesticide poisoning in farmers spraying pests, as well as the results of research conducted by Yuantari 2009 [11] shows that there is a relationship with the nutritional status of cholinesterase activity in the blood spraying farmers who conduct research by cross sectional method Tintometer-kit. This is because at the examination kholinesterase spectrophotometer method using serum or blood plasma while the Tintometer kit using red blood granules. The nutritional status of a person is also influenced by genetic factors and diet. Determination of the nutritional status of a person is not based on BMI alone, but must be supported by measurements of head circumference and body fat measurements [12]. An assessment of a participatory training approach in changing crop protection by farmers from chemically depen- dent, to more sustainable practices in line with the tenets of Integrated Pest Management (IPM). We review the evidence from the studies on an educational investment designed to capacitate farm- ers to apply IPM, and discuss these data in the light of an on-going policy debate concerning cost effectiveness [13].

CONCLUSIONS

There is no effect of dose, frequency of spraying, spraying direction, the spraying time, the respondents' attitudes about handling pesticides on cholinestrse enzyme levels decrease. No influence respondents' knowledge cholinestrse enzyme levels decrease. It is to be disseminated / pesticide management training is good and right. Based on this conclusion, it is recommended to provide better socialization and assistance to farmers on pesticide management of the purchase, application, storage and disposal need to be managed and monitored continuously. Keep aternatif

use of natural pesticides instead of chemical pesticides because the frequency is already exceeding the limit. The use of PPE is complete when handling pesticides, especially the eye and the hand has not been protected by using the complete application, including goggles and gloves mainly made of plastic. There should be periodic checks to farmers cholinesterase coordinated by PHC Sebrang Tenggara and to encourage farmers who have poor health status for not doing the spraying. Need for guidance and assistance from related parties either the clinic or BPOM order problems pesticide residues in vegetables can be controlled. Need for monitoring and evaluation of activities Empowerment of farmers, so that this empowerment model can be continued.

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ICASH-A62

**MODE OF DELIVERY, HOSPITAL OWNERSHIP AND
PREDICTORS MATERNITY LENGTH OF STAY IN TWO
HOSPITALS IN JAKARTA**

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ABSTRACT

Background: Length of stay (LOS) is one of the most common indicator used for hospital performance assessment. The longer LOS for mothers giving birth can increase the risk of nosocomial infections and cause some psychological problems.

Aims: This study aims to analyze the determinants of maternal length of stay which can be used to evaluate the hospital efficiency and quality care improvement.

Methods: The cross-sectional study was conducted in two hospitals in Jakarta. We used the medical records of women who underwent delivery during the period of January 1 to December 31, 2011. Multivariate linear regression analysis with stepwise method was used to predict length of stay.

Results: The study found 2727 patients met the inclusion criteria and were included in the analysis. The overall mean length of hospital stay was 3 days and the mean of mother's age was 29,9 years old. Among all of the covariates, mode of delivery had largest impact on LOS, with cesarean section increasing LOS by 1.2 days on average (Coef=1,21; P=0,000), followed by hospital ownership with private hospital reducing LOS 0,79 days on average (Coef = 0,79; P=0,000).

Conclusion: Mode of delivery and hospital ownership were the strong predictors for maternal length of stay in two hospitals in Jakarta.

Keywords: mode of delivery, hospital ownership, length of stay

INTRODUCTION

Length of stay (LOS) is one of the most common indicator used for hospital performance assessment [1,2]. It is considered as the effective measure for efficiency of the hospital delivery process and quality of care indicator [3,4]. The excess length of stay has an economic consequences which would increase the costs per patient and make beds unavailable for other patients [5]. The longer LOS for mothers giving birth can increase the risk of nosocomial infections and cause some psychological problems such as sleep disturbance, breastfeeding problem, maternal dissatisfaction, paternal involvement and family bonding problems [6].

There is a wide variation in the length of stay after giving birth between countries. The mean length of stay ranged from 0.5 to 6.2 days for vaginal deliveries and 2.5 to 9.3 days for cesarean-section deliveries [6]. According to WHO recommendation the cut off LOS for uncomplicated vaginal deliveries was 24 hours, but for cesarean section there was less evidence for choosing cut off, yet the united states consider 48 – 72 hours for complicated cesarean section and allowed to stay until 96 hours [6]. In Indonesia, the length of stay for cesarean section

deliveries was reported ranging from 4 to 13 days in 2010 [7]. Meanwhile in 2015 most women with cesarean deliveries have less than 5 days of hospital stay [8].

Several studies showed various factors that contribute to the maternal length of stay after delivery including cesarean section, birthweight, multiple birth, infant survival status, advanced maternal age, birth attendants, gained excess weight during pregnancy and the presence of obstetric complications [6,9,10]. Indonesia still has limited data on how much is actually the mean of maternal LOS after delivery and its determinants. Therefore, this study aims to analyze the determinants for maternal length of stay in two hospitals in Jakarta which can be used to evaluate hospital efficiency and quality care improvement. It was hypothesized that mode of delivery and hospital ownership are more influential than demographic characteristics in predicting maternal length of stay.

METHODS

The cross-sectional study was conducted in two hospitals in Jakarta. We used the medical records of women who underwent delivery during the period of January 1 to December 31, 2011. The data that were collected including patient's demographic characteristics (mother's age, mother's education level, mother's occupations, funding source), hospital ownership, mode of delivery, clinical risk factors (gemelli, haemorrhagia antepartum/HAP, malpresentation, history of hypertension, (pre-)eclampsia, anemia), and delivery by social indications.

LOS as dependent variable was defined as the time from patient admission to the hospital until discharge (in days). This study excluded the patients less than 15 years of age and greater than 45 years of age, the patients with a length of stay of longer than 7 days (were considered to represent unusual cases) and the patients with incomplete data. The predictors for LOS as independent variables were mothers age (years), hospital ownership which was recorded as public and private hospital, mode of delivery was categorized as vaginal and cesarean delivery. Education level was categorized into three groups: low (uneducated until complete primary school), middle (complete junior high school) and high (complete senior high school or more). Mother's occupations were divided into 5 categories (unemployed/housewife, military/police/civil servants/state, private employees, entrepreneurs/traders and laborer). Payment sources were grouped into five categories: out of pocket, civil servants insurance (provided by *Askes*), company (*Jamsostek* or other company insurances), private insurance and social insurance (*Jamkesmas*, *Jamkesda*, or *Jampersal*).

Clinical risk factors were categorized as yes and no (diagnose was established by professional health workers in the hospital as gemelli, haemorrhagia antepartum/HAP, malpresentation, history of hypertension, (pre-) eclampsia, anemia). Delivery by social indications was operationalized as delivery based on patient's demand. Multivariate linear regression analysis with stepwise method was used to predict length of stay by using STATA version 9. The null hypothesis was accepted if mode of delivery and hospital ownership did not significantly influence maternal length of hospital stay. Ethical approval was obtained from National Institute for Health Research and Development Ethics Committee, Ministry of Health, Republic of Indonesia on July 25, 2012.

RESULTS

The study found 2727 patients met the inclusion criteria and were included in the analysis. The overall mean length of hospital stay was 3 days and the mean of mother's age was 29,9 years old. Table 1 shows the geometric length of stay means was almost distributed similarly in respect with mother's education level and occupation. Meanwhile those with company and civil servant

insurance, cesarean delivery, mothers with clinical risk factors and perform delivery in government hospital had higher geometric mean length of stay.

Table 2. presents patient's demographic characteristics, including age, education, and payment source had effect on LOS except occupation. Every addition of 1year mother's age seems to elevate length of hospital stay. Compared to the respective reference group, patients with insurance payment appears to stay longer meanwhile low and middle educated mothers were more likely to stay shorter. However such effects were very small, these variables contributed less than 15% of the difference on LOS. Otherwise mode of delivery, hospital ownership and clinical risk factors except anemia were more likely to have much contribution on LOS.

Table 1. Patients' demographic and clinical characteristics on the length of stay

Variable	Frequency		Mean length of stay (days)
	n (2772)	%	
Mother's education			
High ^R	730	26.8	2.87
Middle	1339	49.1	2.72
Low	658	24.1	2.51
Mother's occupation			
Unemployed/housewife ^R	1902	69.7	2.69
Military/police/civil servants/state	147	5.4	2.97
Private employees	551	20.2	2.75
Entrepreneur/traders	86	3.2	2.69
Laborer	41	1.5	2.20
Payment source			
Out of pocket ^R	1403	51.4	2.53
Company insurance	160	5.9	3.25
Private insurance	63	2.3	2.68
Civil servant insurance	254	9.3	3.09
Social insurance	847	31.1	2.81
Mode of delivery			
Vaginal delivery ^R	893	32.7	1.86
Caesarean section	1834	67.3	3.26
Hospital ownership			
Government ^R	1292	47.4	3.21
Private	1435	52.6	2.32
Malpresentation			
No ^R	2385	87.5	2.66
Yes	342	12.5	3.11
Haemorrhagia antepartum			
No ^R	2630	96.4	2.69
Yes	97	3.6	3.33
History of hypertension			
No ^R	2451	89.9	2.63
Yes	276	10.1	3.47
(Pre-)eclampsia			
No ^R	2559	93.8	2.66
Yes	168	6.2	3.58
Gemelli			
No ^R	2667	97.8	2.69
Yes	60	2.2	3.59
Anemia			
No ^R	1791	65.7	2.68
Yes	936	34.3	2.76

Social indication				
No ^R	2484	91.1	2.63	
Yes	243	8.9	3.71	

^Rused as reference category for dummy variables

Table 2. Effect of demographic and clinical risk factors on the length of stay

Variable	Estimate	Difference (%)	95% CI	p value
Mother's age	0.03	3.0	0.02 - 0.04	0.000
Mother's education	-0.14	-14.0	-0.21 - 0.08	0.000
Mother's occupation	-0.02	-2.0	-0.07 - 0.03	0.422
Payment source	0.07	7.0	0.05 - 0.10	0.000
Mode of delivery	1.37	137.0	1.28 - 1.46	0.000
Hospital ownership	-0.87	-87.0	-0.96 - -0.77	0.000
Clinical risk factors				
Malpresentation	0.34	34.0	0.19 - 0.48	0.000
HAP	0.59	59.0	0.33 - 0.85	0.000
History of hypertension	0.73	73.0	0.57 - 0.88	0.000
(Pre-)eclampsia	0.84	84.0	0.65 - 1.04	0.000
Gemelli	0.84	84.0	0.51- 1.17	0.000
Anemia	0.09	9.0	-0.01- 0.19	0.066
Social indication	0.89	89.0	0.73 – 1.06	0.000

Table 3 demonstrates among all of the covariates, mode of delivery had largest impact on LOS (with cesarean section increasing LOS by 1.2 days on average), followed by hospital ownership (with private hospital reducing LOS by 0,79 days on average), clinical risk factors (HAP, pre- eclampsia, gemelli, anemia) and payment source. Patients with cesarean section delivery and clinical risk factors except malpresentation had longer hospital stay compared to the reference group. In term of hospital effect, patients who perform delivery in private hospital stay shorter than in government hospital.

Table 3. Final fitted model to predict LOS

Variable	Estimate	95% CI	P
Mode of delivery	1.21	1.12 – 1.31	0.000
Hospital ownership	-0.79	-0.88 - -0.72	0.000
Clinical risk factors			
Malpresentation	-0.13	-0.25 – 0.01	0.042
HAP	0.26	0.05 – 0.47	0.015
(Pre-)eclampsia	0.42	0.24 – 0.61	0.000
Gemelli	0.29	0.02 – 0.55	0.034
Anemia	0.10	0.02 – 0.18	0.015
Payment source	0.07	0.04 – 0.09	0.000
Intercept	2.39	2.28 – 2.49	0.000
R-squared		36,0%	

DISCUSSION

Some limitations for this study were the absence of severity for clinical risk factors and neonatal condition information which made the prediction on LOS for more than 4 days was less accurate. This study only conducted in one private and government hospital, the prediction

hospital ownership on LOS may not represent large hospital. This study demonstrated that mode of delivery was the strongest predictor on maternal LOS. This finding was consistent with a review by Cseh who revealed the type of delivery has the largest effect on length of stay, with cesarean section increasing length of stay by 1.4 days on average [11]. The study done by Campbell reported that cesarean section delivery was one of the important factors associated with longer stay [6]. Ahlen stated Length of stay was longer for cesarean section (emergency and elective) compared to vaginal delivery [12]. Cesarean section was indicated when vaginal delivery put the mother or baby's health or life at risk [13]. The impact of anesthetic and adverse event following caesarean section also was related with extended hospital length of stay [14].

Another finding in this study is patients who perform delivery in private hospital stay shorter than in government or public hospital. Lin also found that women who underwent vaginal delivery in public hospital had longer LOS than in private hospital [15]. Meanwhile a review by Cseh stated that hospital ownership had very little effect on LOS [11]. The difference in the hospital ownership finding may be due to the private hospitals in this study was a teaching hospital for midwives where the number of vaginal delivery was higher than the government hospital. However, this result enables an interaction effect between covariates.

CONCLUSION

In conclusion, mode of delivery and hospital ownership were the strong predictors for length of stay in two hospitals in Jakarta. It is recommended that clinicians both in public or private hospitals always plan for a vaginal delivery, cesarean section should not be the delivery of choice unless it is medically required, moreover the hospitals should provide cesarean service as family-friendly as possible.

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ICASH-A63

**NURSES' ROLES IN HEALTH PROMOTION PRACTICE: A
SYSTEMATIC REVIEW**

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ABSTRACT

Background: Promoting public health is applied by health care professionals including nurses. The focus of health promotion by nurses traditionally has been on disease prevention and changing the client behavior with respect to their health. In fact, the role as promoters of health by nurses is not as simple as we perceive. It is because they have experience and multi-disciplinary knowledge of health promotion in their nursing practice.

Aims: This study presents a systematic review aimed at examining the findings of existing research studies (2001-2016) of health promotion roles by nurses.

Methods: A systematic search of databases using EBSCOhost, ProQuest, and Science Direct were conducted. The 353 articles included were extracted and verified and a new interpretation of the concepts extracted was generated.

Results: 12 research articles met the inclusion criteria and included in this review. Nurses play an important role in relation to health promotion in any setting like hospital, community, primary care and home care.

Conclusion: This review need to be confirmed by well-designed large studies which engage validated procedures of nurses' role in health promotion practice and involve multivariate analyses to make sure the real role of nurses regarding health promotion practice.

Keywords: nurses' role; health promotion; nurses

INTRODUCTION

Promoting public health is applied by health care professionals including nurses. The focus of health promotion by nurses traditionally has been on disease prevention and changing the client behavior with respect to their health. In fact, the role as promoters of health by nurses is not as simple as we perceive. Health promotion has always been an essential component of nursing care, and the traditional approach has focused on screening for diseases such as cancer and on preventing communicable disease through immunizations [1]. Motivated by the Ottawa Charter, the 1980s saw increasing attention being given to the role of supportive environments, social influences, economic resources, health inequalities, and political action in creating health [2]. One of the nurses' roles is to share information and facilitate desired lifestyle behavior change rather than to prescribe or attempt to control client behavior [3]. It is because they have experience and multi-disciplinary knowledge of health promotion in their nursing practice. Moreover nurses could practice health behaviors themselves, they could not only serve as role models but also influence their attitudes, knowledge, and skills toward health promotion [4]. Nevertheless, since the field of health promotion is too broad, there is a need to investigate the role of health promotion in nurses.

Health promotion models can provide a useful framework with which to investigate the actual and potential role of primary care professionals, including nurses. The aim of this systematic review was to collate the findings of past research studies (2001-2016) of nurses' roles in health promotion practice.

METHODS

The systematic review was preferred because it has many benefits, including evaluating the strength of the scientific evidence, identifying gaps in current research and the need for future research, bridging between related areas of work, identifying central issues in an area, generating a research question, identifying a theoretical or conceptual framework, and exploring which research methods have been used successfully [5]. The study selection process is set out in Figure 1.

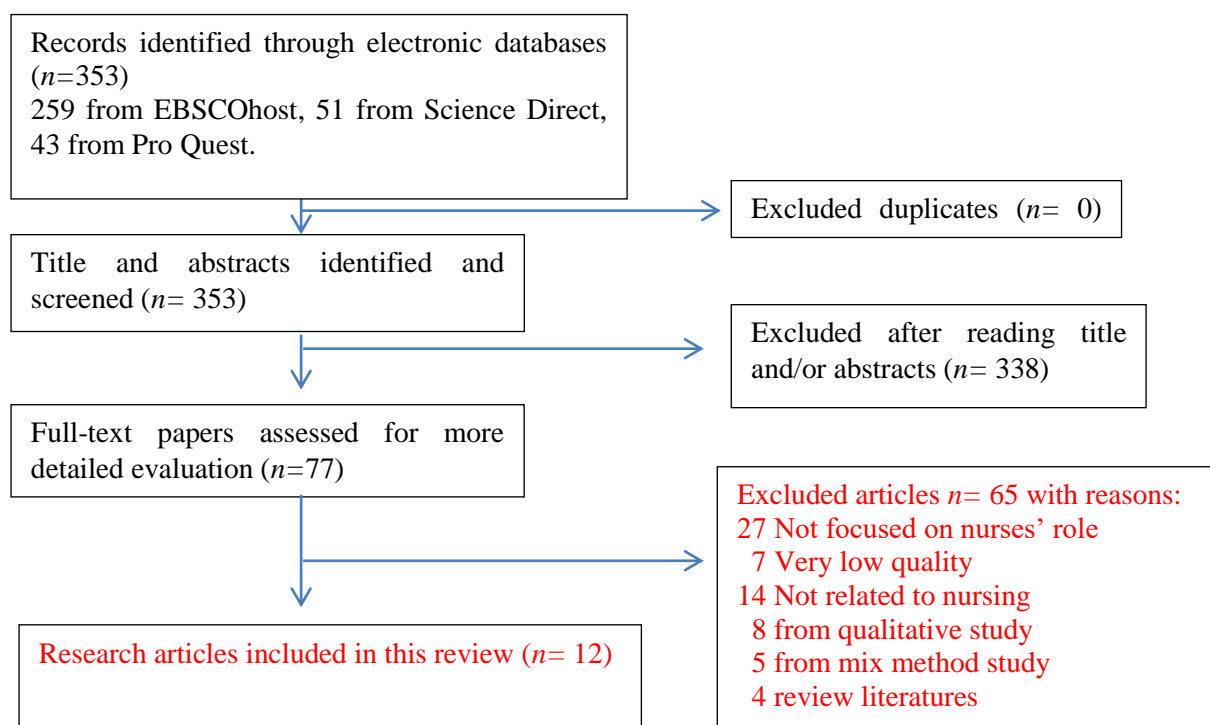


Figure 1. Flow chart of the systematic review

Several different databases were investigated to identify relevant published articles. Systematic searches of the EBSCOhost, ProQuest databases were undertaken using the search string *nurs* AND health promotion AND practice*. The searches were limited to studies published during the period January 2001-November 2016. Meanwhile systematic searches of the Science Direct database was undertaken using the search string *nurs* and (health promotion) AND limit to (topics, "nurse")* and found for *pub-date > 2000*. The researchers defined the inclusion criteria. Articles were reviewed if they met the following criteria: 1) original research articles; 2) reported qualified nurses' roles in health promotion knowledge or skills and/or factors that contributed to nurses' ability to implement health promotion in nursing. 3) full text; 4) English language, as the researcher has no comprehend foreign language other than English; 5) the articles had to be published in peer-reviewed journals, 6) the articles contain comparison or contrast nurses' roles in health promotion whether in between nurses or among nurses and other health professions.

Exclusion was based on the following criteria: data relating to nurses were not reported independently. No attempt was made to access unpublished studies or the ‘grey’ literature. The included studies were tabulated in chronological order under the following headings: reference and country, design and sample, instruments and data collected, aim, and key findings.

The original search acknowledged 353 references: 259 from EBSCOhost, 51 from Science Direct, 42 from Pro Quest. After duplicate papers were excluded the researcher (BW) read the titles and abstracts of the remaining 353 research papers. No specific evaluation criteria are employed when conducting a systematic review using diverse empirical sources; one approach is to evaluate methodological quality and information value [6].

RESULTS

A total of 12 articles were included in this systematic review. The articles were methodologically very varied: three cross-sectional studies, four randomized control trials, three prospective studies, one quasi-experimental design, one observational and longitudinal study. In term of the research setting four studies were conducted in hospital, two in university / school, four were in Primary Care center, one was in home care, one was conducted in community setting. None of study was published between 2001 and 2005, three studies were published in the period of 2006 and 2010 and nine studies were published between 2011 and 2016. The design and main findings of the selected studies are reported in Table 1.

Table 1. The design and main findings of the selected studies

Authors	Title	Methods	Variabels	Results
Chiou, S. T., Chiang, J. H., Huang, N., & Chien, L. Y. (2014) (4)	Health behaviors and participation in health promotion activities among hospital staff: which occupational group performs better?	Cross-sectional survey	Participation in hospital-based health promotion activities, participation in lectures, participation in clubs/groups, physical activity and dietary behavior, and stress adaptation	Physicians reported more days of 30-minute physical activity than administrative staff and other health professionals, followed by pharmacists, who all reported more days of physical activity than nurses. Nurses had lower stress adaptation than all other groups. The rate of reporting stress adaptation as bad or very bad was 39.9% for nurses and 31% to 32% for other professional groups
Tahlil, T., Woodman, R. J., Coveney, J., & Ward, P. R. (2015) (7)	Six-months follow-up of a cluster randomized trial of school-based smoking prevention education programs in Aceh, Indonesia	Cluster randomized control trial	Smoking knowledge, attitudes, intentions and behaviours	Compared to the control group, significant long term effects were found for the health-based intervention program in improved health, Islamic knowledge and a reduction of smoking attitudes. For the Islamic-based intervention programs there was an improvement of health (and knowledge and a reduction towards smoking attitude and smoking behaviors in the past month. The effects were greater but less than additive in the combined group for health for interaction) and Islamic knowledge for interaction) but were additive for smoking attitudes. No significant effects on smoking

Authors	Title	Method	Variabels	Results
				intentions were observed at 6 months follow-up in the health or Islamic-based intervention programs
Harbman, P. (2014) (8)	The development and testing of a nurse practitioner secondary prevention intervention for patients after acute myocardial infarction: A prospective cohort study	Prospective cohort study	Secondary prevention intervention	Nurse practitioners (NP) delivered secondary prevention intervention can significantly improve achievement of the following target goals when compared to usual care: smoking cessation (OR 5), blood pressure (OR 15), attendance at cardiac rehabilitation (OR 7), physical activity five days a week (OR 17), physical activity five days a week (OR 34), achieving a glycated haemoglobin < 7% in those with diabetes (OR 10), triglyceride levels (p = .02), statin use at follow-up (p = .05), and number of weeks to cardiac rehabilitation (p = .05).
Leijon, M. E., Bendtsen, P., Nilsen, P., Ekberg, K., & Ståhle, A. (2008) (9)	Physical activity referrals in Swedish primary health care – prescriber and patient characteristics, reasons for prescriptions, and prescribed activities	Prospective	Physical activity referral (PAR)	The number of PARs prescribed per year in relation to the number of unique individuals that visited primary health care during one year was 1.4% in 2004 and 1.2% in 2005. Two-thirds of the combined prescriptions were issued by physicians (38%) and nurses (31%). Physiotherapists and behavioural scientists issued the highest relative number of prescriptions. The most common reasons for issuing PARs were musculoskeletal disorders (39.1%) and overweight (35.4%), followed by high blood pressure (23.3%) and diabetes (23.2%)
Tiessen, A. H., Smit, A. J., Broer, J., Groenier, K. H., & Klaas, V. D. M. (2012) (10)	Randomized controlled trial on cardiovascular risk management by practice nurses supported by self-monitoring in primary care	Randomized controlled trial	Cardiovascular risk and separate risk factors	SCORE risk assessment decreased 1.6% (95% CI 1.0–2.2) for the control group and 1.8% (1.2–2.4) for the intervention group, difference between groups was .2% (-.6–1.1). Most risk factors tended to improve in both groups. The number of visits was higher and visits took more time in the intervention group (4.9 (SD2.2) vs. 2.6 (SD1.5) visits p < .001 and 27 (P ₂₅ – P ₇₅ :20–33) vs. 23 (P ₂₅ –P ₇₅ :19–30) minutes/visit p = .048)



Authors	Title	Method s	Variabels	Results
Markle-Reid, M., McAiney, C., Forbes, D., Thabane, L., Gibson, M., Browne, G., Hoch, J. S., Peirce, T., & Busing, B. (2014) (11)	An interprofessional nurse-led mental health promotion intervention for older home care clients with depressive symptoms	Prospective one-group pre-test/post-test study design	Depressive symptoms, anxiety, health-related quality of life (HRQoL), and the costs of use of all types of health services at baseline and six-month and one-year follow-up	Of the 142 participants, 56% had clinically significant depressive symptoms, with 38% having moderate to severe symptoms. The intervention was feasible and acceptable to older home care clients with depressive symptoms. It was effective in reducing depressive symptoms and improving HRQoL at six-month follow-up
Tung, C. Y., Chang, C. C., Ming, J. L., & Chao, K. P. (2014) (12)	Occupational hazards education for nursing staff through web-based learning	Pre/post-test control group design	Knowledge, attitudes, and practices	After web-based learning, the experimental group had higher post-test scores than the control group in terms of knowledge, attitudes, and practices (KAP)
Wang, D., Ou, C. Q., Chen, M. Y. & Duan, N. (2009) (13)	Health-promoting lifestyles of university students in mainland China	Cross-sectional	Nutrition behavior, Social support, Life-appreciation, Exercise behavior, Health-responsibility and Stress-management	Cronbach's coefficients were greater than 0.7 in all dimensions of the AHP scale except for Nutrition behavior (0.684). Intraclass correlation coefficients ranged from 0.689 to 0.921. Splithalf reliability coefficients were higher than 0.7 in three AHP dimensions (Social support, Lifeappreciation and Exercise behavior).
Šimić, D., Bendeković, Z., Gladović, A., & Kovačić, L. (2014) (14)	Did the structure of work in the public health nurse service of the Republic of Croatia change in the period 1995-2012?	Observational and longitudinal	Visits to healthy, pregnant and postpartum women; to new-born babies; babies under the age of 12 month; small children (1–6 years) and other children; visits to chronic patients; visits to schools; and visits to patients' homes due to social and hygienic concerns, and other visits	PHN's are overloaded by a high number of visits, especially to chronic patients
Spivack, J. G., Swietlik, M., Alessandrini, E., & Faith, M.S. (2010) (15)	Primary care providers' knowledge, practices, and perceived barriers to the treatment and prevention of childhood obesity	Survey	Knowledge, current practices, perceived barriers, childhood obesity prevention and treatment	Most primary care providers' (PCPs: pediatricians, and nurse practitioners) (81%) spent 11–20 min per well visit during the first 2 years, and 79% discussed diet, nutrition, and exercise for ≥ 3 min. Although >95% of PCPs discussed juice, fruits and vegetables, sippy cups, and finger foods during the first year, over 35% never discussed fast food, TV, or candy, and 55% never discussed exercise

Authors	Title	Method	Variabels	Results
Harris, T., Kerry, S., Victor, C., Ekelund, U., Woodcock, A., Iliffe, S., Whincup, P., Beighton, C., Ussher, M., David, L., & Brewin, D. (2013) (16)	Randomised controlled trial of a complex intervention by primary care nurses to increase walking in patients aged 60-74 years	Randomised controlled trial	Average daily step-count, average time spent in at least moderate intensity physical activity weekly,	Change in average daily steps (primary outcome) and average time spent in at least moderate intensity physical activity weekly (secondary outcome) at 3 months and 12 months, assessed by accelerometry. Other outcomes include quality of life, mood, exercise self-efficacy, injuries
Vermunt, P. W. A., Milder, I. E. J., Wielaard, F., De Vries, J. H. M., Baan, C. A., Van Oers, J. A. M., & Westert, G. P. (2012) (17)	A lifestyle intervention to reduce Type 2 diabetes risk in Dutch primary care: 2.5-year results of a randomized controlled trial	Randomised controlled trial	Body weight, glucose concentrations, physical activity and dietary intake	Both groups showed modest changes in body weight, glucose concentrations, physical activity and dietary intake [weight: intervention group,) 0.8 (5.1) kg, usual care group,) 0.4 (4.7) kg, (P = 0.69); fasting plasma glucose: intervention group,) 0.17 (0.4) mmol/l, usual care group,) 0.10 (0.5) mmol/l, (P = 0.10)].

All of the studies discovered the roles of the nurses in relation to health promotion practice in any settings. Most of the studies were conducted in Europe n=5 (2 Netherland, 1 UK, 1 Croatia, 1 Sweden), 4 studies conducted in Asia (1 China, 2 Taiwan, 1 Indonesia) and in North America n=3 (1 USA, 2 Canada).

DISCUSSION

This review revealed a small number of relevant studies which were mainly conducted in Europe. In addition, by limited the review to published studies reported in English, full text and peer-reviewed may have excluded studies published in other languages and those in the grey literature. The purpose of this review is to examine the findings of existing research studies (2001-2016) of health promotion roles by nurses. Most of the quantitative studies revealed that nurses' role in health promotion are mostly in the prevention domain. As a role model the nurses would be followed by their patient care. Their role can be benefit as well in community setting like in supporting smoking cessation program.

Others studies specified that in the prevention domain it can be varied. Nurses can play their role in cancer prevention, prevention of occupational hazards, building self-efficacy and relapse prevention in patients aged 60–74 years [12,16].

Comparing with other professions regarding health behaviors in attending health promotion lecturers in hospital during their research Chiou et al. [4] found that nurses were less likely to come than administrative personnel. Unfortunately nurses also reported the lowest level

of physical activity, 5 a day, and stress adaptation of all occupational groups. However this study needs to be explored with other studies using more reliable design since this study only using cross-sectional survey to gain the data. In contrast to Chiou study, Harris et al. [16] noted that primary care nurses have been shown to be effective at increasing physical activity, particularly walking among the patients aged 60-74 years. It means that to some extents, nurses facing in trouble to come to lectures. We have know that nurses' time are mostly for their patients as Harris et al found that elderly can't be alone without nurses. They can increase their walking activity only because of ward nurses help.

Dealing with cardiovascular management by practice nurses, Tiessen et al. [10] concluded that both groups cardiovascular risk decreased significantly after one year of treatment. The effect size is comparable to a decrease systolic blood pressure from 160 to 120 mmHg for a non-smoking 60-year old woman with unchanged lipid level. Furthermore, Harbman [8] in Canada revealed that an Nurse Practitioner delivered secondary prevention intervention can significantly improve achievement of the following target goals when compared to usual care. Again these two studies proved that nurses play an important role as a primary care whether in prevention or in the following the hospitalisation. Nurses can be optimally deliver their services not only in the hospital but also after their patients get back home. In response to this role however one thing need to be accounted that nurses who work longer in one area need for pause for a couple of time. To support this in a correlational cross-sectional study of PHPs (physicians, nurses, nursing assistants, and community health workers) Atanes et al. [18] highlighted that nurses demonstrated lower levels of mindfulness, higher perceived stress (PS), and subjective well-being (SW) negative affect, as well as lower SW positive affect. Being at work for 1 year or longer showed a clear association with higher PS and lower SW positive affect, and no significance with mindfulness levels. Pearson's coefficient values indicated strong negative correlations between mindfulness and PS, and medium correlations between mindfulness and SW.

When nurses play their role as a counselor they can give any advices such as lifestyle counseling in smoking cessation counseling, for patients with coronary heart disease, a career, in the treatment and prevention of childhood obesity, and in Dutch primary care [8,15,17].

CONCLUSION

Since nurses work in any setting like school, hospital, community, home care, primary care and other health care facilities so that nurses' role in health promotion can be varied. Nurses play an important role whether in preventive, promotive, curative, or rehabilitative domain.

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**NONCOMPLIANCE ANTIRETROVIRAL THERAPY
AMONG PEOPLE LIVING WITH HIV/AIDS IN PEMALANG CITY,
INDONESIA**

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ABSTRACT

Background: Provision of antiretroviral therapy for HIV / AIDS Patients can reduce mortality and improve quality of life of people living with HIV. Lost to follow-up in HIV / AIDS Patients on ARV therapy can cause cessation of therapy, increase of the risk of death, complicate the evaluation of antiretroviral therapy services and increase of the risk of resistance to antiretroviral drugs if they want to start over.

Aims: This study aims to identify factors that cause lost to follow-up on antiretroviral therapy in people with HIV-positive in Pemalang regency.

Methods: The study used a qualitative method with case study approach. Data collected through in-depth interviews, observation and documentation with 6 Patients with HIV / AIDS who lost to follow-up of antiretroviral therapy. The Data were Analyzed descriptively with a method of triangulation and analysis of data.

Results: The factors that lead to non-compliance with ARV therapy in people with HIV / AIDS in Pemalang district is the low perception of vulnerability will suffer from a disease later in life, the low perception of pain informant about the severity of the illness, their perception of the barriers their side effects are felt, lack of means to access ARVs and their shame if HIV-positive status is known by others and the low perception of the benefits perceived by most informants

Conclusion: It was found that the factors that cause lost to follow-up of antiretroviral therapy were the low of perceived susceptibility, perceived severity and perceived benefits in people living with HIV also perceived barrier that complaints of side effects, lack of access and shame. It is advisable Evaluating Patients methods of counseling about the side effects of antiretroviral drugs and providing another alternative of ARV therapy.

Keywords: AIDS; HIV; Lost to follow-up; ARV therapy.

INTRODUCTION

HIV/AIDS(Human Immunodeficiency Virus / Acquired Immuno Deficiency Syndrome) is a life-threatening infectious diseases that until now a serious concern. HIV it self is the name of the virus that attacks the human immune system. AIDS is a collection of symptoms resulting in the loss of immunity. General director of Disease Control and Environmental Health in Indonesia reported that cases of HIV in Indonesia cumulatively since 1987 until September 2014 Month much as 150 296 people, while in the case of AIDS amounted to 55 799. Central Java province until the end of 2015 as many as 13 567 cases were reported with the details as much as 7,338 cases of HIV and AIDS as much as 6229 and who died as many as 1,234 people [1].

Services HIV / AIDS in Indonesia given free of charge, including the provision of therapy *antiretroviral* (ARV) by the government through ARV referral hospitals. Provision of antiretroviral therapy for people living with HIV / AIDS can suppress the growth of the HIV virus in the body. ART does not kill the HIV virus, but could slow the growth of the HIV virus that can significantly reduce mortality and morbidity, improve the quality of life of people living with HIV [2].

Research in Malawi (mainland South Africa), it was found that the patients were classified as non-adherent patients if they were absent for three months or more on health care facilities [3]. Ministry of Health of Directive Recording and Reporting HIV / AIDS patients to define non-compliance as patients who did not come again kefasilitas health for 3 months or more. Noncompliance of patients on ARV therapy can cause cessation of therapy, increase the risk of death, complicate the evaluation of antiretroviral therapy services and increase the risk of resistance to antiretroviral drugs if it is to start over [4].

Pemalang occupies five major findings of HIV cases in Central Java province in 2015. Until the end of the year reported as 231 people tested positive for HIV. Of these reported 96 people had died, 73 people are undergoing ARV therapy and 13 people were reported disobedient in running ARV therapy. The number of HIV / AIDS in Pemalang reported growing every month as the implementation of the program Mobile VCT and PITC in all health care facilities. People with HIV / AIDS (PLWHA) in Pemalang Some have received therapy ARV treatment and will possibly appear new cases of non-compliance with ARV therapy.

Based on the case of non-compliance with ARV therapy and considering the impact of non-compliance with ARV, as already mentioned in previous studies as well as the lack of research done in Pemalang, authors are interested in doing research on the factors that lead to non-compliance with drug therapy antireteroviral (ARVs) in People With HIV / AIDS.

METHODS

The study was a qualitative research, case study approach. The research object is a person with HIV / AIDS who quit Antireteroviral therapy (ARV) in Pemalang. Data obtained from the informant health care facilities are on ARV therapy in Pemalang namely dr. M. Ashari Pemalang. From the data obtained, there were 13 people living with HIV (17.8%) stated stopped treatment. However, after researchers conducted a search in the field, could only find six people living with HIV who drop out of treatment. 7 others declared *lost* contact or unknown.

The research variables based on the theory of *health belief model* (HBM), which includes demographic factors, perceived susceptibility, perceived severity / morbidity, perceived barriers, perceived benefits and their cue to take action. Data collection techniques with in-depth interviews, documentation and field observations. The data were analyzed descriptively with a method of triangulation and data analysis.

RESULTS

Table 1. Characteristics of informants

	Characteristics	sum	f%
Age	21-30 years	3	50%
	31-40 years	2	33.3%
	41-50 years	1	16.7%
Gender	Male	3	50%

	Female	3	50%
Education	do not complete primary school	2	33.3%
	Primary school	1	16.7%
	Junior high school	1	16.7%
	High School	2	33.3%
Work	IRT	2	33.3%
	Shemale	1	16.7%
	WPS/female sex workers	1	16.7%
	others	2	33, 3%
type Residential	Home Alone	2	33.3%
	Boarding room	2	33.3%
	others	2	33.3%

Table 1 shows that six informants have a distribution of different ages, between 21 years to 50 years. Age informants vary, but all expressed stops ARV therapy. Not found a specific pattern showing that HIV-positive people who have reached a certain age will experience non-compliance with ARV therapy. Therefore, non-compliance with ARV therapy in HIV-positive people in Pemalang not influenced by the age of the people living with HIV. This is consistent with research Latif et al (2014), which states that there is no correlation between age and treatment compliance antiretroviral.

According to the research, the gender of the informant is 3 males and 3 females. There is a similar distribution among people living with HIV who stopped antiretroviral therapy, both men and women. It concluded that sex does not lead to non-compliance with ARV therapy is done PLWHA. This is consistent with research Latif et al (2014) also Rosiana study (2014) found no significant influence between the sexes with the incidence of non-compliance with ARV therapy.

Sixth research results to the informant, the informant showed that the work is different, that 2 of them are housewives (IRT), café manager, transvestites, wps, and *jobless* (inmates). Diverse array of this work can not yet provide a pattern that a particular job can menyebabkan occurrence of non-compliance with ARV therapy. Therefore it can be concluded in this study that occupational factors do not lead to non-compliance with ARV therapy. This is consistent with research Togun, et al (2011) there is no significant influence between work and the occurrence of non-compliance with ARV therapy. This is because non-compliance is not only influenced by one factor alone but is also influenced by other factors.

The results showed that six informants education are two of them did not graduate from elementary school (SD), a graduate school (SD), a graduate school (SMP), and two graduating high school (SMA). There are many levels of education can not be generalized to certain educational level will lead to non-compliance with ARV therapy. Therefore it can be concluded in this study that education does not lead to non-compliance with ARV therapy. This is consistent with research Latif et al (2014) found no significant correlation between level of education and ARV treatment adherence. Research Peltzer, et al (2011) also states that there is no significant influence between formal education with the incidence of non-compliance with ARV therapy. It is caused, patients who have a low education level is not always a non-adherent *patients*.

The results showed that the residence of different informants. Two informants occupy boardinghouses, two more occupies his own and occupy a mes and home detention. It can be concluded in this study that the type of residence do not lead to non-compliance with ARV therapy. This is according to research Rosiana (2014) which states that there is no significant effect between the residence of the non-compliance of ARV therapy. It can be concluded that demographic variables do not result in non-compliance with ARV therapy. It can be seen from the demographic variable component, yatiu: age, gender, occupation, education and housing are shown no effect on non-compliance with ARV therapy.

Half of the informants claimed they had sexual intercourse with multiple partners are at risk. A small part of the informant claimed to still perform sexual activity with a partner. A small portion informant no longer have sexual intercourse because it is still serving prison time. According Sajidah, et al (2014) sexual activity always attracts attention because it involves the values of human life. Sexual activity fun will be positive for the quality of life.

Most informants claimed in sexual intercourse using a condom. This means most informants feel vulnerable can transmit HIV to their partners if they are not using condoms in sexual activity. Condoms have been widely recommended to prevent sexually transmitted diseases (STDs) and was effective in lower infection rates in both men and women. A small portion of informants who also works as female sex workers (FSW) said he could not impose on the use of condoms to its customers because of customer demand which does not want to use condoms. This is because knowledge of WPS customers are still low vulnerability to HIV and the benefits of condoms as research Oktarina (2012). WPS good knowledge of HIV prevention does not necessarily make the WPS using condoms in sexual activity because there is on the part of the decision WPS customers. Required the right approach to customers in order to better understand and be aware of behavior towards HIV prevention.

Most of the informants claimed to be at risk of transmitting HIV to their partner. Their vulnerability in transmitting the HIV manifested in the use of condoms in every sexual intercourse by most informants. Feel at risk can transmit HIV is one indication that a person aware of his behavior could lead to other people contracting HIV from him. The risk perception usually arises from knowledge about modes of transmission and prevention of HIV.

DISCUSSION

According Notoatmodjo (2010) that measures a person's health problem would basically be influenced by a person's knowledge of the issue. In this case the higher the level of knowledge possessed by the informant, the higher the level of adherence to antiretroviral therapy informants. Based on the results of the study showed that most informants have poor knowledge about HIV / AIDS and ARV. Outreach has been done we should bear in evaluation with emphasis on increasing knowledge and awareness of individual people living with HIV to treatment. During this time the activity was limited to the distribution of brochures, leaflets and condoms regardless of whether information on HIV / AIDS and ARV has been accepted by people living with HIV or not at all. The lack of knowledge about HIV, antiretroviral drugs and the impact of non-compliance may result in the individual fails to prevention or treatment or no effort at all.

Most informants are not afraid of the risk of disease to be suffered if it still does not conduct ARV therapy. Informants feel healthy just like people who do not have the disease. This means that most of the informants do not feel vulnerable to the potential for him prone to various diseases later in life if it does not resume antiretroviral therapy. The low perception of the vulnerability caused informants do not take precautions, in this case continue with ARV therapy.

This is consistent with the theoretical *Health Belief Model* (Priyoto, 2014) which states personal risk or perception of vulnerability is one of the more powerful in encouraging people to adopt healthy behaviors.

Pain / severity most informant claimed not feel scared after deciding to quit ARV therapy. The informant was not afraid of what will happen in the future so they decided not to continue ARV therapy. This is in line with research by Sirait. et al (2012) which states that a person feel more at risk to a disease the prevention measures undertaken will be the better, and vice versa increasingly do not feel at risk of a person against a disease that no precautions taken.

Most informants did not feel there will be a thing that will make them developing severe illness. Most informants also stated not to think when their immune systems decline since quit ARV therapy. Most of the informants claimed to surrender when death comes. The decision to stop therapy does not make informants fear of death. Most informants live life as it is, trying to live a healthy life and surrender to God Almighty. Menurunnya immune impact on a person's body easily attacked by various diseases. When the state of the body has been attacked by many diseases, it will ride his HIV status became an AIDS condition.

The low perception of pain caused by the belief informant informant about his condition much better than during the treatment period. According to the research, most informants feel healthier and better at not doing ARV therapy. It was felt by the increasing weight of informants and the value of religiosity. Most felt it was recovered and thought no longer need to continue ARV therapy. This will affect the motivation to make a visit to the health facility, especially supported by the busyness of each informant.

Perception Barriers most informants did not encounter barriers to access to ARVs. Informants can take ARVs themselves in general hospital and there were ushered into place informants by health workers and NGOs. A small portion informant experiencing barriers to getting ARVs. The distance from home to health care facilities far enough and do not have their own vehicles to take ARVs. Their perceptions of barriers find it difficult to obtain health services because you have to queue with other patients. Those who are key population feel at home if you have to join the queue. This is because they are afraid that among the many people who are in hospital there recognized him and asked various things about the reason he had come to the hospital.

Most informants did not encounter obstacles when taking ARVs. They can arrange to take medicine every day. The family also helped to remind you when to take medication. A small portion of informants obstacles taking ARVs is a fear known by co-workers, so it must hide to taking ARVs. Their perception of the barriers that dreaded known by a friend's office so as to make the informant to go into hiding when taking ARVs.

Most informants had family support. The courage to open the HIV status to families with hopes of getting a good spirit and moral support of the family. The informant said that after telling him about her HIV situation, the family more attention and remind you to always take medicine on time. A small part of the informant have no family support because of shame and fear of being left out. All informants get support from NGOs and health workers. Support is given attention and remind each other to take medicine. Social support provided will help the informant for adhering to ARV therapy. As research Veronica (2012) which says that there is a relationship between social support on ARV adherence. Perception barriers that exist both when access to antiretrovirals or when taking ARVs can be mitigated by social support.

All informants have never experienced stigma and discrimination. This happens because all informants except conceal their HIV status to their families. This proves that all informants felt would get the stigma and discrimination if their status is known by others. Perception barriers of stigma and discrimination can be prevented with the attitude of maintaining the confidentiality of HIV status informant. This is in line with research Sanjobo *et al* (2015) which states that stigma and discrimination is a hindrance in carrying out individual ARV treatment compliance.

The whole informant stated that the services provided by the health care facilities are good and there is no shortage. The existence of an adequate health care should not be a barrier for individuals to be able to enjoy the health service. However, all of the informants experienced ARV therapy noncompliance. This shows the factors other than health care that makes informant disobedient in antiretroviral therapy.

Most informants stated feel complaints of side effects after taking ARVs. The complaints include nausea, vomiting, dizziness and other uncomfortable feelings. Most informants ARV therapy under 6 months, so it may be prone to feel ES as research Eluwa (2012) which states that the drug's side effects are more likely in patients undergoing antiretroviral drugs in the first 6 months of treatment than those who have long ARV treatment, After the expiry of six months, the side effects will gradually disappear and no longer be a nuisance. However, most of the patients undergoing antiretroviral therapy can not withstand the adverse effects of perceived grievances and immediately took the decision to stop taking ARV therapy.

From the results of this study concluded that the perception of the barriers that lead to non-compliance with ARV therapy is because of their side effects felt by informants. Side effects that are felt to be an inhibiting factor in the continuing informant ARV therapy is done. Research Latif, et al (2014) which states that the significant side effects related to treatment compliance. If there are no complaints of side effects are felt, certain to be compliance in therapy treatment, and vice versa if the complaints reported adverse events were so heavy and disturbing, it is certain to be non-compliance in undergoing treatment therapy. Complaints of side effects that are felt to be the perception of barriers in the form of feelings of trauma to the complaint which will be felt after taking ARVs.

Perception barriers also cause poor adherence ARV therapy is the lack of transportation facilities to access ARVs. The distance between housing with ARV service providers can be said to be far and should be pursued with a motor vehicle. Not their own vehicle and lack of access to public transport services as a barrier to accessing antiretrovirals. Distance is also associated with the desired access service, socioeconomic status, an infectious disease that affects other than HIV and age.

Perception barriers also cause poor adherence ARV therapy is their shame if HIV status is known by others. ARV therapy is done for life by taking ARVs regularly every day at the appointed hour. A small portion informants feel embarrassed if known by a coworker, a girlfriend or a community because it must take ARVs every day. Fear is an obstacle medication adherence. When anyone asks about medications which always used at certain hours, the informant was concerned about the known status, so often have to take medicine by stealth or skip taking medication schedule. This fear is actually derived from the fears of the emergence of stigma and discrimination if their HIV status publicly, they are afraid socially ostracized or cast out of society.

Perception Benefits sost informant nausea, vomiting, dizziness and some even up to be treated in RSU after taking ARVs. This means that most of the informant has not been able to benefit from ARVs do. Due to their more nausea, vomiting and dizziness that can not benefit from

ARV therapy is done. Their benefits to be taken will encourage informants to always take these benefits to continue ARV therapy. This is as research conducted by Rasmussen, et al. (2013) which states that the aspect of the perceived benefit of ARV therapy impact on patient treatment compliance.

According Notoatmodjo (2010), when an individual feels himself vulnerable to diseases that are considered serious (seriously), he will perform a specific action. This action depends on the perceived benefits. According Bastable (2003), the perceived need for action is influenced by variables that influence a person's perception and consequently will affect health behavior. That includes; level of education you have, the differences of culture, age, personal experience, gender and economic status [5].

One of the factors that had an impact on individual adherence to ARV therapy is a personal experience of the individual. In this case the intended experience is the experience of side effects taking ARVs. The results showed that the side effects become a thing that complaints by informants as secant if they were traumatized by the side effects that arise after taking the drug. In addition to feeling less comfortable, no complaints of side effects can also interfere with their daily activities. This causes people to no longer conduct ARV therapy. It can be concluded that the perceived benefits of antiretroviral therapy led to non-compliance. It can be seen from most of the informant has not been able to benefit from ARV therapy is done, so that in the absence of these benefits they decided to stop doing ARV therapy.

CONCLUSIONS

The factors that lead to non-compliance with ARV therapy in people with HIV / AIDS in Pemalang district is the low perception of vulnerability will suffer from a disease later in life, the low perception of pain informant about the severity of the illness, their perception of the barriers their side effects are felt, lack of means to access ARVs and their shame if HIV-positive status is known by others and the low perception of the benefits perceived by most informants.

The proposed recommendation is the need to reevaluate the methods of counseling to patients who had been undertaken primarily delivery management of side effects to the patients and the provision of ARV treatment alternatives other than the type Nuviral and Combivir.

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ICASH-A65

**THE ASSOCIATION BETWEEN KNOWLEDGE AND IRON
TABLET CONSUMPTION AMONG PREGNANT WOMEN IN
PONDOK KACANG, SOUTH TANGERANG CITY, INDONESIA**

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ABSTRACT

Background: Based on 2013 Indonesian Basic Health Research (IBHR), anemia prevalence among pregnant women in Indonesia was still high. Some studies found that knowledge is one of the main factor which affects the consumption of iron tablet among pregnant women. The Pondok Kacang Timur Health Center (Puskesmas Pondok Kacang Timur) in South Tangerang City was selected as our study site due to their coverage on iron tablet consumption was the lowest in the city. South Tangerang City itself is a new city or town located in the southern part of the Jakarta Capital City (DKI Jakarta).

Aims: This study aimed to know the association between knowledge about iron tablet and iron tablet consumption among pregnant women in Pondok Kacang, South Tangerang City, Indonesia.

Methods: This study was analytical descriptive research with cross-sectional method. It was conducted from 25 July to 20 August 2016. The sample size was calculated using Lemeshow formula so it was obtained a total of 120 formerly pregnant women who currently have infant age of 0 to 6 years old as participants. The data collection was done through interviews using a questionnaire.

Results: The study revealed that only 34.2% of respondents took iron tablet as given by health worker during their pregnancy. Mean score of knowledge was 7.8 of 13 questions. It was found that there was a correlation between knowledge and iron tablet consumption.

Conclusion: The study suggests to improve knowledge of pregnant women in order to increase their compliance on iron tablet consumption.

Keywords: Knowledge, iron tablet, pregnant women.

INTRODUCTION

According to Indonesian Demographic and Health Survey (IDHS), maternal mortality rate increased from 228 deaths per 100,000 live births in 2007 to 359 per 100,000 live births in 2012 [1, 2]. The high of anemia prevalence is one of main factors which lead maternal mortality. Based on WHO (2013), pregnant women are stated suffer from anemia is when their hemoglobin (Hb) was less than 11 gr/dl in trimester I and III and less than 10.5 gr/dl in trimester II [3]. In Banten province, there was increasing maternal mortality rate from 216 deaths per 100,000 live births in 2013 to 230 deaths per 100,000 live births in 2014 causing by bleeding (37%), infection (22%) and hypertension (14%) [4]. In South Tangerang city, the highest number of maternal death causes are hemorrhage (60%) and preeclampsia/eclampsia (30%). Besides, it was also found that 55.8%

pregnant women did not regularly consume iron tablet during pregnancy with a reason of nausea, dizziness, and uncomfortable even forget to take it [5].

Only 18% of pregnant women who reported consume iron tablets, while there were 80.7% of pregnant women in Indonesia getting 90 iron tablets from health worker during pregnancy [6]. Iron deficiency anemia may increase the risk of death in childbirth, bleeding before or during give birth, the fetus and mother are susceptible to infection, miscarriage, and increase the risk of premature birth [7]. Noncompliance of pregnant women to consume iron tablet is one of the most influential factors for the high prevalence of anemia [8].

Several studies found that knowledge was highly correlated with iron tablet consumption [9-11]. Kamidah (2015) found that knowledge, education and family's support are the factors that influence pregnant women's compliance to consume iron tablets in Boyolali [9]. Kautshar (2013) found that knowledge, family support, role of health worker and availability of iron tablet were correlated with iron tablet consumption in Makassar [10]. Iswanto (2012) found that there was a correlation between knowledge and iron tablet consumption in Klaten [11].

This study aimed to know the association between knowledge about iron tablet and iron tablet consumption among pregnant women in Pondok Kacang, South Tangerang City, Indonesia. The results of this study was expected to be an input for program managers and policy makers to continue and improve the education program on anemia and iron tablet consumption.

METHODS

This study was part of a larger study, "Determinants of Iron Tablet Consumption Compliance among Pregnant Women in Pondok Kacang Timur Health Center in 2016". The research was conducted because of the low provision of iron tablet among pregnant women in South Tangerang City. This study was analytical descriptive design. Cross-sectional design was used in this study. Data collection started from July 25th to August 20th, 2016. Eligible respondents of this study were women who had infants aged 0-6 months, living in Pondok Kacang Timur during pregnancy, and willing to be interviewed as respondents. There were 400 women met the eligibility criteria. The sample size was determined using Lameshow's hypothesis test formula for two population proportions [12]. With 95% confidence interval, it was obtained 120 formerly pregnant women as participants. Sampling technique was using simple random sampling regardless strata that exist in the population. The instrument used in this study was a questionnaire. The questionnaire was tested to determine the validity and reliability.

Independent variable in this study was the knowledge on iron tablet and anemia, while dependent variable was iron tablet consumption. There were 13 questions about knowledge on iron tablet and anemia. One question about iron tablet consumption was a binary variable: whether mother always consume all iron tablets which has been given at the pregnancy or antenatal care. The first analysis was univariate analysis which aimed to determine the distribution, frequency and proportion of the observed variables. The second analysis was bivariate analysis which aimed to determine the relationship between independent and dependent variables. Statistical test used was the chi square (χ^2) test and Fischer exact, this test was used or the data would be analyzed was the type of categorical data. To see the significance of result of statistical calculation, it was used the limit of significance with $\alpha = 0.05$ so that if it was found the results of statistical analysis p value < 0.04 then the association between two variables were declared as significant. For examine the association between score of knowledge and iron tablet consumption, statistical test used was the two sample t test with equal variances because the data was normally distributed and had equal variances.

RESULTS

Iron tablet consumption refers to whether pregnant women always consume iron tablet which given by health worker when they did antenatal care. This study revealed that 65.8% of respondents did not consume all iron tablets and more than one-third or 34.2% of pregnant women consume all iron tablets.

Table 1. Frequency and percentage distribution of iron tablet consumption (n = 120)

Measured variable	Frequency	Percent
Iron Tablet Consumption		
Do not consume all iron tablets	79	65.8
Consume all iron tablets	41	34.2

Respondent's characteristic are shown in Table 2. Respondents with age of 30 years old and over (55.0%) is larger than respondents with age of less than 30 years old (45.0%). Only few of respondents (10.8%) had completed university, more than 40% had completed each senior and junior high school, and more than 5% of respondents had completed elementary school. Majority of respondents are unemployed, 10% work for private employer, 7.5% work for themselves and less than 1% of respondents work for government.

Table 2. Frequency and percentage distribution of respondent's characteristics (n = 120)

Variables	Frequency	Percent
Age Group		
30 and over	66	55.0
Less than 30	54	45.0
Mean = 30.22, S.D.=5.17, Min= 15, Max = 40		
Educational Level		
University	13	10.8
Senior High School	50	41.7
Junior High School	49	40.8
Elementary school	8	6.7
Occupational Status		
Unemployment (House-wife)	98	81.7
Private employee	12	10.0
Entrepreneur	9	7.5
Government officer	1	0.8

Table 3 shows knowledge about iron tablet. There were 13 questions that we asked to respondents on how extent they know about iron tablet. Nine questions could be answered by more than half of respondents, such as mineral water can be drank for taking iron tablet and do not use tea or coffee (nearly 90%), the use of iron tablet which is to prevent anemia (more than 80%), the function of iron tablet is to increase the formation of red blood cells (more than 70%), pregnant women are the most in need of taking iron tablet (more than 70%), the danger of anemia when giving birth is bleeding (nearly 70%), the danger of anemia when pregnancy is miscarriage (65%) pregnant women need to take iron tablet during trimester II and III of pregnancy (more than 50%), the signs of anemia of pregnant women are dizziness, weakness, fatigue and lethargy (more than 50%), the danger of anemia for infant is jaundice (more than 50%). Besides, three questions could only be answered by less than half of respondents, such as the meaning of anemia which is

decreasing level of hemoglobin in the bloods (40%), the number of iron tablet needed during pregnancy is 90 tablets (more than 40%), a test to examine anemia is blood test (more than 40%), the impact of no taking iron tablets is anemia (nearly 50%).

Table 3. Knowledge on whether respondent know about iron tablet (n = 120)

No	Knowledge component	Freq.	Percent
1	The use of iron tablet		
	No	20	16.7
	Yes	100	83.3
	Total	120	100.0
2	The function of iron tablet		
	No	33	27.5
	Yes	87	72.5
	Total	120	100.0
3	The need of iron tablet for pregnant women		
	No	56	46.7
	Yes	64	53.3
	Total	120	100.0
4	Number of iron tablet needed during pregnancy		
	No	68	56.7
	Yes	52	43.3
	Total	120	100.0
5	Water to be drank for taking iron tablet		
	No	13	10.8
	Yes	107	89.2
	Total	120	100.0
6	Who need iron tablet		
	No	34	28.3
	Yes	86	71.7
	Total	120	100.0
7	The impact on having no iron tablet		
	No	62	51.7
	Yes	58	48.3
	Total	120	100.0
8	Definition of anemia		
	No	72	60.0
	Yes	48	40.0
	Total	120	100.0
9	The sign of anemia of pregnant women		
	No	57	47.5
	Yes	63	52.5
	Total	120	100.0
10	A test to examine anemia		
	No	70	58.3
	Yes	50	41.7
	Total	120	100.0
11	The danger of anemia when pregnancy		
	No	42	35.0
	Yes	78	65.0
	Total	120	100.0
12	The danger of anemia when giving birth		

No	37	30.8
Yes	83	69.2
Total	120	100.0
13 The danger of anemia for infant		
No	59	49.2
Yes	61	50.8
Total	120	100.0

Table 4 shows percentage distribution of each knowledge by iron tablet consumption. Based on the statistical test using chi square and exact Fischer, it was shown that questions number 1, 2, 4, 6, 9, 11 and 12 were highly correlated with iron tablet consumption. Questions number 3, 5, 7, 8, 10 and 13 were not significantly associated with iron tablet consumption.

Table 4. Percentage distribution of knowledge by iron tablet consumption (n = 120)

No	Knowledge on iron tablet	Iron tablet consumption		N	p-value
		Did not consume all tablets	Consumed all tablets		
1	The use of iron tablet				
	No	90.0%	10.0%	20	0.018 (Fischer)
	Yes	61.0%	39.0%	100	
	Total	65.8%	34.2%	120	
2	The function of iron tablet				
	No	81.8%	18.2%	33	0.023
	Yes	59.8%	40.2%	87	
	Total	65.8%	34.2%	120	
3	The need of iron tablet for pregnant women				
	No	73.2%	26.8%	56	0.111
	Yes	59.4%	40.6%	64	
	Total	65.8%	34.2%	120	
4	Number of iron tablet needed during pregnancy				
	No	88.2%	11.8%	68	0.000
	Yes	36.5%	63.5%	52	
	Total	65.8%	34.2%	120	
5	Water to be drank for taking iron tablet				
	No	76.9%	23.1%	13	0.539 (Fischer)
	Yes	64.5%	35.5%	107	
	Total	65.8%	34.2%	120	
6	Who need iron tablet				
	No	79.4%	20.6%	34	0.049
	Yes	60.5%	39.5%	86	
	Total	65.8%	34.2%	120	
7	The impact on having no iron tablet				
	No	71.0%	29.0%	62	0.220
	Yes	60.3%	39.7%	58	
	Total	65.8%	34.2%	120	
8	Definition of anemia				
	No	70.8%	29.2%	72	0.157

	Yes	58.3%	41.7%	48	
	Total	65.8%	34.2%	120	
9	The sign of anemia of pregnant women				
	No	75.4%	24.6%	57	0.035
	Yes	57.1%	42.9%	63	
	Total	65.8%	34.2%	120	
10	A test to examine anemia				
	No	71.4%	28.6%	70	0.126
	Yes	58.0%	42.0%	50	
	Total	65.8%	34.2%	120	
11	The danger of anemia when pregnancy				
	No	78.6%	21.4%	42	0.031
	Yes	59.0%	41.0%	78	
	Total	65.8%	34.2%	120	
12	The danger of anemia when giving birth				
	No	94.6%	5.4%	37	0.000
	Yes	53.0%	47.0%	83	(Fischer)
	Total	65.8%	34.2%	120	
13	The danger of anemia for infant				
	No	67.8%	32.2%	59	0.656
	Yes	63.9%	36.1%	61	
	Total	65.8%	34.2%	120	

Table 5 shows score of knowledge by iron tablet consumption. Of respondent who did not take iron tablet, percentage of the number of correct decreases while the number of correct answer increases. Meanwhile, of respondent who take iron tablet, percentage of the number of correct increases according to the number of correct answer increases. Table 5 also shows the mean score of knowledge among respondents is 7.8 of 13 questions.

Table 5. Score of knowledge on iron tablet consumption (n = 120)

Number of correct answer	Iron tablet consumption		N
	No	Yes	
3	100.0%	0.0%	2
4	100.0%	0.0%	8
5	91.7%	8.3%	12
6	92.9%	7.14%	14
7	89.5%	10.5%	19
8	63.2%	36.8%	19
9	38.5%	61.5%	13
10	35.3%	64.7%	17
11	35.7%	64.3%	14
12	0.00%	100.0%	1
13 (all correct)	0.00%	100.0%	1
Total	65.8%	34.2%	120
Mean score = 7.8			

It was categorized as sufficient knowledge if respondents had score above mean score (7.8) and insufficient knowledge if respondents had score below mean score (7.8). This study revealed that 54.2% of respondents had sufficient knowledge.

Table 6. Frequency and percentage distribution of mean score of knowledge (n = 120)

Measured variable	Frequency	Percent
Knowledge on iron tablet		
Sufficient (above 7.8)	65	54.2
Insufficient (below 7.8)	55	45.8

Table 7 shows distribution of score of knowledge by iron tablet consumption. It was shown that there were significant differences between knowledge among those who took iron tablet and knowledge among those who did not take iron tablet. Meanwhile, mean score of knowledge among those who took iron tablet is higher than those who did not take iron tablet, 9.4 and 6.9 respectively.

Table 7. Distribution of score of knowledge by iron tablet consumption (n = 120)

Iron tablet consumption	n	Mean	Std. Dev.	T (t-test)	p-value
No	79	6.911392	2.04557		
Yes	41	9.439024	1.613208	-6.8753	0.0000
Combined	120	7.775	2.25091		

DISCUSSION

This study found that only 34.2% of respondent consumed all tablet which given by health professional. The result of this study was in line with the 2013 Indonesia Basic Health Research (IBHR) which revealed that only 33,3% of pregnant women consumed all tablets [13]. According to the 2014 Health Profile of South Tangerang City, coverage of iron tablet provision in the third trimester were below 95% in 6 health care centers (of 26 health care centers): one of them was Pondok Kacang Timur health care centers [5]. It means there were many pregnant women who did not consume all tablets which given by health professional whereas the government had been promoting a program for pregnant women to take a minimum of 90 iron tablets during pregnancy. In addition, iron deficiency during pregnancy poses a risk of increased morbidity and mortality, not only for the mother but also the baby [14].

This study revealed that 54.2% of respondents had sufficient knowledge and 45.8% had insufficient knowledge. It was shown that there were association between score of knowledge and iron tablet consumption. Mean score of knowledge among those who took iron tablet is higher than those who did not take iron tablet. This result was in line with preced-proceed theory of Green which mention knowledge as predisposing factor for practice [15]. Notoatmodjo mentioned that knowledge domain was very important for the formation of individual's actions [16]. A study in Banyumas, Central Java, in 2008 found that knowledge plays an important role in determining the attitudes and actions of mothers in consuming iron tablet during pregnancy [17]. A study in Jombang, East Java, in 2011 also revealed that there was association between knowledge and iron tablet consumption [18]. A study in 2012 by Budiarni and Subagia also showed that there was a significant relationship between knowledge on iron tablet and iron tablet consumption [8].

CONCLUSION

This study showed that only 34.2% of respondents consuming iron tablet which given by health professional when they did obstetric. Because of South Tangerang City was an emerging city, the characteristics of respondents seemed appropriate. More than half of respondent were in

age group of 30, with more than 80% of respondent had completed high school. However, more than 80% of respondents were housewife. More than half respondents could correctly answer at least 9 of 13 questions. Bivariate analysis result showed that some items of knowledge are correlated with iron tablet consumption, such as the use of iron tablet, the function of iron tablet, number of iron tablet needed during pregnancy, who need iron tablet, the sign of anemia of pregnant women, the danger of anemia when pregnancy, and the danger of anemia when giving birth. Respondents who took iron tablet have better knowledge, was shown as a percentage on the number of correct answers always greater as the number of correct questions increases. Using t-test, this study also revealed that the mean score of knowledge were significantly different between those who took and who did not took iron tablet. This study recommends to increase the knowledge of iron tablet on pregnant women. It can be done using a variety of media. Health providers need to provide comprehensive information about the benefits of taking iron tablet and the risks of not taking iron tablet, so pregnant women will be encouraged to take iron tablet as prescribed.

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ICASH-A66

THE ASSOCIATION BETWEEN HIV AND AIDS KNOWLEDGE AND UPTAKE OF HIV TESTING AMONG SEXUALLY ACTIVE YOUNG POPULATION AGE 15-24 IN DISTRICT MERAUKE, PAPUA PROVINCE, INDONESIA

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ABSTRACT

Background: *This study examine relationship between HIV and AIDS knowledge as one of milestone to uptake HIV testing. Knowledge was first step as response to HIV prevention. Young population was the vulnerable group who were in stage of exploring sexual experience and had less awareness of personal risk.*

Aims: *The aim of this study is to determine the distribution of HIV and AIDS knowledge and to know its association with response to HIV testing among young population who have had sex in the last 12 months preceding the survey.*

Method: *Data set were obtained from Multiple Indicator Cluster Survey (MICS) 2011. Respondents consist of 119 young women and 56 young men age 15-24 years old who lived in Merauke administrative area. Comprehensive HIV and AIDS knowledge was measured from at least gave 6 correct answers from 7 questions. Data output are analyzed by cross-tabulation to describe socio demographic, HIV and AIDS knowledge and HIV testing and bivariat analysis to know their correlation.*

Results: *HIV and AIDS knowledge was in low level (28%). Respondent who have been tested in last 12 months preceding the survey have tiny participant (10,3%). Women, higher education, non-Papua ethnicity, and wealth status were all positively associated with having comprehensive knowledge. And only wealth status significantly associated with HIV testing. Substantively, young people who had comprehensive knowledge are more likely to uptake HIV testing, but in this paperit didn't significantly proved.*

Conclusion: *HIV and AIDS knowledge among young population in Merauke was very poor status and it significantly impact to lack of uptake in HIV testing. To know HIV status, there are many approaches to drive people and knowledge is one of milestone to start. The uptake of HIV testing were more likely has done among young population who had good knowledge about HIV and AIDS.*

Keywords: *HIV and AIDS, HIV and AIDS knowledge, HIV testing, young population, Merauke, Papua*

INTRODUCTION

Papua Provinces has different characteristic from other society in another province which is located in the eastes of Indonesia. The race are different with majority of population and the ethnicity was vary. Merauke District was the farthermost area that reach from capital city. This district located in the border of Papua New Guinea in the East, and Arafura Ocean in the south and

west . This area was become one of transmigration destination in Population Distribution Program when The Second President of Indonesiawas officiate.

Data from Directorate General CDC and Environment Health, Ministry of Health year 2014 shows that Papua has the highest case prevalence both in HIV (566 per 100,000) and AIDS (359 per 100,000) when compare to National level which has HIV prevalence 63 per 100,000 and AIDS prevalence 23 per 100,000. That caused many attention from any sources. Cited from its final report (2013) MICS is an international household survey program developed by UNICEF. MICS provides information on the situation of children and women, and other key indicator to monitor MDGs progress. This survey in 2011 was select Merauke society, one of district in Papua Province, as their respondent to study. This paper was select MDG indicator number 6.3 that examine the relationship between HIV knowledge as milestone step for HIV prevention and uptake of HIV testing.

The analysis study (Crum et al., 2006) showed that with the advent of effective HIV testing and treatment options over 2 decades, more person living with HIV are experiencing reduced mortality and morbidity. However, to get that benefits, people should know their HIV status early in the course of their infection. An estimated (Marks, Crepaz, Senterfitt, & Jassen, 2005, p. 450) shows that 20% to 25% of HIV-positive individuals are unaware of their status and may contribute to approximately 50% of all new cases. Based on Guidance Report from UNICEF (2013), young age can be define as key population because of their behaviors or vulnerable situations that increase their risk such as: penetrative vaginal or anal sex without a condom with multiple partners; injecting drugs with non-sterile equipment that has been shared; living on the streets; and sexual abuse or exploitation. The aim of this study is to determine the distribution of HIV and AIDS knowledge and to know its association with response to HIV testing among young population who have had sex in the last 12 months preceding the survey.

METHODS

Population study was select young population age 15-24 years who have had sex in the last 12 months preceding the survey in Merauke, Papua Province, Indonesia. MICS survey use probability proportional to size for sampling method and collect data using questionnaire instrument. This study select the criteria of sampling those who are District Merauke citizen age 15-24 years and have had sex in the last 12 months preceding the survey, and eliminate respondent with missing data. After sort the criteria, there are 119 women and 56 men whose data will be examined.

Data output are analyzed by cross-tabulation to describe socio demographic factor, HIV and AIDS knowledge and HIV testing, and bivariat analysis using chi square to know their correlation. Comprehensive HIV knowledge define as gave 6 correct answer from 7 questions (adapt from MICS indicator). HIV testing are measured from have been tested in last 12 months regardless the result.

RESULTS

Based on table , most of respondent are women (68%) age 20-24 years (76%). Distribution area are balance both urban and rural area of District Merauke. Seventy three percent of respondent have married status with under secondary level of education. Ethnicity mostly non Papua (69,1%), and wealth majority was middle to fourth (49,7%).

Table 1. Distribution of socio demography of population study (N=175)

Variables	N	%
Sex		
man	56	32.0
women	119	68.0
Age		
15-19	42	24.0
20-24	133	76.0
Area		
urban	95	54.3
rural	80	45.7
Marital Status		
ever married	129	73.7
never married	46	26.3
Education Level		
higher	21	12.0
<= secondary	154	88.0
Ethnicity		
papua	54	30.9
non papua	121	69.1
Wealth index quintile		
richest	47	26.9
middle to fourth	87	49.7
poorest to second	41	23.4

HIV and AIDS knowledge

HIV and AIDS knowledge in this study measure by giving 3 groups of question with total 7 question. Comprehensive knowledge is giving to those who gave 6 correct answer, instead classified by don't have comprehensive knowledge. Distribution of HIV and AIDS knowledge are shown in table below. Based on table 2, majority of respondent (72%) don't have comprehensive knowledge of HIV and AIDS.

Table 2. Distribution of HIV and AIDS knowledge

Variables	N	%
Know of the two main ways of HIV prevention		
Doesn't know	95	54.3
Know	80	45.7
Know that a healthy looking person can have the AIDS virus		
Doesn't know	44	25.1
Know	131	74.9
Reject the two most common misconceptions		
Doesn't know	64	36.6
Know	111	63.4
Comprehensive knowledge		
No	126	72.0
Yes	49	28.0

Uptake of HIV testing

Table 3. Distribution of HIV testing (N=175)

Variables	N	%
Take HIV Test in last 12 months		
No	157	89.7
Yes	18	10.3

As shown in table 3 above, 89.7% of respondent who have had sex in last 12 months didn't do HIV testing in the same time as well.

This analysis using chi square to know odd ratio between two variables. This study investigate correlation between socio demographic factor and comprehensive knowledge; correlation between socio-demographic factors and uptake of HIV testing; and correlation between comprehensive knowledge and uptake of HIV testing.

Table 4. Correlation between socio-demographic factors and comprehensive knowledge

Variables		Comprehensive Knowledge		Total	x ²	P-value	OR						
		Yes	No										
sex	man	count	6	50	12,206	0,000*	0,212						
		%	10,7%	89,3%									
	women	count	43	76									
		%	36,1%	63,90%									
total		count	49	126									
		%	28,0%	72,0%									
age	15-19	count	10	32				0,481	0,488	0,753			
		%	23,8%	76,2%									
		total		count							39	94	
%	29,3%			70,70%									
area	urban	count	29	66							0,658	0,417	1,318
		%	30,5%	69,5%									
		total		count	20	60							
%	25,0%			75,0%									
marital status	ever married	count	41	88	3,484	0,062	2,213						
		%	31,8%	68,2%									
		total		count				8	38				
%	17,4%			82,6%									
education level	higher	count	13	8				13,607	0,000*	5,236			
		%	61,9%	38,1%									
		total		count	36	118							
%	23,4%			76,6%									
ethnicity	papua	count	8	46	6,735	0,009*	0,339						
		%	14,8%	85,2%									
		total		count				41	80				
%	33,9%			66,1%									
wealth index quintile	richest	count	16	31				8,848	0,012*				
		%	34,0%	66,0%									
		total		count	29	58							
				%	33,3%	66,7%							
		poorest to second		count	4	37							
%	9,8%			90,2%									
total		count	49	126									
		%	28,0%	72,0%									

*significant using chi-square test p<0,05

Based on analysis in table 4, factor that significant marked by star sign ($p < 0,05$). HIV and AIDS comprehensive knowledge are in low level (36,1% for women and 10,7% for men). Women are 5 times more likely have comprehensive knowledge than man ($p = 0,000$). Education level and ethnicity also influencing knowledge status ($p = 0,000$ and $p = 0,009$), person who have higher education level are 5 times more likely to have comprehensive knowledge than under secondary level of education, and non-Papua ethnicity have 3 times more likely to have comprehensive knowledge than Papua ethnicity. Wealth status among three degree are influence the comprehensive knowledge ($p = 0,012$).

There were still many misconceptions about HIV and AIDS. This misconception mostly occur in mode of transmission questions. Young population in this study still assume that HIV can be transmitted by mosquito bites, supernatural means, and sharing food with someone with AIDS

Table 5. Correlation between socio-demographic factors and uptake of HIV testing

Variables	Take HIV testing		Total	x ²	P-value	OR	
	Yes	No					
sex	man	count	3	53	2,168	0,141	0,392
		%	5,4%	94,6%			
	women	count	15	104	2,168	0,141	0,392
		%	12,6%	87,4%			
total		count	18	157	2,168	0,141	0,392
		%	10,3%	89,7%			
age	15-19	count	3	39	0,592	0,442	0,605
		%	7,1%	92,9%			
	20-24	count	15	118	0,592	0,442	0,605
		%	11,3%	88,7%			
total		count	18	157	0,592	0,442	0,605
		%	10,3%	89,7%			
area	urban	count	11	84	0,377	0,539	1,366
		%	11,6%	88,4%			
	rural	count	7	73	0,377	0,539	1,366
		%	8,8%	91,2%			
total		count	18	157	0,377	0,539	1,366
		%	10,3%	89,7%			
marital status	ever married	count	14	115	0,171	0,679	1,278
		%	10,9%	89,1%			
	never married	count	4	42	0,171	0,679	1,278
		%	8,7%	91,3%			
total		count	18	157	0,171	0,679	1,278
		%	10,3%	89,7%			
education level	higher	count	2	19	0,015	0,902	0,908
		%	61,9%	9,5%			
	<= secondary	count	16	138	0,015	0,902	0,908
		%	23,4%	10,4%			
total		count	18	157	0,015	0,902	0,908
		%	10,3%	89,7%			
ethnicity	papua	count	2	52	3,667	0,056	0,252
		%	3,7%	96,3%			
	non papua	count	16	105	3,667	0,056	0,252
		%	13,2%	86,8%			
total		count	18	157	3,667	0,056	0,252
		%	10,3%	89,7%			
wealth index quintile	richest	count	10	37	88,535	0,014*	
		%	21,3%	78,7%			
	middle	count	6	81	88,535	0,014*	
		%	6,9%	93,1%			
total	poorest	count	2	39	88,535	0,014*	
		%	4,9%	95,1%			
total		count	18	157	88,535	0,014*	
		%	10,3%	89,7%			

*significant using chi-square test $p < 0,05$

Table 5 above shows only wealth index quintile factor was significant for uptake of HIV testing ($p=0,014$) and other factors was not significantly correlate.

Table 6. Correlation between comprehensive knowledge and uptake of HIV testing

Variables	Take HIV testing		Total	χ^2	P-value	OR		
	Yes	No						
comprehensive knowledge	yes	count	6	43	49	0,283	0,595	1,326
		%	12,2%	87,8%	100,0%			
total	no	count	12	114	126			
		%	9,5%	90,5%	100,0%			
		count	18	157	175			
		%	10,3%	89,7%	100,0%			

Finding for correlation between HIV and AIDS knowledge and uptake of HIV testing in table 6 above shows that there was not significant correlation. People with comprehensive knowledge has low participation ($n=6$) for uptake of HIV testing rather than doesn't have comprehensive knowledge ($n=12$).

DISCUSSION

Knowledge was first step as response to HIV prevention. Study (Berkley-Patton et al., 2012) reveal that prior to controlling for intervention exposure, HIV knowledge was a significant predictor for lifetime HIV testing. This study reveals only 28% sample has comprehensive HIV and AIDS knowledge and 10,3% sample uptake of HIV testing in same time they have had sex along 12 months preceding the survey.

Sex, education level, ethnicity, and wealth index quintile are significantly influencing young population having comprehensive HIV knowledge. Study in China (Yuan et al., 2012) reveal that age, gender, education, ethnicity, marital status, and income showed that having a greater HIV knowledge and significantly associated with greater willingness to participate in HIV testing.

Adolescent and young adults is part of a highly vulnerable group for HIV infection. Ironically, even though many surveys found that the general knowledge of HIV was high among them, but they indicate a high underestimation of personal risk (Fennie&Laas, 2014, p. 6035). Data in this study shows that young population in District Merauke have low participation of self-awareness as worse as their knowledge about HIV and AIDS whereas 26,3% of them have had sex outside marriage.

The uptake of HIV testing were more likely has done among young population who had good knowledge about HIV and AIDS. But this study finding shows not significantly association between comprehensive HIV knowledge and its influence to uptake of HIV testing among young population.

Even though finding in this study show negative relation, but substantively HIV knowledge was one of factor related to uptake of HIV testing. Finding from study (Berkley-Patton et al., 2012) suggest expanding HIV awareness and screening education should be critical component of HIV testing promotion efforts, because HIV knowledge alone may not be powerful enough to increase uptake of HIV testing behavior.

As describe earlier, this finding was not significantly proved between comprehensive knowledge and uptake of HIV testing. It can be caused by lack of number of sampling. At beginning of study was mention that missing data was eliminate for analysis, and we select the criteria which eligible of this topic. So that number of data decrease from 365 to 175 respondents. Besides that, this

study doesn't examine other factor influencing HIV testing such number of partner, to whom they have sex with, condom use, and know the place for HIV testing.

CONCLUSION

HIV and AIDS knowledge was in low level (36,1% for women and 10,7% for men). The disparity in comprehensive knowledge by gender was exist where women had more knowledge 5 times than men ($p=0,000$). Other significant finding reveal that respondent with higher education had more knowledge 5,2 times than secondary level ($p=0,000$), non-Papua ethnicity had 3 times comprehensive knowledge than Papua ethnicity ($p=0,009$), and wealth status show significant disparity of comprehensive knowledge and HIV testing between the richest, the middle, and the poorest ($p=0,012$ and $p=0,014$). Respondent who have been tested in last 12 months preceding the survey have tiny participant (12,6% for women and 5,4% for men) or only 10,3% ($n=18$) from whole respondent. Substantively, young people who had comprehensive knowledge are more likely to uptake HIV testing, but in this paperit didn't significantly proved.

HIV and AIDS knowledge among young population in Merauke was very poor status and it significantly impact to lack of uptake in HIV testing. This rigors should alarming for related institution for build progressive program objected to young population against HIV transmission.

Engaging young population in high HIV prevalence area with big effort may be good public health strategy that could have a significant impact on increasing HIV knowledge and increasing HIV testing practices for other population.

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ICASH-A67

**THE EFFECT OF STUDENTS' RESPONSE IN USING PROBLEM
BASED LEARNING WITH SIMULATION TOWARD STUDENTS'
ACHIEVEMENT (LIGHT CONCEPT)**

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ABSTRACT

Background: In many circumstances, students' alternative conception on light concepts have encountered in previous studies. One of the causes factor is the lack of students' response, and it may allow student to have a low achievement. According to Educational Unit Level Curriculum (KTSP), an active learning such as Problem Based Learning (PBL) can help students meet high achievement. In addition, learning through simulation is also increased students' response.

Aims: Based on rationale of this study, we concern to see the effect of students' response toward students' achievement in learning physics through PBL with simulation.

Methods: There were 27 grades eighth students had been involved as participants. This study had been conducted by posttest only control design, and quantitative analysis had been used to analyze the data. Twenty items of questioner of students' response, and twenty item of posttest of light concept had been applied to gather data.

Results: Our findings revealed that students who have learned by PBL with simulations have shown a great response with score 76.37 %. The students' achievements have exceeded the minimum completeness criteria (KKM) with the score $73.15 > 70$. However, the correlation of students' response towards students' achievement is very low with the correlation value $r = 0.1801$. Moreover, it merely 3.2 % of students' achievement is influenced by learning through PBL with simulations.

Conclusion: In short, leaning through PBL with simulation allows students to have a great response, but they aren't giving a significant effect to the students achievement, and it should be another factor that we missed.

Keywords: Student' response, Problem Based Learning, Simulations, Student's Achievements

INTRODUCTION

Science learning process is emphasized on giving direct experience, and let the learners to explore and to understand their surrounding environment via scientific ways [1]. According to Liliyasi [2], science is a group of discipline which is consisted of physics, biology, geology, or astronomy that attempt to describe a natural phenomenon. In learning science such as physics, students often have various alternative conceptions toward the formal learning environment [3]. The students' alternative conception may come from various sources such as textbooks [4], using phrases in daily life [5], or even teacher explanations [6]. In physics terms, light is the most scientific concept which has various students' alternative conception upon it. Several previous studies revealed that

students have many problems with source of light, definition of light, speed of light, reflection, refraction, and even images on mirror [5,7,8].

In order to fix the students' alternative conception had appeared in light concept, the active learning approach should be implemented. Based on Trianto [9], learning included in Educational Unit Level Curriculum (KTSP) should be more applicable in daily life. The level of learning should be improved from memorizing and understanding to be analysis, application in skill of problem solving. One of learning model is commonly used in learning physics is Problem Based Learning (PBL). It is an innovative learning that will give active learning situation to the students [10]. In term of implementation, PBL is often integrated with media such as simulation [11-13]. Other than that, the students' responses are also can allow students to fix their misconception as well as improve their achievements [14]. As concerning of various matters at the above, we attempt to integrate the simulation in problem based learning approach to investigate the effect of students' response against students' achievements on learning physics of light concept. All issues related to the problem based learning, simulation, and students' response will be described on the next topic.

LITERATURE REVIEW

Problem based learning in affecting students' achievement

Problem-based learning (PBL) is a student-centered, independent, self-directed learning style which is guided by a facilitator [15]. In PBL, student learning process is emphasized to problem directed than teacher-directed [16]. Naturally, PBL is described as a learning approach which contain of the carefully selected problem that emphasize the learners to have self-directed learning strategies, ability to solve the problem, participation skills, and critical thinking knowledge instead of teachers' instruction [17]. In fact, PBL was developed originally for adults, in order to train doctors in how to approach and solve medical problems [18]. Although PBL is effective learning and enhances retention in medical education, many studies had proved that PBL could also ameliorate the students' achievement in science education, especially in physics [19].

In certain cases, learning through PBL can enhance students' achievements, positive attitude, and even students' motivation [20]. A study conducted by Mandeville and Stoner [21] towards undergraduate students had proven the students who have learning activity by PBL showed students' achievement greater than their colleagues who learned via traditional lecture. PBL is recommended to be adopted as a learning strategy to promote meaningful learning in the classroom [22]. Moreover, PBL allow student to see a physics problem directly, working as a scientist, and obtain knowledge by themselves in order to solve their misconception. By the completion of their misconception, it may lead students improve their achievement [23].

In several condition, a realistic situation is needed to develop PBL strategies had been clearly stated by several literatures [24], it emphasize the essential problem of the context [25]. In PBL, the contextualization is the key composition to be successful in learning [26]. Hence, it is merely the simulation as impeccable media to present a real problem in PBL.

PBL with simulation

The principles of collaborative and constructivism learning may allow the best collaboration of PBL with simulation based [11]. These matter happens because the adaptability of high-fidelity simulations to a various learning strategy, and its essential elements [27]. A number of previous

studies found that the integration of PBL with simulation increase self-efficacy and enhance students' performance [28].

METHODS

According to research objective on this study, quasi experimental design and quantitative analysis will be implemented in interpreting the results. There are two variables were contained of dependent variables (students' achievement) and independent variables (Students' response). Furthermore, participants, research instruments, and how the participants are threatened in data collection will explained as follows.

Participants (population and sample)

The entire students of secondary school at (SMP N 22) eighth grades is the population of participants. As many as 27 students at grades eighth (VIII-C) were chosen as a sample of these study. *Simple Random Sampling* methods had been used to determine the sample, it means the VIII-C students have similar capabilities (homogeny).

Research Instruments and Data Collection

The students' name, age, and grade was collected from school's data base. Participants had been taught about the light concept using PBL with simulation in three meetings. Twenty item of students' responses questionnaire have been applied to participants in the last meetings. Questionnaire items contain of six response element which are (1) tendency to accept or reject, (2) feeling (prejudice or suspicious), (3) alternative conception, (4) ideas, (5) fear (threats), and (6) belief in a specific case [29], and five scales of Likert's scale had used. Furthermore, twenty item test of multiple choices questions had also been developed based on physics concept of "Light" in order to evaluate the students' understanding after treatment. Data which is collected by both research instruments have been analyzed by linear regression.

RESULTS AND DISCUSSION

Problem Based Learning (PBL) and simulation which were implemented to eighth graders have shown positive effect. Based on findings, 0.7637 or 76.37 % of students had a high response in learning through PBL with simulation. It means most of students having a good attention, relevance, confidence, and satisfaction against PBL with simulation. It was consistent with a study which conducted by Oliver and Omari [30], the using of online technologies such as simulation in sustaining PBL can enhance students' responses to transform the learning environment.

The positive response of students allow them to improve their learning achievement. The posttest results revealed that 70.37 % students have passed the minimum completeness criteria (KKM) with the average score $70 \leq N \leq 100$. It means about 19 of 27 students reach their learning achievement above average, and 29.63 % or 8 students did not passed their learning goals. The percentage of students who have a high response is not much different with percentage of students who have passed the minimum learning standard. It proved that learning by PBL allow students to have a great response and motivation, and even has significant effect to physics learning achievement [10]. The studies that had been conducted by Agbayewa [31] and Iroegbu [32] had proven that students who have learn by PBL performed greater than those taught by traditional methods.

In addition, we found the relation among the students' response and students' achievement in learning using PBL with simulations. Statistically, output showed that the role of students' response in affecting students' achievement in learning physics is relatively low. The value of coefficient of

correlation $r = 0.1801$ has proven that its correlation is very low, and merely 3.2 % of students' achievements were influenced by PBL with simulation. In detail, a graphic of simple linear regression will be shown as follow.

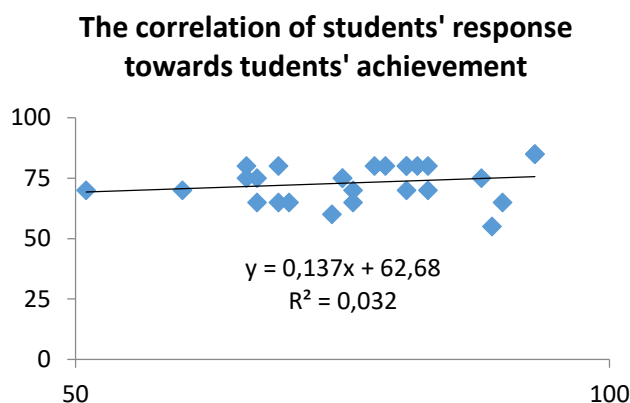


Figure 1. Simple linear regression

There are many factors that may induce the relationship between both variables are low. We have found several students who have high response score weren't directly proportional to his/her learning achievement (e.g., student number sixth, get 93 for response, and only 85 in the learning achievement). These kind of data may cause the correlation of response and learning achievement became very low.

Based on Watson [33], PBL is a learning model which allow students to improve their independence and motivation in science learning, particularly in physics learning. It may allow student to solve the problem which is occurred in daily life with currently knowledge that they had [34]. Other than that, PBL may create an original concept for students to obtain new knowledge and blend it with students' alternative conception to promote learning [35]. Rationally, we believed that PBL is one of the factor which affect the students' learning achievement.

CONCLUSION

According to our results, we sum up that problem based learning (PBL) with simulation are an example of integrating learning approach which can promote students' achievement. There is an effect of students' response when students learn trough PBL with simulation towards learning outcome, but the correlation among variables are really low. Students' response is not only the factor in affecting students' learning achievement, and it can be from PBL with simulation itself.

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ICASH-A68

**DEVELOPING THE CONCRETE MANIPULATIVE FOR LEARNING
THE CIRCLE THEOREMS**

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ABSTRACT

Background: *Geometry has a special position in the school mathematics curriculum. The circle theorems, topics in geometry, found that students have the difficulty in learning it. This study proposed a learning tool of concrete manipulative which has advantages in promoting effective and active learning.*

Aims: *The purpose of this study is to observe the use of the developed concrete manipulative in learning mathematics.*

Methods: *The study process involved students in lower secondary school in Indonesia. The informal observation sheet was used to collect data.*

Results: *The results showed that the developed concrete manipulative complied the criteria of the use of the manipulative in learning mathematics.*

Conclusion: *Therefore, it could be concluded that the developed concrete manipulative promoted the effectivity of students' performance in mathematics learning.*

Keywords: *Mathematics learning, circle theorem, concrete manipulative.*

INTRODUCTION

Geometry is one of the most crucial branches of mathematics, is the study how to understand shapes, relationship of the shapes, and properties of the shapes [1]. Additionally, most of the mathematics curriculum in many countries contain a part of geometry. They focus on the same aims that learning geometry is to promote students' visualization skill, conceptual understanding, and problem-solving skill [2-5].

The circle theorems, one of topics in geometry, study how to understand the angle properties in a circle, and then apply it in solving problems. However, students still have difficulties in learning them. Mostly, the students have difficulties in visualization and applying the properties of geometric figures [6]. Specifically, the circle theorems were found that students had the difficulty in visualizing and recognizing figures applying the same or different property [7]. For instance, one of concepts in circle theorems is about relationship between the angle at the center and circumference of a circle subtended by same arc (see Figure 1), the angle AOB is the angle at the center of the circle, and the angle APB is the angle at the circumference or a circle. Both of the angles are subtended by arc AB. Therefore, the concept mentions that an angle at the circumference of a circle is half the angle at the center of a circle subtended by the same arc [8]. However, most students had misunderstanding to learn this concept [9].

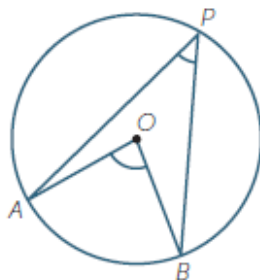


Figure 1. Angles at the center and circumference

In learning mathematics, various kinds of teaching and learning methods had been applied. The conventional teaching method are still most frequently used in learning and teaching mathematics concepts. With the result, some students who were potentially successful to become interested in mathematics failed to learn geometry, and they viewed the geometry as the disconnected subject to reality [10]. Therefore, using concrete manipulative tools designed to learn concepts by hands-on experiences could help students in understanding the mathematic concepts [11,12]. For example, the use of transparent cubes improves students' spatial visualization skills [13], and Geoboard was used in manipulating to help students understand a concept of area and perimeter of shapes [14]. In addition, the concrete manipulative is helpful for encouraging students to engage natural interaction in the physical world. By natural interaction, mental workload produced by cognitive activities that are not directly associated to the learning objectives can be reduced [15].

In this study, to develop the concepts of geometry in a special topic of circle theorems, the activities and instructions by utilizing a concrete manipulative are going to help students learn the concepts in the topic.

DEVELOPMENT OF THE CONCRETE MANIPULATIVE

The concrete manipulative for learning angle properties in a circle, called CircleBoard-Pro (Fig. 2), was developed.

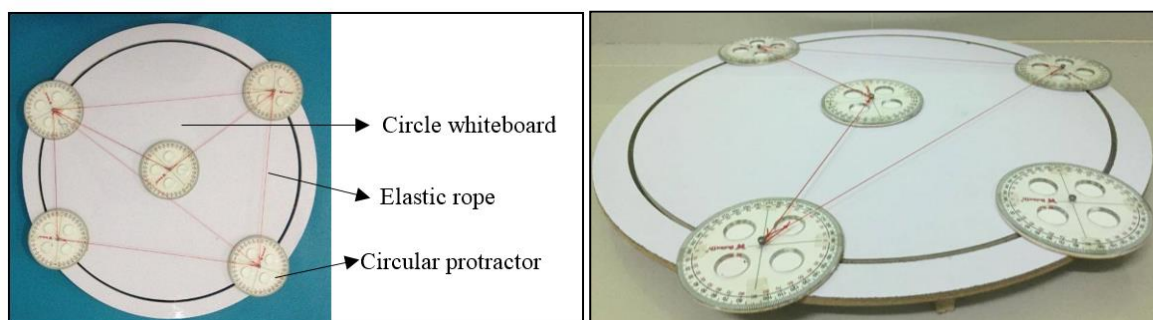


Figure 2. CircleBoard-Pro

Figure 2 illustrates components of CircleBoard-Pro. The circle whiteboard was the main circle. It made from whiteboard which was easy to write on or delete from it. An extra circle board is necessary for supporting the circle protractors and the elastic ropes to measure angles accurately. The ropes represents lines between points on the circle. The elastic property is needed for flexibly moving and changing the position along the circle whiteboard. The circular protractors were used to ease in measuring the angles between elastic ropes at any directions. Screws were tighten on the protractors

and the board which could be freely moved at any positions on the circle board. To use CircleBoard-Pro as a supported learning material, we also designed worksheets as guidelines for learning angle properties in a circle

METHOD

The objective in this study is to observe possibilities on the use of the developed concrete manipulative in learning mathematics. To address the objective, the eighth grade Indonesian students were invited to CircleBoard-Pro in learning angle properties in a circle. All students' activities were informally observed focusing on criteria of using manipulative tools in learning mathematics suggested by Dunlap and Brennan [16], and Cope [11]. They suggested how to use the manipulative in learning and teaching mathematics. Based on the guidelines, there are four criteria of the use of the manipulative that are more likely to experience positive results. In the first criteria, the manipulative must have parts or something which can be moved to portray a mathematical process or concept. In the second criteria, the direct correlation between the process portrayed by the manipulative and the process conducted using pencil and paper must exist. The third criteria explains that the manipulative must correctly illustrate the actual mathematical process. The fourth criteria suggests that the learning does not derive from the manipulative itself, but derive from students' physical action on the manipulative. And, the fifth criteria describes that the use of the manipulative requires explicit instruction.

RESULT

The learning activities was observed to know whether the CircleBoard-Pro comply the criteria of the use of the manipulative in learning mathematics. 23 students participated in this study.

The manipulative must have parts or something which can be moved to portray a mathematical process or concept: CircleBoard-Pro was available for students to drag, move, and arrange the circular protractor pins along the circumference and at the center (see Figure 3). By moving the circular protractor pins and arranging them into the proper position, these could be reached students to visualize and discover the relationship between an angle at the center and at the circumference of a circle subtended by same arc.



Figure 3. Dragging available circular protractors

The direct correlation between the process portrayed by the manipulative and the process conducted using pencil and paper must exist: Students not only rely on the manipulative to find a mathematical concept directly, but they also rely on the pencil and paper to note mathematical process

illustrated by the manipulative. During the learning activities, students wrote their exploration and observation on the circle whiteboard related to what they noted on the worksheet (see Figure 4).

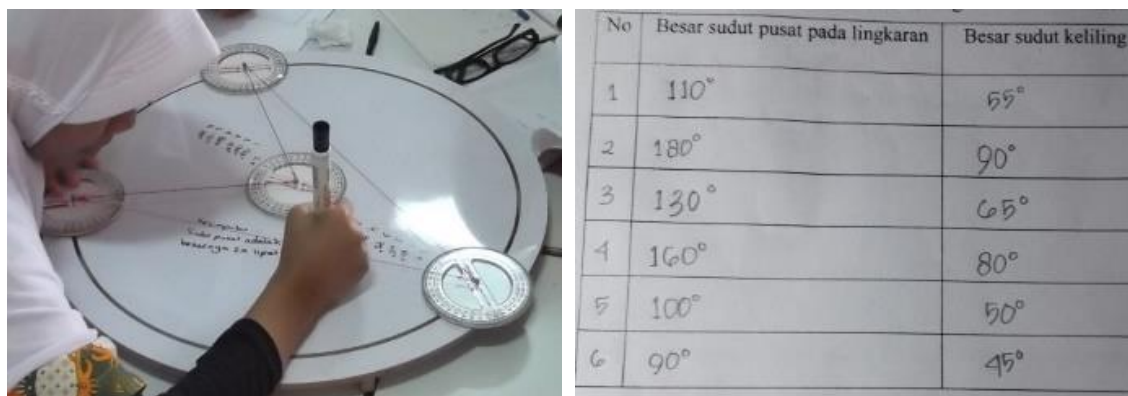


Figure 4. Activities using CircleBoard-Pro, pencil and paper

The manipulative must correctly illustrate the actual mathematical process: The students' notes both on CircleBoard-Pro and the worksheet showed that there was a process to reach the conclusion of this concept. Each result of measuring angles was noted on the worksheet (see Figure 5). The students' worksheet show that students could use the circular protractor pins to measure the angles, and they provided the adequate collection of angle measurement in order to lead students to the correct conclusion of the angle properties.

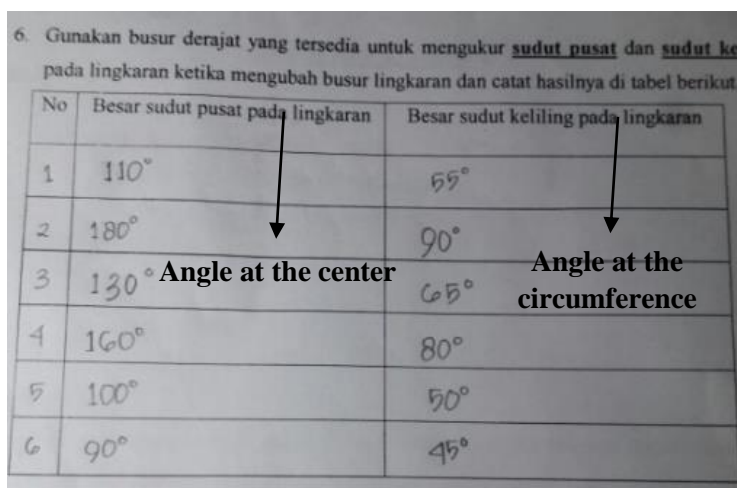


Figure 5. The students' note

The learning does not derive from the manipulative itself, but derive from students' physical action on the manipulative: Based on observation by concerning this criterion, most students try to conclude correctly the concept after having done hands-on activities. In the learning activities, students performed the physical action via CircleBoard-Pro to form angles at the center and angles at the circumference, and to measure the angles between ropes. Afterwards, students had to draw their own conclusion on the worksheet (Fig. 6).

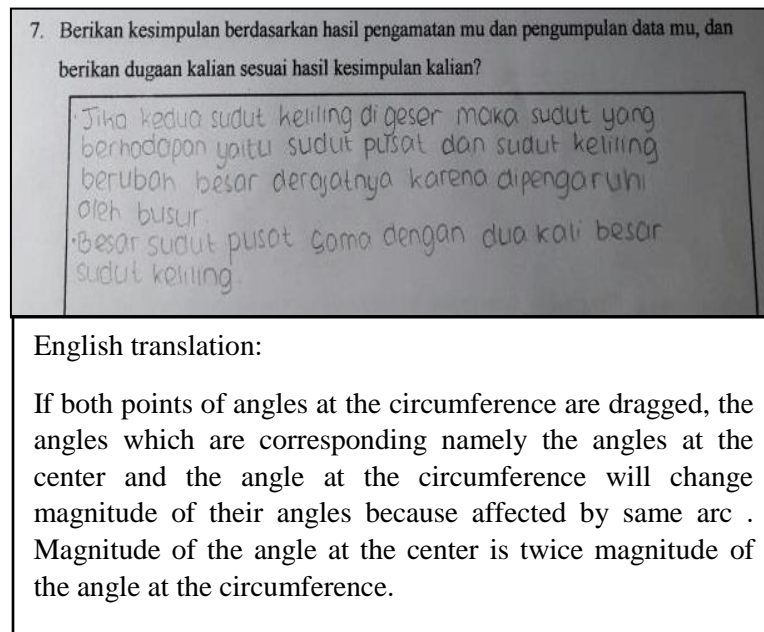


Figure 6. The conclusion of students

The use of the manipulative requires explicit instruction: This criterion refers that there is explicit instruction about how to use the manipulative in order to help students learn and understand mathematical subject. Form observation, we could conclude that most students succeed in finding the relationship between an angle at the center and at the circumference of a circle subtended by same arc, even none of students could prove correctly. This result came from the helps of two components: worksheets, and CircleBoard-Pro.

DISCUSSION AND CONCLUSION

This study was conducted to investigate the possibilities on the use of the developed concrete manipulative. The observation illustrated that the use of CircleBoard-Pro succeed to meet five criteria of using manipulative in learning mathematics. However, there were some components in CircleBoard-Pro that still need to be developed to make the users more comfortable in using it. In addition, the students' worksheet as instructions of using CircleBoard-Pro need to be revised in order to make it more clear in following the instructions. CircleBoard-Pro was developed to support constructivism theory describing that the learning is not a process to transfer knowledge, but it is a process to generate knowledge constructed actively by individual based on individual's own experiences [17]. Therefore, to succeed in the activities in learning mathematics, the students must integrate their own experience and knowledge. For example, after investigating the concept using CircleBoard-Pro and following the instructions on the worksheet, students summarized that "the angle at the circumference of circle is half the angle at the center of a circle subtended by the same arc". They realized that both of angles subtended by same arc the important part to support the relationship between those angles. From this finding, it is evident that the students reflected on their experiences during the process of learning with Circleboard-Pro. Overall results of this study suggested that when students follow appropriate instruction and utilize tools which helped them learn relevant ideas, understanding of geometric concepts could be accomplished. Therefore, this study is concluded that the effectiveness of students' performance in mathematics learning could be promoted through the use

of the developed concrete manipulative. This study is relevant with the previous study that the use of the concrete manipulative made students more active and activities more meaningful [18].

For our further research, we will design learning activities for all concepts in circle theorems. The developed concrete manipulative will be embedded in the learning approach, and then it will be implemented to promote students' understanding and attitude.

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ICASH-P01

NURSING STAFFS' CONFORMANCE IN INFECTION PREVENTION PROGRAMME: A STUDY IN BANYUASIN HOSPITAL

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ABSTRACT

Background: Healthcare-associated infection (HCAI) is a major problem for patients' safety and the surveillance and prevention must be first priority for settings and institutions committed to make health care safer. Human behavior and infection prevention and control are two areas that are linked. **Aims:** This study is to analyze the conformance of nursing staffs in preventing infection in Banyuasin hospital.

Methods: Authors employed a cross-sectional study using mix method explanatory sequential strategy to nursing staff with simple random sampling undertaken in type C hospital in Banyuasin, South Sumatera. Data was collected using questionnaire and focus group discussion to respondent assessing the conformance among nursing staff and continue with in depth interview to hospital management.

Results: About 30 nursing staff participated in the study, mean of age 29.50 ± 5.35 , working experience 4.60 ± 2.33 . The majority of nursing staff had poor (under 85% cut off point) conformance level (83.3%) using direct observation and the commitment of the hospital management, salaries and knowledge influences the conformance level. From focus group discussion shows that low salaries, lack of continuing education and availability of prevention control material also affect the conformance nursing staff.

Conclusion: Our study results that poor conformance among nursing staff to infection prevention program is influenced by knowledge, hospital management and low salaries. The study alarms the needs to change the regent rule about salaries, hospital management should training the nursing staff, and material availability that can improve the quality of nursing staff.

Keywords: Infection prevention programs, standard precautions, conformance in nursing staff

ICASH-P02

LEAN ANALYSIS AND IMPLEMENTATION OF SCHEDULING THE GYNECOLOGICAL CANCER OPERATIONS IN DR. MOEHAMMAD HOESIN HOSPITAL PALEMBANG

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ABSTRACT

Background: Gynecological cancer largely contributes to the cancer burden for Indonesia, especially in the incidences, morbidity and mortality. One of the treatment is surgical approach which will help increasing the survival rate of patients. Progression of cancer should have been taken into consideration in scheduling the surgery and operation waiting period which should not exceed more than 2 weeks. Of course, this waiting period also reflects the quality of the hospital services.

Aims: To analyze the waiting period in scheduling gynecologic cancer surgery in dr. Moehammad Hoesin Palembang using Lean Analysis. Analysis of lean will eliminate the service activities which rated as a waste and maintain the value services activities. The results of the lean analysis will be implemented into new service procedures which will reduce patients' waiting period.

Results: This study showed that scheduling of gynecologic cancer surgery requires a long waiting period. The period of 43,844 minutes are wasted to establish the diagnosis or equal to 30.4 days, and the operation waiting period were 66,700 minutes or as long as 46.3 days. By applying the principles of lean, time to establish the diagnosis will become shorter, which was 10,328.5 minutes or 7.2 days and operation waiting period became 10,325 minutes or about 7.2 days.

Conclusion: Lean principles can be applied into hospital services procedure to improve the quality of hospital services on the base of commitment of each unit that involved in hospital services. The researcher suggests the improvement of Hospital Information System to be integrated with service units as the key for successful implementation of lean in the hospital.

Keywords: Lean principles, waiting time diagnosis, surgery waiting times, gynecological cancer.

ICASH-P03

THE RELATIONSHIP BETWEEN ACTIVITY OF DAILY LIVING AND SLEEP QUALITY OF ELDERLY PEOPLE AT PROCOT VILLAGE OF TEGAL REGENCY, INDONESIA

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ABSTRACT

Background: Elderly as the last stage in the life cycle is a normal developmental stage which will be experienced by the individual. Elderly is more vulnerable to various diseases and the function of their organs will decline, affect to mental and psychosocial conditions. Assessing the functional status and the weakness in the health history can be done by employed the Activity of Daily Living with Barthel index including shower, eat, control of bowel movement and waterworks, dress up, make a move, walk up and down stairs. The aging process related to physiological changes affects sleep quality, directed to the most common elderly complaints that can cause malfunctioning in everyday life. The elderly tends to be easier to wake up from his/her sleep. At the other hands, sleep requirements will diminish with the age.

Aims: The purpose of the study is to find out the relationship between Activity of Daily Living (ADL) and sleep quality among the elderly at Procot village of Tegal regency.

Methods: The quantitative study was employed with a cross-sectional approach that involved 92 elderly as respondents. Data from the community was analysed through a classification system based on Barthel index. Sleep quality was determined using Pittsburg Sleep Quality Index. The two standard procedures were presented by questions in the questionnaires. Data was analysed using chi-square test.

Results: By Barthel index we noted that 19 elderly have bad sleep quality, while only 53 of 92 respondents admitted they have good sleep quality. The statistical analysis indicated there was no significant relationship between Activity of Daily Living and sleep quality among the elderly at Procot village of Tegal regency.

Conclusion: The findings highlight at the setting location, even some elderly admitted having sleep deprivation, there is another factors that may relate to the causes. Further research becomes important in order to improve sleep quality among the elderly at Procot village of Tegal regency.

Keywords: Activity of daily living, Barthel index, sleep quality, elderly, Tegal regency.

ICASH-P04

**PREGNANT WOMEN'S ACCEPTANCE TO HIV TESTING IN A
HOSPITAL-BASED OBSTETRICS POPULATION**

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ABSTRACT

Background: HIV testing among all pregnant women during prenatal visit has not been implemented by some hospitals, either as a mandatory or as an option. The potential deterrent effect of the policy would discourage pregnant women from seeking prenatal care. Some women accept prenatal HIV screening in order to avoid subjecting their children to a neonatal testing.

Aims: The study explored information about socioeconomic status, stigma, concern for infant testing, and knowledge and attitude towards HIV screening policy among pregnant women and their opinion about prenatal HIV screening.

Methods: This study is a qualitative study which utilized an anonymous semi-structured face-to-face interview questionnaire. The questionnaire included questions concerning socio-demographic condition, knowledge and attitudes toward HIV screening policy, and opinion regarding the HIV screening method. We interviewed pregnant women who used the hospital facilities (outpatient clinic, delivery room, emergency room) and agreed to get involved in the study. There were 11 pregnant women have signed the informed consent and ready to be interviewed.

Results: The results showed socioeconomic status of the involved participants was in average per capita. Their stigma to HIV testing was still high. The pregnant women were not ready for infant testing even their knowledge to HIV was found good. In assessing their attitudes toward HIV screening policy, most of women assumed that the test had benefit for mother and child, and the other reason were depend on hospital policy. The majority stated every pregnant woman should had HIV test but as a voluntary test.

Conclusion: Most of the pregnant women who had antenatal care in hospital, even were not ready for HIV testing in infant, agreed of the HIV test as a voluntary test. Meaning that the hospital had to have a policy of HIV test in obstetric population. The information from this study may be helpful in developing appropriate policy of HIV screening among pregnant women in hospital-based obstetrics population.

Keywords: HIV testing, screening policy, HIV test acceptance, infant, pregnant women.

ICASH-P05

SERVICE DISTRIBUTION SYSTEM IN THE ERA OF NATIONAL HEALTH INSURANCE (JAMINAN KESEHATAN NASIONAL, JKN) TO THE SATISFACTION OF DOCTORS IN SANJIWANI HOSPITAL, GIANYAR, INDONESIA

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ABSTRACT

Background: Improvements to prevention, medication and rehabilitation are the main aspects of both conventional and complementary healthcare covered by National Health Insurance (Jaminan Kesehatan Nasional, JKN). Healthcare improvement can only be done if personnel involving the healthcare itself was assured by a good health service distribution system insurance. Good health service distribution system insurance will improve health worker's performances, especially doctors.

Aims: This is to understand the effect of health service distribution system in national health insurance with doctor's satisfaction degree

Methods: The study was conducted in RSU Sanjiwani in December 2016 employed a mix of research methods. Observational quantitative analysis was done using cross sectional analysis. Chi Square test was conducted, while qualitative analysis was done by open interviews. The samples of this study consisted of 22 doctors. The samples were functional doctors working on the Sanjiwani Hospital, which was taken by consecutive sampling method. Doctor's satisfaction was assessed using Minnesota satisfaction questionnaire.

Results: Statistical analysis using SPSS 22 with Chi square test demonstrate a significant relationship between the JKN service distribution system and doctor's satisfaction ($p = 0.010$). The present study also found in Sanjiwani Hospital's system of indexing caused doctor's fee remained the same despite providing care service to more patients which cause digression of doctor's satisfaction.

Conclusions: Service distribution system in the era of JKN is an important factor on doctor's satisfaction which resulting in an optimal doctor performances. Good JKN service distribution system improves doctor's satisfaction. The finding is carrying an expectation where changes in indexing system into remuneration system will improve doctor's satisfaction.

Keywords: National Health Insurance, Health care service, Doctor Satisfaction

ICASH-P07

REFERRAL FEEDBACK OF NATIONAL HEALTH INSURANCE PROGRAM IMPLEMENTATION IN POLY UNIT FOR CHRONIC DISEASES OF SANJIWANI HOSPITAL, GIANYAR, BALI

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ABSTRACT

Background: Indonesian Government has responsible for implementation of community health insurance through National Health Insurance (NHI). Health service in NHI program is given stages, effectively and efficiently with carry quality and cost control. The ineffective implementation of stages referral system resulting in the highest referral which can be seen in accumulation of the patients in the hospital. Referral Feedback Program (RFP) to Primary Health Services in is needed to control this accumulation of patients and make health services become better. RFP must be done to patient with chronic diseases if the patient already stabilized.

Aims: This is to know the affectivity of RFP implementation in Sanjiwani Hospital to the prevention program to chronic diseases including Diabetes Mellitus, Hypertension, Asthma, Lung diseases, Heart diseases, Epilepsy, Schizophrenia, and Systemic Lupus Erythematosus.

Methods: This study used a qualitative approach employed a method content analysis based on triangulation method, triangulation of data sources, and triangulation theory. Data was obtained by interviewing a total of 5 managerial team and staffs who associated with RFP and threat the subjected chronic diseases in poly unit of Sanjiwani Hospital including specialist (Pulmonologist, Internist, Neurologist, Cardiologist, and Psychiatrist), and also Director of Sanjiwani Hospital, and BPJS administration clerk.

Results: From interviewing 5 doctors in charge of poly Sanjiwani Hospital, only Internist who did RFP well, meanwhile Cardiologist, Pulmonologist, Psychiatrist, and Neurologist did not doing referral back.

Conclusion: In poly Sanjiwani Hospital, only Internist did RFP well, meanwhile 4 others did not. From BPJS's role all specialist who treat patient with chronic disease in stable condition must did referral back to primary health care service. The recommendation is given to optimize the implementation of the RFP in Sanjiwani Hospital.

Keywords: National Health Insurance, Referral Feedback Program, BPJS's patient

ICASH-P08

**LINEAR REGRESSION AS A METHOD FOR PREDICTING
OUTPATIENT VISITS OF PSYCHIATRY POLYCLINIC AT BALI
PSYCHIATRIC HOSPITAL IN 2017**

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ABSTRACT

Backgrounds: In term of hospital management, forecasting plays many important roles. By forecasting the number of outpatient visits, a hospital could develop a basis for decision making and planning. To this date, various methods have been developed to forecast the number of outpatient visits. Among those methods, linear regression has been proved to provide the highest accuracy showed by the lower MAPE value, and also require simpler calculations compare to newer models. In this study, linear regression was performed to predict the number of outpatient visits at psychiatry polyclinic of Bali Psychiatric Hospital, which is the main hospital in Bali providing mental health-related services.

Methods: This study used secondary data obtained from Bali Psychiatric Hospital outpatient visits record from January-November 2016 by means of the total sampling technique. The data were analyzed by linear regression method to construct a model for forecasting the number of outpatient visits in 2017. MAPE value was calculated to measure the method's level of error. As a general rule in linear regression method, all data were assumed to be normally distributed, having a linear relationship in nature, no or little multicollinearity, no autocorrelations, and were heteroscedastic in nature.

Results: The number of outpatient visits at Bali Psychiatric Hospital in 2017 was predicted to be 15,561 patients, increasing from the previous year of 14,043 patient visits. In 2017, the number of outpatient visits was predicted to be increased by 12 patients per month. The calculated MAPE value was 0.013%.

Conclusion: From the linear regression analysis, the number of outpatient visits of psychiatry polyclinic at Bali Psychiatric Hospital in 2017 tends to increase by 9.7% compared to the previous year visits. By forecasting the number of patient visits, it is expected that the hospital could anticipate a large number of patient visits so that all psychiatric patients could receive proper services despite the limited number of resources, funding, and health workers. By referring to the previous studies, which were mostly conducted at the Emergency Department, this study also implies that linear regression could also be appropriately used to predict the number of patient visits at other departments in a hospital.

Keywords: prediction, outpatients, linear regression

ICASH-P09

**THE OVERCROWDING IN EMERGENCY DEPARTMENTS
GANESHA GENERAL HOSPITAL**

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ABSTRACT

Background: *Emergency departments (ED) are an important component of healthcare systems because they provide immediate and essential medical care for patients, but they are also the most overcrowding unit. The Ganesha general hospital has the ED as the main entry point for patients, therefore it is often becomes overcrowded.*

Aims: *The purpose of this study was to identify and describe the factors that contribute to the overcrowding in the emergency departments Ganesha general hospital.*

Methods: *This type of research is analytic qualitative. Collecting data about factors influence overcrowding in the ED Ganesha general hospital obtained by observation, document review, and in-depth interview. Informants were selected for in-depth interviews are part of management, doctors, and nurses in the ED. For information about overcrowding patient, the present study obtained number visits patients from the ED Ganesha general hospital throughout the year 2016. The data then was evaluated by making a comparison based on seven criteria with superior quality management concept by Malcolm Baldrige.*

Results: *Crowding in the ED is defined as having more patients than beds or more patients than staff should ideally care for, in other words the ED forces to operate beyond its capacity. From the interviews it was found that the overcrowding in the ED can be explained by the lack of human resources, lack of facilities, and the administrative process used to have long waiting time, poor management performance, and prohibition to refuse the Non-BPJS patient obtained Jaminan Kesehatan Nasional (JKN) participant's with emergency cases.*

Conclusions. *Overcrowding is a complicated problem caused by various reasons. To overcome this problem, collaboration between ED staffs and the hospital management was needed, such as increasing emergency room facilities and increasing the number of personnel, so that the quality of medical care always maintained.*

Keywords: *Overcrowding, emergency department, Malcolm Baldrige*

ICASH-P10

**EXPOSURE PESTICIDE ANALYSIS WITH HEALTH PROBLEMS
(SUBJECTIVE) TO FARMERS IN DISTRICT PACET CIANJUR
REGENCY WEST JAVA**

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ABSTRACT

Background: Pesticides are chemicals that are used to suppress reduce) populations pengganggu bodies (pests, diseases, and weeds) quickly and practically. The use of pesticides that are not according to the rules will have an impact on the environment and can cause food poisoning in animals and humans, especially farmers themselves. In Indonesia many cases of pesticide poisoning, among others, in Kulon Progo there were 210 cases of poisoning by physical examination and clinical, 50 Orang them examined in a laboratory with the results of 15 people (30%) positive poisoning. In Sleman reported 30 officers pest eradication 14 (46.66%) experienced symptoms of poisoning.

Aims: Know what factors are associated with health problems (subjective) on the farmers who use pesticides on District Pacet, Cianjur Regency, West Java

Methods: The study population was all the farmers who use pesticides on District Pacet Cianjur Regency, West Java. Total sample of 80 farmers (Total population). Non-experimental research design with cross sectional study. The independent variables were age, education level, employment, hours worked per day, the concentration of pesticides, storage, spraying and the use of PPE and the dependent variable is subjective health problems. Data was collected through interviews using a questionnaires. Data was analyzed by univariate and bivariate

Results: From this study showed that theres signifikan relation between lenght work per day ($P=0,000$), pesticide concentration ($P=0,01$), storage method ($P=0,008$), spraying ($P=0,002$), and Used PPE ($P=0,001$) with subjective health disorders on farmers. Result study were not related from aged ($P=0,651$), education level (0,449), and leght work (0,481) with subjective health problem on farmers.

Conclusion: Variables associated with health problems (subjective) on the farmers who use pesticides on District Pacet Cianjur Regency, West Java, namely the concentration, storage, spraying, use of PPE, and the length of work/day. The findings carry a **recommendation** to the Department of Agriculture for training and counseling on the benefits of pesticides, hazards of pesticides and pesticide use correct procedures. The development required further research on the nutritional status of farmers, spraying time and spraying frequency. It suggests that farmers should pay attention on the habit of using PPE at work, maintaining personal hygiene after using pesticides and the use of pesticides by the rules and safe measure

Keywords: pesticide, health disorders (subjective), farmers

ICASH-P11

STRENGTHENING THE REGIONAL REFFERAL SYSTEM: RABAIN HOSPITAL IN MUARA ENIM REGENCY, PROVINCE OF SOUTH SUMATRA, INDONESIA 2016

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ABSTRACT

Background: Since 2014, the Indonesian goverment has been implementing the National health Insurance. Accordingly, the regional refferal system is crucial because its needed to ensure that individuals receive optimal care at the appropriate level of health care.

Aims: This study evaluates factors in regional refferal hospital program of Muara Enim hospital.

Methods: A qualitative study to evaluate Regional Refferal system in Rabain Hospital in Muara Enm Regency, Province of South Sumatra, Indonesia, 2016. We compared the conformity between the decree of Indonesia Health Ministry about regional refferal system to the real condition in Rabain Hospital. Data was collected by document review, in-depth interview and Consensus Discussion Making Group. Informants of the study were top manajer and middle manager of Rabain Hospital as stakeholder in each their positions.

Results: There were two incoherent criterias among specified criteria by Indonesia Health Ministry. We found hospital class and hospital accreditation were not in the rules. Rabain Hospital was in secondary class; should been in tertiary class and not accredited by national hospital accreditation committee yet.

Conclusion: Our study results that mostly criteria have been fulfill by Muara Enim Hospital in regional refferal system. Between two incoherent criterias were in process of being accredited on 2017 and upgraded class hospital being tertiary class by the time less then 5 years since appointed. Needed commitment of all components in Rabain Hospital and supported by local goverment to accelerate its process.

Keywords: Strengthening, Regional Refferal System, Rabain Hospital.

ICASH-P12

HEALTH PROBLEM AMONG MANUAL METAL MELTING WORKERS

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ABSTRACT

Background: The manual metal melting industry included metal scrap recycling. The technique of processing in the manual metal melting industry consists of a multi-step process and vary activities, included manual material handling, melting, forming and finishing. Each activity may generate some health hazards and lead to some risk to health problem. Material processing operations and the equipment used in the process may associate with vary health hazards.

Aims: The purpose of the study was to identify worker's health problem in that area of activity in the manual metal melting industry.

Methods: The study was observational study, conducted by mixed method. Data was collected by observing the activity and environment (walk through research location) in the workplace and structured interview about health problem to 6 workers (2 as forming workers and 4 as finishing workers) and the employer. The health problem includes complain of musculoskeletal disorders, eye problem, hearing problem, lung problem and accident that happened during did the tasks in this industry.

Results: Industry in this study can be categorized as small industry. Processing of melting and forming was conducted twice per week. The finishing step will be done at the other day by the other workers. The melting and forming processes were conducted manually whilst finishing processes were conducted by workers with some machine. Health hazards at the melting and forming processes were observed, included heat stress, unsafe work postures, and accident by very hot metal. Health hazards at the finishing processes, included metal dust, noise and cut risk. All of workers had musculoskeletal problem where one worker had hearing lost problem (finishing), one worker had lung problem (finishing) and one worker had accident (forming), but none had eye problem. Three workers had not any health problem.

Conclusion: The study shows that the metal melting activity in the industry had some risk to health problem. Hazards at the melting and forming processes were observed different with the finishing. These health problem may increase the health care cost and reduce work performance. Employers have to give proper personal protection equipment to every worker and make sure the workplace condition safer.

Keywords: Health problem, musculoskeletal, hearing, accident.

ICASH-P13

**ANALYSIS OF FACTORS THAT ASSOCIATED WITH PATIENT
READMISSION IN GANESHA GENERAL HOSPITAL**

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ABSTRACT

Background: *In the era of universal health coverage, health care provider required to prioritize quality and patient safety without neglecting effectiveness and efficiency. Ganesha general hospital as a secondary healthcare provider should always perform quality and cost control without compromising patient's health care. One of the cost and quality control efforts is to reduce readmission. Patient readmission in the short term after discharge will raise questions about the hospital quality.*

Aims: *The purpose of this study was to identify and describe the factors which cause readmission in Ganesha hospital.*

Method: *This study was a qualitative research. Information and data about factors associated with readmission in Ganesha hospital were obtained by observation, document review, and in-depth interview. While information about patient admitted to the hospital in the year 2016 obtained from the patient's medical record, the data was then evaluated by making a comparison based on seven criteria approach superior quality management concept by Malcolm Baldrige.*

Results: *Patient readmission to Ganesha hospital associated with several factors, including patient's characteristics like age, chronic disease with morbidity, and had history of emergency unit visits before readmission. Underprepared discharges planning also contribute patient readmission. Another important factor is clinical pathways that have not been done properly by all clinician. Without clinical pathway, clinicians tend to rely on their experience to make clinical decisions, this including the proper time to discharge the patient. Furthermore, there is no instrument that can be used to help the healthcare provider identifying high risk patient for readmission, and as the result the intervention to reduce the risk can't be done.*

Conclusions: *Before the interventions take action to reduce readmission, we need to look for the readmission cause. Patient readmission is sometime unpreventable and must be done in certain condition like chemotherapy for cancer patients or readmission for diagnostic procedures. The intervention must be targeted to high risk patient to increase its effectiveness, hence, the identifying the individual and determining the causes become important.*

Keywords: *Readmission, inpatient care, predictive, Malcolm Baldrige*

ICASH-P15

ANALYSIS OF HOSPITAL SOLID MEDICAL WASTE MANAGEMENT

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ABSTRACT

Background: Hospital is one of the industries that provides services for the public health and social functioning hospitals including curative (treatment of disease), rehabilitation (restoration of health), prevention (prevention of disease) and promotion (health education). On the other hand, hospital can also be regarded as a donor for the discharge of hazardous or non-medical waste from medical activities in large numbers. Therefore, a need to an appropriate solid waste management from hospital becomes important for preventing environmental damage.

Aims: The aim of this study is to explore a hospital solid medical waste management.

Methods: In this study, an analytic method was used by collecting data from literature review, direct observation, and depth interview. A literature review conducted through four data centers, namely: Google Scholar, National Public Health Journal, Lontar Library of the University of Indonesia, and the International Journal, with a period of months searching from October 2016 until December 2016. The key words are hospital solid medical waste management. The research data management of hospital solid medical waste by the year 2010-2015, and the use of keywords in the title, obtained 34 studies, which consisted of two thesis reports, and 32 journals. By checking the relevance of the content with the aim of the study, we narrow the articles used for the systematic study of as many as eight articles which consisted of two thesis report and 6 journals (1 international journals and 5 national journals). From an in-depth interview, the information was obtained from head of hospital wards, financial staff, head of general sector and households, and training staff.

Result: Variables in hospital solid medical waste management covered input, process and output. Input factors included the characteristics of the waste consisted of the source, types and quantity. The process of solid medical waste management highlighted activities (shelter, transportation, and final disposal), policies and regulations on the management of solid medical waste hospital resources (personnel, facilities and infrastructure, as well as cost). Moreover, the output includes the management of solid medical waste hospital to meet the standard requirements.

Conclusion. From the results of the literature search, analyzing problems in hospital solid medical waste management direct intention on the steps of the management of medical waste including input, process, and output.

Keywords: Management of hospital solid medical waste, input, process, output.

ICASH-P16

THE COMPLETENESS OF INFORMED CONSENT SHEET IN PATIENTS WITH MEDICAL PROCEDURE: A LITERATURE REVIEW

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ABSTRACT

Background: Recently, lawsuit againts doctor due to unclear communication and information increased due to the incompleteness of informed consent sheet in patients with medical procedure. In the informed consent, doctors should provide information regarding the patient's disease and the measures to be taken because the doctor knows the patient's condition as well as matters relating to the required medical action.

Aims: The purpose of this study was to explore the completeness of informed consent sheet in patients with medical action based on the results of existing research.

Method: The method used for this study is narrative review. Data were taken from the literature obtained from an online library of the University of Indonesia. The review of journal articles and research has been conducted by professors and students related to informed consent and medical records. The inclusion criteria of this study are journal articles and thesis report related to informed consent, medical records and medical procedure. The exclusion criteria are the informed consents related to research and organ donation. The indexed online database search in the journal JSTOR, gained as much as 4,925 articles related to informed consent and medical records. The articles then were selected based on their relevance to the medical procedure. From the database search in UI library also obtained 14 documents related. Finally, 4 theses and 3 journal articles are set to be used in research on purpose to do narative review

Result: The studies showed that no informed consent sheets were 100% complete. Factors affecting the completeness are the lack of regulations on informed consent procedure, knowledge of doctors / officers about informed consent, educational level of the patient / family, the nature of operations, the provision of medical information, and the attitude of doctors when giving explanations. While doctor working period and the age of the doctor and age are not related to the completeness of the informed consent sheet

Conclusion: The data on completeness of sheets of informed alerts attentions to regulations on disciplinary to charge the informed consent, knowledge of doctors / officers about informed consent, educational level the patient / family, the nature of operations, the provision of medical information, and the attitude of doctors when giving explanations.

Keywords: Informed consent, the doctor

ICASH-P17

**PATIENT WAITING TIME OF OUTPATIENT PRESCRIPTION
IN PERMATA HATI HOSPITAL'S PHARMACY SECTION MATARAM**

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ABSTRACT

Background: Pharmacy is one of the units at hospitals which provide products and services in the form of prescription services. Prescription services as a front-line pharmacy services to patients should be managed well, because the quality of service depends on good pharmacy prescriptions which generally associated with the speed of providing services.

Aims: This study analyzes the patient's waiting time of prescription public services in Depo Framasi Permata Hati Hospital Outpatient and explore the constraints which cause long waiting times.

Methods: This research was a mix method where quantitative design was followed by qualitative. Quantitative methods were used in the observation of the amount of waiting time in completing the prescription. In qualitative design, direct observation and in-depth interviews between pharmaceutical personal and hospital management was employed to determine the perceptions of prescription services. The study focused at outpatients for two weeks. A total of 55 patients who need pharmacy services was selected using systematic random sampling at Depo Framasi Permata Hati Hospital. Univariate analysis was then used in this study for descriptive analysis.

Results: The results showed the average waiting time needed in prescription was 39 minutes. The delay due to the availability of some drugs officer was lacking, the length of the computerized network, not optimum in implementing the procedures of prescription services, high workloads with limited human resources.

Conclusion: Expected results of this study found a solution to reduce waiting times for service prescription by providing confirmation of the implementation of drug procurement procedures and the officer, making prescription queuing system. Human resources department also plays important roles in distributing evenly important points of standard operations, providing rewards and punishments to the employees and physicians.

Keywords: Waiting time, service prescriptions, pharmacy hospital, Permata Hati Hospital.

ICASH-P18

**PATIENT WAITING TIME ANALYSIS AT POLYCLINIC OF
PERMATA HATI MOTHER AND CHILD HOSPITAL MATARAM**

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ABSTRACT

Background: *Waiting time is related with hospital services. The longer time needed to provide service, the more unsatisfaction felt by patients, then the quality of services will be judged as not good.*

Aims: *This is to analyze the causes of long patient's waiting time in polyclinic Permata Hati Mother and Child Hospital*

Methods: *This research was a mix methods where quantitative followed with qualitative. Quantitative method was used in observation waiting time from registration to obtain the services of doctors. Qualitative research was a sequential approach after the quantitative study to elaborate further the issues patient's waiting time perception. Target population of the study were patients who have visited polyclinic from 7 – 15 November 2016. The 17 respondents were selected using snowball method to fulfill appropriate and adequacy until all answers were satisfiedly collected. Data were triangulated by sources by method and by data, to gain it's validity and reliability.*

Results: *The average waiting time spent by patient is approximately 1 hour 15 minutes. The observations reveal the waiting time was caused by medical record, no-queuing system, and delays in the arrival of doctors. Patients perceived the waiting time was long, but the hospital management considers it is still within reasonable waitingduration.*

Conclusion: *This research is expected to provide solutions for hospital to improve respon time of services by applying a registration application with integrated patient medical records, queuing systems, and commitment of doctors*

Keywords: *Waiting time, polyclinic services*

ICASH-P19

**THE CAUSES OF PATIENT SAFETY INCIDENT IN HOSPITAL:
NURSES' PERSPECTIVES**

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ABSTRACT

Background: A lawsuit against the hospital related to an increasingly frequent occurrence of Patient Safety Incidents (PSI). The image of hospitals become worse, in addition to the cost of treatment, LOS (length of stay) increased, and psychological impact. Based on the report of IOM (Institute of Medicine) in the United States in 1999, said that 44,000 to 98,000 patients die from medical errors, in a year. Some studies suggest that most errors in drug delivery due to the nurse. This is due to low education, and experience, in addition to the work environment is not supportive. Another factor is the low patient safety. Consequently, the socializations of Standard Operating Procedures (SOP) have not been fully implemented. It was concluded that the problems occur due to a lack of support from hospital management to improve the quality of care and patient safety.

Aims. To explore nurses' perspective to the causes of patient safety incidents in hospital focus on inpatient ward.

Methods. It was a qualitative research. The informants were 8 nurses with the criteria: have been working for over a year, working in the inpatient ward, and not as a team leader. Data was collected from interviews, document review and observations to the nurse who met the criteria. Triangulation is done to obtain data validity.

Results. The information from the nurses who were included in the criteria, showed that they have a similar perspective about the causes of patient safety incidents in hospital including the lack of nurses' competence, unsupportive work environment, and lack of patient safety culture. The findings also highlight the nurses' consideration to the lack of support from the leadership of the Hospital to prevent the occurrence of patient safety incidents.

Conclusion: Hospital leaders create policies that can improve quality and patient safety, in order to reduce and prevent the occurrence of patient safety incidents such as training to improve the competency of nurses, socializing more applicable SOP, creating a comfortable working environment for nurses, and cultivating patient safety in hospitals

Keywords: Patient safety incidents, nurses, inpatient ward

ICASH-P20

**CLAIM PROCESS OF HEALTHCARE AND SOCIAL SECURITY
AGENCY (BADAN PENYELENGGARA JAMINAN SOSIAL
KESEHATAN OR “BPJS KESEHATAN”) AT RSU KASIH IBU
DENPASAR**

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ABSTRACT

Background: The implementation of the National Health Insurance services encountered obstacles in the process of filing a claim which is related to the regulation and financing, quality patient care, provision of medicines, to accelerate the verification.

Aims: This is to understand the process of filing a claim and to identify the obstacles in the process of filing a claim BPJS in Kasih Ibu Hospital.

Methods: This research uses qualitative descriptive analytic using cross sectional design. The subjects in this study are the Head Instalation Medical Record, officer coding, data entry officer, admin clerk, internal verifier, and eksternal verifier. We used all documents in November 2016 which been related to claim.

Result: Observations were carried out during November 1 to 30, 2016 of 479 files examined claims BPJS found 19% did not complete required documents to claim. As the consequence, the coding process and data entering cannot be run maximum. Admin officer had a duty to complete the claim file, but need to speed up the process the internal verifier officers. In addition, the encoding and entering data has not run with the maximum because the coder officers also have other jobs so they cannot focus on doing the claim file. Socialization about what files are needed for the process of filing a claim never existed due to the absence of the Standard Operational Procedure (SOP) and the plot of the process of filing the claim file. Further, due to the policy might change, the process of withdrawal of the claim cannot be done.

Conclusion: This study shows that the follow-up of the monitoring and evaluation of the claim files submitted by admin clerk needs to be done then it will run effectively and efficiently and there are no other pending work and claims can be filed on time.

Keywords: Health care and social security agency (BPJS), Claims Process, Delay Claims

ICASH-P21

**MEDICINE CONSUMPTION COMPLIANCE IN PATIENTS OF
HYPERTENSION IN PRIMA MEDIKA HOSPITAL, DENPASAR, BALI**

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ABSTRACT

Background: Hypertension is one of the diseases with the highest prevalence in Indonesia. Noncompliance undergoing therapy program is a major problem for patients with hypertension that can lead to fatal complications even to death. The success of the hypertension treatment is due to the patient compliance to medicine consumption and their healthy lifestyles.

Aims: The purpose of this study to explore the medicine consumption compliance in patients of hypertension in Prima Medika Hospital Denpasar- Bali.

Methods: The study was conducted by qualitative analytical methods using an in-depth interview to 10 patients who have hypertension without complication in Prima Medika Hospital Denpasar- Bali.

Results: As 60% of hypertensive patients are non-compliant in taking medications and 40% of hypertensive patients are adherent in taking medication. Medicine consumption compliance in patients of hypertension in Prima Medika Hospital Denpasar- Bali is defined as patients' motivation for treatment related to health belief model, the level of education, family support, and medical personnel support. High motivation for treatment and recovered desires have adherence to taking medication. The level of education also greatly affects patients' knowledge about hypertension that will affect medication adherence. Moreover, family motivation influence patient adherence so that family support is indispensable.

Conclusion: The findings carrying an expectation to involve family's role to improve medicine consumption compliance in patients of hypertension, as well as, the role of health workers in providing health education to the community about hypertension and its complications. Medication adherence in hypertensive patients is one of the efforts to improve the cure rate of patients with hypertension, or may reduce the risk of complications.

Keywords: Hypertension, medication adherence, complications, Prima Medika Hospital

ICASH-P22

HEALTH PROMOTION TOWARDS WOMEN'S KNOWLEDGE AND PARTICIPATION IN EARLY DETECTION OF BREAST CANCER

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ABSTRACT

Background: Breast Cancer is a health problem that occurs in Developing Countries. Estimation of breast cancer occurrences in Developing Countries according to the UICC (Union Internationale Contre Le Cancer) could reach up to 10 million cases in 2020 with 16 new cases every year. Based on breast tissue examination recorded in 2005 for breast cancer, it was found that more than 20 thousand of new cases occurred annually in Indonesia with evidence of 50% cases were discovered in an advanced stage. It happens due to lack of public knowledge about breast cancer, then early detection such as screening was rarely being done. One of the ways to increase awareness and disseminate the importance of screening is by delivering Health Promotion.

Aims: To investigate the effectiveness of health promotion towards woman's knowledge about breast cancer to decrease new cases in advanced stage.

Methods: It was an analytic study employed an in-depth interview to 90 women from 3 communities, ranged from 20-40 years old, who join the Health Promotion in Breast Cancer from January until December 2016. We used pre-test at the first time, and after promotion, and measured the result after the test. In this present study, the population was sampled from 3 communities (Banjar). The data was analyzed by T-test (paired) using SPSS 17th Version.

Results: From data obtained at the first Banjar, the mean score for pretest was 46.0 ± 1 , and post-test was 78.0 ± 7.6 from 30 participants. The difference from pretest and posttest was statistically significant ($p < 0.05$). From second Banjar, the mean score for pretest was 38.0 ± 11.8 , and post-test was 64.0 ± 10.3 from 30 participants. The difference from pretest and posttest is statistically significant ($p < 0.05$). From third Banjar, the mean score for pretest was 46.0 ± 10.3 , and post-test was 80.0 ± 6.4 from 30 participants. The difference from pretest and posttest was statistically significant ($p < 0.05$).

Conclusion: The data supports that Health Promotion from the first, second and third Banjar increased woman's knowledge about breast cancer and participation in early detection.

Keywords: Breast carcinoma, health promotion, early detection.

ICASH-P23

FACTORS AFFECTING MOTHERS CHOOSING BIRTH ATTENDANTS IN THE WORKING AREA OF PUBLIC HEALTH CENTERS MANGGAR BARU, BALIKPAPAN CITY

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ABSTRACT

Background: Although the maternal mortality rate (MMR) has been drastically reduced from 390 per 100,000 live births in 1991 to 228 per 100,000 live births in 2007, still required a hard effort in order to achieve the target of reducing the MMR in 2015 is 102 per 100,000 live births. One of the efforts needed to prevent maternal deaths is increasing the number of births attended by health personnel.

Aims: The aims of this study was to determine the factors that influence mothers choosing birth attendants in the working area of Public Health Centers Manggar Baru Balikpapan.

Methods: This study uses descriptive analytical cross-sectional study design. Population in this study were mothers who gave birth in January–December 2014 at PHC Manggar Baru Balikpapan. Purposive sampling using a sample of 180 respondents. The data analysis using univariate analysis with frequency distribution and bivariate analysis with the chi-square statistic test at significance level α of 0.05.

Results: The results showed the P value (0.017) $< \alpha$ (0.05) there was influence between of maternal age with birth attendants selections, P value (0.005) $< \alpha$ (0.05) there was significant relationship between socio-economic with the selection of skilled attendants, P value (0.000) $< \alpha$ (0.05) there was the influence of culture with the selection of skilled attendants, P value (0.024) $< \alpha$ (0.05) there was influence between access to information with the selection of birth attendants, P value (0.620) $> \alpha$ (0.05) no effect between the distance of residence mothers with birth attendants selection.

Conclusion: It can be concluded that the most influential factor in the selection of birth attendants in this study were socioeconomic. Improvement of knowledge is needed to increase the number of skill attended delivery.

Key words: Factors affecting, mother choosing, birth attendants

ICASH-P24

ANALYSIS OF FACTORS THAT INFLUENCE THE INACCURACY OF SURVEILLANCE DATA AT BALI ROYAL HOSPITAL DENPASAR

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ABSTRACT

Background: Imprecision of time, incompleteness and inaccuracy of reports from health providers to the District Health office and also from the District Health office to the Ministry of Health, may cause the differences in recording between the District Health Office and the Ministry of Health and misunderstanding about the spread of disease in the community. This condition leads to inappropriate actions and strategies implemented by the Government. The inaccuracy of surveillance data was found on CNR TB data, Ministry of Health data record in 2014 was 38 per 100.000 population for Bali, while based on province data it was 74 per 100.000 population. Studies indicated that manpower, knowledge, workload, leadership and hospital information system may affect the quality of surveillance data.

Aims: To determine and analyze the contribution factors of leadership, strategic planning, customer focus, data, information and management knowledge, human resources and management operation to the quality of surveillance data in Bali Royal Hospital.

Method: The qualitative analytic was used by conducting an in-depth interview toward 10 medical records officers and IT officers at Bali Royal Hospital Denpasar.

Results: The study found that the factors contribute to the incompleteness, imprecision, and inaccuracy of the hospital report were the lack of optimal use of IT system, the high workload of coder, lack of standard policy in the use of electronic medical records at the hospital and the quality of online data from Hospital, District Health Office, the Provincial Health office and the Ministry of Health.

Conclusion: All the factors were interrelated in impacting delays, imprecision and inaccuracies report of surveillance data to the Health Offices and the Ministry of Health, which could lead to improper disease mapping and improper actions and strategic to overcome the disease problem. It needs a commitment from hospital managers to allocate budget for the electronic medical record programs in the 2017 plan.

Keywords: Surveillance Data, Hospital Management Information System, Report, Inaccuracy

ICASH-P25

**TOTAL QUALITY MANAGEMENT (TQM) AND SIX SIGMA
CONCEPT TO SERVICE QUALITY PERCEPTIONS OF CHARITAS
HOSPITAL, PALEMBANG: A MALCOLM BALDRIGE ASSESMENT**

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ABSTRACT

Background: Hospitals are expected to provide better health services. Excellent service and quality have an impact on customer satisfaction and loyalty. One measure of quality achievement is customer loyalty. Customer loyalty in Charitas Hospital had decline from 2013 to 2015 by 80%. It was influenced by the decrease of quality indicators such as BOR, LOS, TOI, GDR, NDR, in the last three. TQM and Six Sigma respectively conceptually and empirically proven as a quality improvement method to improve organizational performance.

Aims: This is to know the service quality perceptions of Charitas Hospital through the Malcolm Baldrige Criteria with approach from the integration of TQM and Six Sigma

Method: The population is all employees of Charitas Hospital. Quantitative research applied a cluster sampling technique, with a total sample of 359 respondents, while the qualitative research employed a purposive sampling method, with a total sample of 5 respondents. Informants of qualitative research were derived from Top Management. Quantitative analysis was performed using univariate, bivariate, and multivariate (logistic regressive). Qualitative analysis was performed using triangulation analysis.

Results : Three of the seven variables have an average value > total average values of all variables ($> \bar{X} : 3$) including the Focus on Customer / Patient ($\bar{x} : 3.156$); Hospital Performance ($\bar{x} : 3.11$); and Focus On Process ($\bar{x} : 3.020$). Variables that have an average value < total average values of all variables ($< \bar{X} : 3$) such as Leadership ($\bar{x} : 2.846$); Strategic Planning ($\bar{x} : 2.919$); Measurement, analysis and knowledge management ($\bar{x} : 2.969$); and Human Resource Management ($\bar{x} : 2.989$). An In-depth interview confirms that the biggest role in improving the quality of services at Charitas Hospital is leadership, however, also the weakest category. It was confirmed through depth interview that the weakness of leadership role was in controlling and monitoring as well as lacking in engaging employees to achieve organizational goals.

Conclusions : Hospitals are expected to implement the integration of TQM and Six Sigma to achieve excellent performance through: leadership and strategic planning; focus on patient/customer; focus on human resource; focus on systems and processes; continuous quality efforts emphasize measurement; analysis and knowledge management; and developing information systems. The seven criteria must be viewed and managed as a system by integrating the components to achieve the business excellence performance.

Keywords : Hospital Quality, TQM, Six SIGMA, Malcolm Baldrige

ICASH-P26

THE CAUSES OF LAWSUITS AGAINST HOSPITALS AND MEDICAL PROFESSION AT RISA SENTRA MEDIKA HOSPITAL

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ABSTRACT

Background: *The emergence of lawsuits for the hospital and medical profession, raises concerns for health personnel in carrying out their obligations. The rise of this was due to the patients' dissatisfaction in obtaining health services.*

Aims: *Thus, the authors want to analyze in detail the causes of the patient's lawsuits against the hospital and medical profession at Risa Sentra Medika Hospital*

Methods: *The method used in this study was a qualitative research with in-depth interviews to 7 informants. There were 3 persons from hospital management (the Hospital Director, Manager Training, Customer Care staff) and the other 4 persons included patient and family (ages 25-40). Interviews were conducted during December 2016.*

Results: *From the results, we reveal the causes of lawsuits against the medical profession and hospital was the insufficient communication between physician and hospital officials (43%), unsatisfied medical procedure (29%), and unresponsive of handling the complaints (1%). In providing the opportunity for third parties to provoke the patient to lay claim to hospitals, 1% of all hospitals and doctors are not transparent particularly in providing medical information*

Conclusion: *Responding to proliferate lawsuits by patients against doctors and hospital professions, doctors and hospital are expected to present a good relationship. The patients should be treated as a family, and a policy to Standard Operational Procedure for handling complaints is necessary. Moreover, the findings suggest the hospital to start getting ready for improving the quality of care and focus on patient safety. Last, all procedures should follow standard (Standard Operational Procedure).*

Keywords: *analysis, litigation, patients, the medical profession, hospitals*

ICASH-P27

COMPARISON OF THE REAL HOSPITAL RATE AND INDONESIA CASE-BASED GROUPS (INA-CBGS) RATE IN ARI CANTI HOSPITAL GIANYAR BALI CASE STUDY OF DENGUE HEMORRHAGIC FEVER (DHF) PERIOD JUNE 2015- JUNE 2016

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ABSTRACT

Background: In Indonesia, Universal Health Coverage (UHC) has been implemented since 1 January 2014, with independent institutions as organizers and payment of claims using Indonesia Case-Based Groups (INA-CBGS) system, including the epidemic diseases such as Dengue Hemorrhagic Fever (DHF). In Ari Canti Hospital Gianyar Bali, cases of Dengue fever is a non-surgical inpatient case most period of 2015 - early 2016. It becomes interesting to compare the real hospital rate and Indonesia Case-Based Groups (INA-CBGS) rate.

Aims: This is to compare the real hospitals rate and INA-CBGS rates as well as the components in making up the rate.

Method: This research combines quantitative and qualitative method with cross sectional study design. Analyzing quantitatively, secondary data was hospital rate, obtained from medical billing, of 104 inpatient with Dengue Hemorrhagic Fever (DHF) and hospitalized in the third class periode June 2015 until June 2016 in Ari Canti Hospital Gianyar Bali. The data was then compared with the Indonesia Case-Based Groups (INA-CBGS) rates in the subjected hospital. Qualitative research was then conducted as a sequential approach after the quantitative to elaborate further the issues of rate difference. Informants were selected using snowballing method to fulfill appropriate and adequacy until all answer were satisfiably collected. Data were triangulated by sources, by methods and by data, to gain it's validity and reliability. Collected data were transcribed and content analysis methode was used to gather themes and sub-themes related to research questions.

Results: This study revealed that the price charged to inpatient hospitalized with Dengue Hemorrhagic Fever (DHF) with Indonesia Case-Based Groups (INA-CBGS) systems was significantly different than the inpatients without the schemes ($p < 0,005$). From qualitative analysis noted that the difference was affected by the lack of standardization of services and hospital financing.

Conclusion: The finding is carrying an expectation that development of hospital with standardized service and hospital financing will be able to provide many benefits and efficiencies for patients, healthcare providers and the other funders.

Keywords: Indonesia Case-Based Groups (INA-CBGS), rate, hospitals, analyze, dengue fever, Ari Canti Hospital Gianyar Bali.

ICASH-P28

**STANDARD OPERATING PROCEDURES (SOPs) COMPLIANCE FOR
INSTALLING VENOUS DRIP AMONG NURSES AT EMERGENCY
UNIT OF DHARMA YADNYA HOSPITAL DENPASAR BALI**

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ABSTRACT

Background: Preliminary study at Dharma Yadnya Hospital from September to October 2016, phlebitis incidence data was reached 7% (263), and from observations conducted in November 2016, from 10 nurses in Emergency Unit, six nurses were found did not know about intravenous drip installation SOPs, while the rest of them know but did not executing it correctly.

Aims: This present research is to know about the nurse's compliance level to intravenous drip installation SOPs in the emergency unit, at Dharma Yadnya Hospital

Method: It was a descriptive-quantitative research with cross sectional approach model, implemented at Emergency Unit of Dharma Yadnya Hospital from 5 to 13 December 2016. The respondents involved in this study were 16 nurses who duty in the Emergency Unit and handled 6 patients each without informed in advance. The patients were chosen through consecutive sampling method. The descriptive analysis was employed to find out the level of SOP compliance.

Results: The results showed that the level of compliance of intravenous drip installation SOPs in its preparation phase was high (66.95%). Working procedure phase was also high (89.20%). Nurses at age ranged more than 30 years showed the highest compliance level (84.55%) compared to the age ranged of 20-25 years and 26-30 years. Female nurses followed the compliance higher (83.31%) than in men. Moreover, the level of compliance in nurses with permanent employment status was relatively higher (83.66%) than non-permanent employed nurses.

Conclusions: The compliance level of standard operating procedures for installing venous drip at Emergency Unit of Dharma Yadnya Hospital Denpasar Bali needs to be improved. There was bias of complying the SOPs in the nurses. The better preparation, adequate facilities, and skills improvement should be provided at the intravenous drip installation.

Keywords: Level of compliance, intravenous drip installation, standard operating procedure, nurses, Dharma Yadnya Hospital Denpasar Bali.

ICASH-P29

HEALTH PROFESSIONAL ETHICS IN IMPROVING THE QUALITY OF HOSPITAL SERVICES

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ABSTRACT

Background: Professional ethics is a term that encompasses the organizational and personal standards of behavior a professional individual that are expected to possess. Quality of service is an attitude or way of employees in serving customers satisfactorily thus employees must have certain skills, such as looking nice and tidy, being friendly, passionate for their job and dependable attitude, mastering their job which is related to their part or department or the other part, good communication skill, have the ability to handle customer complaints in a professional manner.

Aims: This study was to analyze the health professional ethic in improving the quality of hospital services.

Methods: The study was a descriptive analytic study with a quantitative approach, prospective and cross-sectional design with non-probability (accidental) sampling technique.

Results: There were 71 respondents participate in this study, with predominance male (52.1%) and women (47.9%). The education levels of respondents were mostly primary school (26.7%) and the least were Diploma (8.5%). Based on the occupation, most of the participants were self-employed workers (43.6%). The mean percentage obtained to determine the quality of health care at Sanglah Hospital in Denpasar is 85.16%. That percentage was within the range of good quality in health care category (72,14%-100%). This indicated the quality of health care services in Sanglah Hospital as good quality services based on a range of health care quality categories.

Conclusion: The average presentation to determine the quality of health services at Sanglah Hospital in Denpasar was 85.16%. These percentages were within the range of good quality services

Keywords: good quality, professional ethics, quality of health care hospital

ICASH-P30

THE ASSOCIATION BETWEEN DOCUMENTATION OF MEDICAL RECORD AND INFORMED CONSENT, AND PATIENT'S SATISFACTION IN HOSPITAL HEALTH CARE SERVICE

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ABSTRACT

Background: Medical records were files that contained notes and documents on patient's identity, examination results, treatment, actions and services given by health care provider toward patients. It was very important especially in confronting patient's complaints toward health care services and law sue from people using medical services. Informed consent was a process of communication between doctors and patients about the acknowledgment of medical actions that will be performed on patients.

Aims: This study was to analyze whether the medical records documentation and completion of informed consent would improve patient's satisfaction in hospital health care services.

Methods: A prospective cross-sectional study using primary data on satisfaction questionnaire and secondary data on informed consent and completion of medical records. Sampling was done consecutively and data was collected using questionnaires and document study.

Results: There were 54 respondents who filled the questionnaires, among them 74.1 % were satisfied with the health care services and 25.9 % were not satisfied. The completions of medical record were 72.2 % as completed medical record category. As for the informed consent, 75.9 % were informed consent exist and complete, 20.4% informed consent exist but incomplete, and 3.7% were informed consent did not exist in the medical report. There was a significant association between completion of medical records and patient's satisfaction with hospital health care services ($p < 0.05$). There were also a significant association between the presence and completion of informed consent, and patient satisfaction with hospital services ($p < 0.05$).

Conclusion: Good medical record supported the achievement of good administration and reflected the quality of health services provided. A good, comprehensive and communicative explanation to patients would improve patient's satisfaction toward health services.

Keywords: informed consent, medical record, patient satisfaction

ICASH-P31

**ANALYSIS OF QUALITY SERVICE AND PATIENT'S SATISFACTION
ON HOSPITAL NUTRITION SERVICE THROUGH VISUAL
COMSTOCK METHOD**

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ABSTRACT

Background: *Quality of nutritional service includes stocking and storage of raw materials, distribution, storage and serving foods. Leftover was determined by gender, ages, type of rooms, length of stay, patient's perception on serving and taste which related to interaction between nutritionist and patient. The problem includes the limited nutrition staff with high workload related to menu cycle, and also evaluation, improvement on serving, recipe standards, and cost analysis. In another way, the quantity of leftover can be evaluated by a quick method called visual Comstock form.*

Aims: *To evaluate patient satisfaction on hospital nutritional service and identify the related factors.*

Methods: *Qualitative research using visual Comstock form followed by in-depth interview in the patients and the nutrition staffs to understand satisfaction problem and propose alternative solutions. The sample were 100 hospitalized patient in November to December 2016 at Parama Sidhi General Hospital focused on the quantity of dietary leftover. The interview were focused in acceptance of the taste, menu variation, visual presentation of the food, punctuality of serving time and the staff's service performance. The in-depth interview to the nutrition staff focused on the factors that could hamper their performance, including the quantity of staffs related to their work load and the necessity for professional up date.*

Result: *Based on data visual Comstock and followed with in-depth interview with patient's and nutrition staff, it can be found that only 50 of 100 patients satisfied to the provided foods, and 25% of the total leave vegetables on their dishes. This present study assessed that serving mechanism, taste, visual appearance, and menu variation determine the leftover.*

Conclusion: *Leftover rate is higher than National Standard (> 20%). To improve, we suggest improvement in menu variation, food taste and serving. To increase the patients' satisfaction to food, the managerial team of the hospitals provides regulatory and financial support.*

Keywords: *Leftover, visual Comstock method, patient's satisfaction, hospital nutrition services.*

ICASH-P32

THE LEVEL OF BINTANG GENERAL HOSPITAL KLUNGKUNG-BALI EMPLOYEES KNOWLEDGE ABOUT HEALTH PROMOTING HOSPITAL BASED ON MALCOLM BALDRIGE NATIONAL QUALITY PRINCIPLE

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ABSTRACT

Background: As it was outlined in the charter of Ottawa, health promotion is a process of community empowerment to improve their health. To this regard, hospitals have an important role in it. As a health service provider, Bintang General Hospital has to run the Health Promoting Hospital program. A constant evaluation of the program is necessary for the implementation of the Health Promoting Hospital. According to Malcolm Baldrige, the understanding of human resources is part of the measurement, analysis, and knowledge management. Human resources who have a good understanding of Health Promoting Hospital are needed to run the health service provider.

Aims: The purpose of this research was to assess the level of Bintang Hospital Employees knowledge about Health Promoting Hospital based on Malcolm Baldrige principle.

Method: This study was a quantitative study using cross-sectional approach, where 20 samples were chosen using simple random sampling methods. The 20 employees of Bintang hospital Klungkung-Bali were given questionnaire as instruments to determine their level of knowledge in regards to Health Promoting Hospital. The questionnaire consists of 28 questions.

Result: Statistical analysis showed that 15 employees (75 %) agreed that all employees have to be a part of the program. 19 employees (95 %) believed that the program must be implemented throughout the hospital. In general, the understanding of the program in the hospital has been good enough.

Conclusion: Based on the research, it can be concluded that almost all employees of Bintang understand Health Promoting Hospital. There should be a regular evaluation and training about Health Promoting Hospital in Bintang.

Keywords: Health Promoting Hospital, HPH, Cross-Sectional

ICASH-P33

EFFECTIVENESS OF TYPE II DIABETES MELLITUS CONTROL PROGRAMS (DIAMED CLUB) BALIMED HOSPITAL ON BLOOD GLUCOSE LEVELS

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ABSTRACT

Background: Among ten major causes of death in the world, two of which are non-communicable diseases including Diabetes Mellitus which been increasing cases every year. Diabetes Mellitus Type II is a multifactorial disease with genetic and environmental components which contribute equally against the onset of the disease process. Factors associated with Type II Diabetes Mellitus include age, family history, being overweight, lack of physical activity and unhealthy diet. The main thing required to control Diabetes Mellitus is by applying guideline of 4 pillars of controlling Diabetes Mellitus which consisted of education, eating regulation, exercise and medical adherence.

Aims: It is to explore the effectiveness of Diabetes Mellitus Type II control programs (Diamed Club) on blood glucose levels in Balimed Hospital.

Method: This was an observative cross sectional study to measure blood glucose level data of the participants before and after joining Diamed Club program. The population of this study was 30 Diamed Club' members with at least joining the programs for 3 times. The sampling technique was a simple random sampling. Wilcoxon test was tested for data analysis.

Result: The Wilcoxon test shows that the Diabetes Mellitus Type II control program in Balimed hospital was effective in controlling blood glucose level among Diamed Club participants.

Conclusion: The study shows the importance of Diabetes Mellitus Type II control program which consisted of education, eating regulation, exercise and medical adherence to control patient's blood glucose level. It is also requiring the role of community health centers, hospitals, health authorities, and the central government in carrying out the control of Diabetes Mellitus through prevention and control of risk factors, discovery and appropriate management of the cases, the epidemiological surveillance and IEC (Information, Education and Communication) in Diabetes Mellitus.

Keywords: Diabetes mellitus control program, Blood glucose level

ICASH-P34

**DOCTOR-PATIENT COMMUNICATION TO THE OUTPATIENT'S
SATISFACTION AT FAMILI HUSADA HOSPITAL**

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ABSTRACT

Background: Communication between doctor and patient succeed the therapeutic process in a hospital. A good and effective communication is important in health care in patient-oriented. Communication does not only focus on providing information about symptoms, causes, and possible ways of treatment of disease, but also on emotional needs of patients. Simple changes in communication style by listening to patient views, discussing issues and encouraging more patients can improve patient satisfaction in the doctor – patient communication, which would increase outpatient's satisfaction to medical services overall.

Aims: This study aimed to determine the relationship of doctor communication - patient to patient satisfaction in the polyclinic Famili Husada Hospital.

Methods: A cross-sectional study was conducted on convenience sample in early December 2016 with a total sample of 275 outpatient polyclinic at Famili Husada Hospital using simple random sampling. Specific satisfaction was measured by Linkert Scale, with three domains as exchanging information (EI), socio-emotional behaviour (SB), and communication style (CS). Data was processed and analysed using the computer program SPSS 22 with chi square test.

Result: The findings show that 92.7% of 275 respondents were felt satisfy with doctor - patient communications. The analyses showed that waiting time was short, noted less than 30 minutes (80.7%). There was a significant relationship (p value = 0.009, CI = 95 %) between doctor communications - patient to patient satisfaction in outpatient polyclinic at Famili Husada Hospital.

Conclusion: The findings shows that the patient satisfaction can be influenced by relationship communication between doctor and patient. Basic communication skills training for doctor and others medical employee should be established and continuous to increase patient satisfaction.

Keywords: Communication, doctor-patient relationship, patient satisfaction, Famili Husada Hospital

ICASH-P35

**MEDICAL COMPLIANCE IN APPLYING HAND HYGIENE IN
PATIENT WARDS AT PRIMA MEDIKA HOSPITAL, DENPASAR,
BALI**

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ABSTRACT

Background: Nosocomial infection is a major problem facing the hospital, not only lead to socioeconomic losses, but also resulted in longer patient hospitalized leading to additional cost for the hospital. Hand hygiene practices is a simple and effective way to prevent nosocomial infections. However, the practices were still questionable low among hospital staff.

Aims: This is to explore medical compliance in applying hand hygiene in patient wards in Prima Medika Hospital, Denpasar-Bali.

Methods: A consensus was employed with a qualitative approach to elaborate problems related to hand hygiene practices. Hand Hygiene practices were applied to eight of nurses and doctors who have been selected using simple random sampling, consider to Indonesia Hospital Accreditation Commissions' Instrument. The participants were selected using a snowball method to fulfill appropriate and adequacy until the action plan were satisfied. Data were triangulated by sources, by methods, and by data, to gain its validity and reliability. Collected data was transcribed, and the content was analyzed to gather themes and sub-themes related to Baldrige frame.

Results: Compliance to hand hygiene was related to knowledge following the correct procedures. The hand hygiene practices were influenced by the facility availability, the awareness about the importance of hand hygiene and its consequences, as well as the availability of sufficient staffs during shifts and workloads. The results found that the participants doesn't consider level of education and working life in their hand hygiene practice Further, all informants agreed to focus on several action plans on staff training and socialization, providing facilities for hand hygiene and clear guidelines.

Conclusion: Hand hygiene practices is still not fully complied by staffs and it is related to understanding of practices, facilities needed to the practices and awareness to the guidelines. Moreover the role of leader in the hospital is a must to support the action plan. The findings lift to an action plan development using Baldrige framework in improving hand hygiene practices.

Keywords: Compliance, Hand Hygiene, Medical Staff.

ICASH-P37

PATIENTS' PREFERENCE TO OBSTETRIC-GYNAECOLOGY SERVICES AT BINTANG GENERAL HOSPITAL, KLUNGKUNG, BALI IN 2016

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ABSTRACT

Background: Hospital is more becoming economic entity which has to provide best quality with cost consideration. Bintang General Hospital is a public health services since 2005. Continuity of hospital health services is determined by the income earned from inpatients. A peculiar phenomenon was observed in patients who have high preference in obstetrics and gynecology care at Bintang General Hospital.

Aims: This present study is to analysis patient's preference at Bintang Hospital Klungkung-Bali.

Methods: A cross sectional with 30 samples was employed using simple random sampling methods. The respondents were patients in obstetrics and gynecology inpatient at the Bintang Hospital. A 28-questions questionnaire was filled by respondents.

Results: It involved 1 respondent aged less than 20 years (3.3%), 22 aged 20-35 years (73.4%), and 7 aged more than 35 years (23.3 %). One did not complete primary school (3.3%), 2 participants have completed primary school (6.7%), 4 at junior high school graduation (13.3%), 16 graduated from high school (53.4%), and 7 were postgraduate (23.3%). All respondents (100%) were satisfied with the performance, presentation, and profesionalism of the Doctor at Bintang Hospital, while 16 respondents (53,3%) said that they are satisfied with the nurses service at Bintang Hospital. There were 15 respondents (50%) disapointed in the administrative process, and 26 patients (86,7%) implied that the hospital is lacking in medical support equipment.

Conclusion: From the results above, we can conclude that those who come to Bintang Hospital will consider to the quality of health provider before decided to use the health service. Impatients admitted that the hospital's staffs were good, friendly, and professional in caring the patients. Although many improvements at administrative and facilities sector are still needed, that does not reduce the interest of patients for hospitalization when they get good service from doctors and nurses. Those factors should be studied and applied in order to maintain the high quality of service and future development of Bintang Hospital Klungkung-Bali, especially to achieve a better accreditation grade.

Keyword: Factor, patient's preferences, inpatient, obstetrics and gynaecology service, Bintang Hospital Klungkung-Bali.

ICASH-P38

**PATIENTS SATISFACTION LEVEL IN HOSPITAL ROOM SERVICE
IN BINTANG GENERAL HOSPITAL, KLUNGKUNG, BALI**

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ABSTRACT

Background: *Quality health services are expected to meet the needs of patients without any delay treatment that may determine level of patients' satisfaction. Quality health services include reliability, assurance, tangibles, empathy, and responsiveness. Lack of services related to those five pillars determines the low quality of human resources, education and training as well as inappropriate recruitment systems. This happens because the hospital management implementation was poor in human resource planning.*

Aims: *The aim of this study is to know the causes of patient satisfaction in Bintang General Hospital, Klungkung, Bali.*

Methods: *It was a qualitative method with qualitative data analysis in the form of interviews with respondents. A total of 20 respondents, selected by accidental sampling method, who hospitalized in the hospital, and graduated at least from high school, was interviewed.*

Results: *Interviews to the respondents who are in-patients at the Bintang General Hospital, Klungkung, Bali, show that a concern to hospital facilities, communications to patients, speed of service to patients, medical personnel reliability and empathy to patients*

Conclusion: *Hospital patient satisfaction rate is highly depended on quality health services. We recommend that the subjected hospital should place attention the reliability, assurance, tangibles, empathy, and responsiveness to satisfy all patients.*

Keywords: *Patient satisfaction, quality health services, Bintang General Hospital*

ICASH-P39

**THE EFFECT OF KNOWLEDGE, ATTITUDES AND
PERFORMANCES TOWARDS NURSE TO PATIENT SAFETY
MANAGEMENT IN MATARAM CITY HOSPITAL WEST NUSA
TENGGARA, INDONESIA**

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ABSTRACT

Background: Patient safety becomes important in global health care services. Nurses have a very critical role to the issue. However, unfortunately, In Mataram City, West Nusa Tenggara Barat, Indonesia, they have little information of their capacity to understand and implement the safety standards in hospital. Yet there are references in international world, however, still needs a systematic review on safety and its causes related to the hospital information system, quality improvement process, staff development and leadership. It is expected to be the first step to establish strategic activities to develop safety culture among nurses.

Aims: The purpose of this study is to determine the extent of the knowledge and attitude of nurses to patient safety in hospital management.

Methods: A narrative review of literature followed with consensus made among nursing staff to develop safety culture. The informants of the research were Mataram City Hospital's senior staff in nursing, and others journal that have association to hospital patient safety incident and medical error. The literatures used by in this study were obtained from 2010 – 2015 Report, and also through online library of University of Indonesia. The researcher selected the journals according to inclusive criteria and exclusive criteria in the critical appraisal process. The initial search obtained as many as 718 research articles that match the keyword. There are 715 articles discarded after the researcher reviewed the titles and abstracts, and it takes only three literatures for this systematic study.

Results: Three literatures were chosen based on subject related to medication errors and factors related to it. The results highlight a need to inputs in order to develop safety roadmap in the hospital. For improvement, the management should consider training for staff, improving the procedures, and providing remuneration related to safety culture to the priorities.

Conclusion: Patient safety program is proposed by this study to the hospital management for considering nurses' knowledge and attitude for optimizing nurse performance in patient safety.

Keywords: Patient safety, nurses, knowledge, attitude, medical error, Mataram City Hospital.

ICASH-P41

**POLICY IMPLEMENTATION OF AREA WITHOUT CIGARETTES
AT RSUD DR ABDUL RIVAI, BERAU REGENCY, EAST
KALIMANTAN**

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ABSTRACT

Background: Smoking cigarettes is not only harmful for active smokers but also dangerous for others. Local governments need to take an action for smoke exposure by establishing the Area without Cigarettes in order for implementation of Article 155 paragraph (2) of Law Number 36 in 2009 about Health that obligates the local government to realize the area without cigarettes. To apply this regulation, smoking in offices, health services, sports venues and education, children playground and public transport will be penalized.

Aims: This is to analyse the policy implementation of area without cigarettes (KTR) in Dr. Abdul Rivai Hospital, Berau Regency, East Kalimantan

Methods: This research used both quantitative and qualitative research methods (mixed- methods) to approach the problem in descriptive analysis. A questionnaire to acquire quantitative data was disseminated to 150 respondents consisted of hospital employees and visitors with different backgrounds. The participants were randomly selected with a purposive sampling method. The qualitative data was obtained by an in-depth interview and document tracking. Data was analysed by content analysis based on triangulation methods and data.

Results: Majority (67%) did not know about this regulation, but recognized the presence of area without cigarettes (KTR). About 92 percent of the respondents agreed if Dr. Abdul Rivai Hospital becomes the area without cigarettes (KTR) and 122 respondents (81%) realised that Dr. Abdul Rivai Hospital is subjected to this regulation. Since KTR policy is not equipped with standard operational procedure, the promotional activities to enforce this policy implementation becomes ineffective. It is suggested to form the committees who focus on implementation, monitor and evaluation of this policy.

Conclusion: The research indicates majority did not recognize area without cigarettes in Dr. Abdul Rivai Hospital was regulated by local government. To develop the community participation and awareness regarding this policy, it is suggested that supervising and monitoring from government and hospital management should be increased.

Keywords: Hospital policy implementation, Area without cigarettes, East Kalimantan.

ICASH-P42

COMPLIANCE TO THE USE OF PROTECTIVE PERSONAL EQUIPMENT (PPE) AMONG LABORATORY OFFICERS IN PURI BUNDA HOSPITAL, DENPASAR, BALI

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ABSTRACT

Background: Standardized procedures are needed in the competitive hospital globally, including protective personal equipment (PPE) compliance on laboratory officers. The compliance reduces accident and nosocomial infections. Studies shown low compliance is related to staff motivation, lack of knowledge, the limited availability of PPE and funds, uncomfortable using PPE and weak supervision.

Aims: This is to describe the compliance to the use of protective personal equipment (PPE) among laboratory officers in Puri Bunda Hospital, Denpasar, Bali, Indonesia.

Methods: A qualitative design using Baldrige framework was employed. Eight managerial staffs in Puri Bunda Hospital were chosen through snowball approach. Data were triangulated by sources, methods and data. Content analysis was applied to classify themes according to Baldrige approach.

Result: The audit report that the average percentage of compliance to PPE use was 71.49%. From interviews and observations, this present study showed that noncompliance was due to the lack of supervision from direct supervisor, inconvenience of taking off and wearing PPE as high demands of mobility in and out of the laboratory among analyst and sampling officer in care units. In addition, occupational safety and health program do not run properly.

Conclusion: The study recommends to build leadership team for supervision of PPE and to run properly the occupational safety and health program, repeatedly reminding awareness of using PPE and create a comfortable work using PPE

Keywords: Compliance, personal protective equipment (PPE), laboratory officers, Puri Bunda Hospital.

ICASH-P43

EVALUATION MANAGEMENT: MOLTEN WASTE AT DORIS SYLVANUS HOSPITAL, PALANGKARAYA, CENTRAL KALIMANTAN, INDONESIA

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ABSTRACT

Background: Hospital waste which is improperly managed could trigger the risk of occupational accidents and disease transmission from patient to workers, from patient to patient from worker to patient and from community hospital visitors. Therefore it is necessary to evaluate the molten waste management system at Doris Sylvanus Palangkaraya Hospitals.

Aims: To evaluate the molten waste management based on the quality standard.

Methods: The method of this research was a descriptive survey that analyzes the molten waste management. The data were obtained by data observation in August 2016 and descriptive analysis.

Results: Based on data evaluation in August 2016 regarding quality standard of inlet and outlet of molten waste management at Doris Sylvanus Hospitals, it showed that (TDS) 200, (TTS) 2000 Temperature 38° (Fe) 5, (F) 2, (Cl₂) 1 (NH₃-N) 1, (NO₂-N) 1, pH 6-9, Sulfide 0.05 0.5 Phenol, Biochemical oxygen demand (BOD₂) 50, MPN Coliform > 1600 while parameter (Cd), (Co), (Cr), (Mn), Zinc (Zn), (Cu), (Pb) were not detected and Hexavalent chromium (Cro-) could not be analyzed because the reagent runs out.

Conclusion: The molten waste management system at Doris Syvanus hospitals was not eligible. Facilities and infrastructure were still not eligible with the criteria of the quality standard thus repairing were needed, and the implementation of the guidelines must be accordance with the government regulations.

Keywords: molten waste, management

ICASH-P44

**EFFECTIVENESS EVALUATION OF TRAINING INFECTION
PREVENTION AND CONTROL IN DHARMA YADNYA GENERAL
HOSPITAL
DENPASAR BALI**

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ABSTRACT

Background: Hospital services quality was determined by the quality of nursing care. Less optimal nursing care could be caused by the negligence of nursing care, when the nurse did not notice to the Standard Implementation of the Prevention and Infection Control at the Hospital. This problem was probably related with the ineffectiveness of training of Implementation the Prevention and Infection Control therefore it needs to be evaluated on an ongoing basis. Ineffective training nurse can be resulted in nosocomial infections and antibiotic resistance in patients. According to Alvarado in Lelonowati, nosocomial infection rates continue to rise, reaching 9% or 1.4 million in hospitalized patients in the worldwide. In order to reduce the risk, it is necessary that the Implementation of Prevention and Infection Control Training to be effective.

Aims: The aim of this study was to determine the effectiveness of Prevention and Infection Control Training on Nurses who worked at Dharma Yadnya General Hospital Denpasar, Bali.

Methods: This study used mixed method by collecting quantitative data followed by interviews to obtain qualitative data. The samples of this study were 30 nurses by using accidental sampling techniques. Independent variable in this study were the evaluation of the reaction level, learning level, behavioral level, and the result level. The dependent variable was the effectiveness of Prevention and Infection Control Training. This variable was measured through structured interviews and questionnaires.

Results: Based on study result, chi-square analysis showed that the reaction level obtained p-value of 0.004, which was smaller than $\alpha = 0.05$; the learning level evaluation obtained p-value 0.019, which was smaller of $\alpha = 0.05$; behavioral level evaluation showed that p-value 1.000 which was greater than $\alpha = 0.05$; and the result level obtained p-value 0.046, which was smaller than $\alpha = 0.05$.

Conclusions: The research showed that the evaluation at the reaction level, learning level, and the result level significantly related with the effectiveness of training. However, an evaluation at the behavior level did not show any significant correlation to the effectiveness of Prevention and Infections Control Training.

Keywords: Evaluation, Training Effectiveness, Prevention and Infection Control

ICASH-P45

**HOSPITAL PATIENT SATISFACTION OF NUTRITION SERVICE IN
RS FAMILY HUSADA GIANYAR – BALI**

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ABSTRACT

Background: Hospital nutrition services are tailored to the patient's condition and the state of clinical nutrition and metabolism status. Nutritional state of the patient is very important in the healing process, otherwise the course of the disease can affect the nutritional status of patients.

Aims: The present study to explore the relationships between patients' satisfaction and hospital nutrition services at Family Husada Hospital Gianyar, Bali.

Methods: The quantitative data was collected by performing survey on patients' satisfaction at Family Husada Hospital. The population of this study was 92 inpatients, selected randomly, during the period of August – November 2016. To measure the patients' satisfaction rate, questionnaire was utilized in this study. The measurement was applied based on their background of educations, occupations, marriage status and age groups.

Results: From the study shows that the 92 inpatients of Family Husada Hospital in the period of August-November 2016 responded the patients' satisfaction survey. The quantitative data shows we noted that most of the respondents (46.8%) graduated from higher education; or based on their occupations, only 27.17% of them having jobs. The majority (65.28%) are single or have not married yet; and the productive age group was mostly women. The result showed that there is a significant relationship between the quality of the nutrition service and the respondents' satisfaction (p value = 0.010).

Conclusion: In conclusion, the study shows that the quality of the nutrition services greatly affects the inpatient's satisfactory rate of Family Husada.

Keywords: Nutrition services, patients' satisfaction, hospital.

ICASH-P46

**THE INFLUENCE OF SPIRITUAL MANAGEMENT APPROACHES TO
EMPLOYEES' PERFORMANCE (CASE STUDY: PARAMA SIDHI
GENERAL HOSPITAL, SINGARAJA, BALI)**

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ABSTRACT

Background: Parama Sidhi General Hospital is one of private hospitals which integrates spiritual approaches with professional approaches to support and improve the performance of employees in their fields. There are some trainings conducted to improve the quality of the employees' performances. However, there is no clear measurement of the effect of a spiritual approach on the employees' performance.

Aims: Therefore, this study is aimed to determine the influences of spiritual management on employees' performance in Parama Sidhi General Hospital.

Methods: This study used a quantitative approach and supported by qualitative approach. Employees' performance result was taken from HRD department. There were 100 respondents selected using random sampling and represent each department. In qualitative approach, the data were obtained by open questionnaires to patients and their families which focus on patients' satisfaction on hospital services, and to director about the idea of implementing spiritual approaches in the hospital.

Results: there is significant influence of spiritual management on employees' performance ($F=21.270$; $p < 0.01$). Besides, it can be seen that spiritual management gives 17.8% contribution for employees' performance. The findings indicate that when employees experience spirituality at work, they feel more close to their organization, experience a sense of responsibility and loyalty towards them, and feel less materially committed. Spirituality has an important role in improving the employees' performance because spirituality can enhance their well-being and quality of life also provides them a sense of purpose and meaning at work.

Conclusion: Based on the result of the research, the conclusions are as follows (1) there are correlation between spiritual management and employees' performance; (2) there is significant influence of spiritual management on employees' performance with 17.8% of contribution; (3) The patients' response is in positive category.

Keywords: Spiritual management, employees' performance, quantitative approach, qualitative approaches, Parama Sidhi General Hospital

ICASH-P48

INCIDENCE OF MEDICATION ERROR AT PURI BUNDA HOSPITAL

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ABSTRACT

Background: Medication error can cause lawsuits in hospital and can also occur due to long length of stay, and patient's disability and death. The incidence of errors is caused by no further identification of patients, attention to patients' allergy, medication reconciliation, cross check the time of drug administration. Wrong or unreadable recipe, ineffective communication between shifts and the units may cause medication errors. Incidence of medication errors may be resulted from lack of training on how to provide medicine, ineffective training and orientation for new staffs, and ineffective monitoring and evaluation of medication.

Aims: This is to identify incidence of medication error at the Puri Bunda hospital.

Methods: It was a qualitative research designed with an in-depth interview of informant in terms of Malcolm Baldrige concept. Informants from this research were 7 doctors, 10 nurses and 8 pharmacists who worked at Puri Bunda hospital.

Results: The results shows doctors, nurses and pharmacist have different perception to what causes the incidences of medication errors at Puri Bunda hospital. Doctors believed medication errors may be presented as a result of a lack of staff orientation on how distribution of drugs to patients, the absence of monitoring and evaluation related to treatment regimens, and the lack of effective communication between the units and the time shift. Nurses and pharmacists consider a lack of staff orientation on how the administration of drugs to patients, the lack of training for prescribing, the absence of monitoring and evaluation related to treatment regimens, unreadable recipe, and the lack of effective communication between the units and the time shift are the causes of medication errors.

Conclusion: In order to prevent the incidence of medication errors, the Puri Bunda Hospital should consider to standardizing the material, orientation and training related to treatment regimens and prescribing, and also monitoring and evaluation related procedure-to-administer, and improving an effective communication between units and shifts.

Keywords: Medication errors, patient safety, incidence.

ICASH-P49

**RELATIONSHIP BETWEEN THE CHARACTERISTICS OF NURSES
WITH PATIENT SAFETY IN HOSPITAL IN MATARAM**

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ABSTRACT

Background: Nurses plays an important role in the hospital function. Medical procedures have the potential risks and involve many types of drugs, types of examinations and procedures, as well as the number of patients and hospital staff were quite large, especially for nurses.

Aims: The purpose of this study was to determine the relationship between the characteristics of nurses with safety of the inpatients, and also the patient safety practices in nursing care in hospital in Mataram.

Methods: This research used a descriptive cross-sectional survey design to explore the distribution and frequency of 2 similar variables. Descriptive survey has been designed to highlight the distribution and frequency of nurse characteristics, knowledge level of patient safety and patient safety practices in nursing care in hospital X in Mataram. The data was collected by studying the bio data of the participated nurses, the interview results, the given answers in questionnaire (by nurses and inpatients), and the measurements of the direct assessment among the nurses on duty. The data collection was done by three assessment team members comprised of one researcher and two independent assessors.

Results: Results provide more accurate information to investigators about the most influenced factors in nurses' characteristics, especially nurses inpatients. The study found a correlation between the level of knowledge of nurses and practice of patient safety. It is also known that the higher the level of nurses' knowledge to patient safety, the better the practice of patient safety in nursing care. This present study also revealed a positive relationship between the level of patients' knowledge to safety and practices.

Conclusion: This study will provide information to the hospital about the factors that influence the character of nurses on the condition of hospitalized patients. Then the hospital can make a special policy to the nurses in order to improve the quality of patient care in hospitals X. One of the actions that can be done is to provide a training. Hospitals should improve knowledge and skills of nurses by hold both internal and external training about patient safety. Every nurse should educate the patient and their family about patient safety procedure

Keywords: Nurses, characteristics, knowledge, patient safety, safety practices.

ICASH-P50

THE EFFECT OF HAND WASHING PROGRAM FOR NOSOCOMIAL INFECTIONS IN MANUABA HOSPITAL

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ABSTRACT

Background: Nosocomial infections were a global problem that often occurs in both the developing and industrial countries. Nosocomial infections were infections acquired and developed when a person was in the hospital environment. Nosocomial infection is not a disease that has suffered the impact. Hand washing was one effective way to break the chain of infection transmission. Hand washing doctors and nurses have a major influence on the prevention of nosocomial infections.

Aims: The purpose of this study was to determine the relationship between adherence doctors and nurses in hand washing with the incidence of nosocomial infections in Manuaba Hospital.

Methods: This study used audit survey method, where researchers investigate the subject directly thus the hand washing performance could be monitored. This method had three main objectives, including describing the circumstances, identifying the circumstances and determining the relation of specific events. The population in this study were 70 medical personnel comprising doctors and nurses in the inpatient unit Manuaba Hospital with a total sample of 90 patients.

Results: The results showed a significant relationship between doctors' and nurses' adherence in hand-washing with nosocomial infection incidence ($p = 0.001$). The level of compliance of hand-washing performed by doctors and nurses were 77.8%. The bivariate analysis was obtained through the chi-square test showed the value of $p = 0.001$ ($p < 0.05$), which means it was significant.

Conclusion: There was a relationship between compliance of doctors and nurses wash their hands with nosocomial infection rates in Manuaba Hospital.

Keywords: hand-washing programs, nosocomial infections.

ICASH-P51

**EVALUATION OF THE IMPACT OF CLINICAL PATHWAYS ON
LENGTH OF STAY AT SANGLAH GENERAL HOSPITAL, BALI,
INDONESIA**

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ABSTRACT

Background: Income and quality of care of a hospital were affected by the high cost of care and a long hospitalization of the patient in the hospital. Clinical pathways (CPs) were believed to be instrumental in both quality improvement and cost containment.

Aims: The purpose of this study was to evaluate the CPs on the length of stay at Sanglah General Hospital, Bali.

Method: A mixed-methods approach were used. Data of 1552 medical record were drawn from hospital records. The PRECEDE-PROCEED model was used to analyze data from a semi-structured interview of purposively selected doctors to understand the behavioral of CPs implementation process and categories of factors influencing the behavior. Five established CPs were identified for common condition (nasopharyngeal carcinoma, closed fracture, dengue hemorrhagic fever, cerebral concussion, and benign prostate hypertrophy). Descriptive analysis was used to detect the LoS changes.

Results: This study found that the main objectives, standardize treatment procedures using CPs reduced length of stay, were fully achieved. Staff implementing CPs clearly encountered several benefits. Predisposing factors were identified as the hospital staff positive attitude to writing up structured, systematic records of patient data and the low attitude towards registration of the behavioral risk factors with respect to clinical data. Enabling factors were the high load of paperwork and the requirement for quantitative registration of certain factors. Reinforcing factors were the doctors' perception that CPs were complex registration data for delivering a quality of service and patient safety and that as doctors concerned on the service commitment.

Conclusion: CPs implementation reveals that length of stay can be reduced with encountered predisposing, enabling and reinforcing factors of doctors and hospital staff.

Keywords: clinical pathway, length of stay, quality of care, commitment

ICASH-P52

**IMPLEMENTATION OF MEDICAL TOURISM IN BALI ROYAL
HOSPITAL DENPASAR**

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ABSTRACT

Background: Medical tourism is a phenomenon where people are traveling to another country to obtain health care with lower prices and high-quality services or seeking specialist treatment which is not available in their country. Medical tourism involves patients from developing and industrialized countries that seeking health care, including Indonesia, specifically Bali. Furthermore, medical tourism involves traveling from developed countries to access healthcare services at a cheaper price.

Aims: The purpose of this study was to overview of implementation the medical tourism in Bali Royal Hospital Denpasar.

Methods: This study used qualitative analytic design, through in-depth interviews with 8 informants, consisting of (1) 3 key informants, including: general director, director of human resources & medical services, director of marketing and business development, (2) 2 stakeholders of Bali local governments, (3) 1 specialist, (4) 1 paramedic, and (5) 1 administration clerk who was selected by snowball sampling. All the above informants were willing to be interviewed and understand about medical tourism characteristics.

Results: Bali Royal Hospital Denpasar has been implementing medical tourism since 2013, with 4 kinds of main services, plastic surgery, in vitro fertilization, endoscopic center, and neurosurgery, with only plastic surgery and in vitro fertilization that were implemented well. Constraints of the implementation were service costs which was 20-25% more expensive than Malaysia and Thailand. Bali Royal Hospital has an ISO certification but there was no regulation concerning medical tourism in Bali. Bali Royal Hospital had collaboration with two universities, three facilitators, and some insurance companies from overseas.

Conclusion: Factors that associated with the implementation were service cost, facilitators, health service, regulations and collaboration with other parties. The recommendations were given to improve the services were improving the efficiency and quality of the services, facilities and human resources through an international joined commission, and collaboration with other parties abroad in terms of quality and quantity.

Keywords: Implementation, Factors, Medical Tourism, Bali

ICASH-P53

**PREDICTING EMERGENCY DEPARTMENT VISITS IN SANGLAH
GENERAL HOSPITAL DENPASAR BALI**

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ABSTRACT

Background: High number and frequency of patients admitted to the emergency department (ED) are accounting for a disproportionate number of hospital visits. In most cases, patients come with non-emergency conditions which consume a substantial amount of medical resources. This study aims to predict ED visits in Sanglah General Hospital based on historical data on previous visits so the hospital will be able to establish new strategies to cope with the aforementioned problem.

Aims: The purpose of this study was to predict the numbers of ED visits in Sanglah General Hospital Bali for the next year.

Methodology: This study analyzed the time series data of ED visits in the period of 6 years January 2011 – November 2016. Trend analysis and ARIMA (Autoregressive and Moving Average) method were used to forecast the visits. The predictive model was identified by Autocorrelation Function (ACF) and Partial Autocorrelation Function (PACF) values. To choose the best model, this study used Mean Absolute Percentage Error (MAPE) and Mean Absolute Deviation (MAD). The best predictive model will prove the classic assumptions of data that are white noise (identical and independent) and also have a normal distribution.

Results: The average of ED visits in the period of 6 years was 4482 per month. The chosen trend analysis model was an S - curve method while the formed ARIMA analysis result is an ARIMA (1, 0, 0) (0, 0, 1)². Prediction of the total visits in 2017 is 41.603 with the average of 3467 visits per month. The MAPE and MAD scores were 6% and 281 respectively.

Conclusion: This study predicts a decreasing trend of ED visit in 2017. The result hopefully will assist the hospital to properly allocate an appropriate amount of medical resources each month, which will increase the efficiency of resource consumption.

Keywords: prediction, emergency department, ARIMA

ICASH-P54

EFFECTIVENESS OF HEAD OF WARD'S SUPERVISION TO THE COMPLIANCE OF THE NURSES ON APPLYING HAND HYGIENE IN TREATMENT WARD AT BALI ROYAL HOSPITAL

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ABSTRACT

Background: Hand hygiene awareness among medical staffs is a basic behavior in prevention of cross infection. Hand hygiene has a great influence in prevention of nosocomial infection at hospital and the nurses have an important role in it since they interact with patient for a full 24 hour. Five moment hand hygiene is one of the indicator determined by Joint Commission International (JCI) to reach 100% of all medical staffs to do hand hygiene to patients. To reach the 100% compliance from the nurses to Five Moment Hand Hygiene it requires the role and managing function from the Head of Ward.

Aims: This study is to observe the correlation between the supervision of the head of ward to the nurses' compliance in applying hand hygiene in treatment ward at Bali Royal Hospital.

Methods: Population in this study was 68 nurses on all of the treatment ward from the 1st floor, 2nd floor, and 3rd floor. We analyzed the data by chi-square test. The instruments used in this study were questionnaire and observation's sheet.

Results: Analysis result shows that 67,6 % of participants admitted the Head of Ward supervised the nurses in applying hand hygiene. The compliance number of the nurses was about 86.8%. Result shows that supervision from the head of ward effectively and significantly created a compliance of the nurse to do hand hygiene (p value = 0.038).

Conclusions: Supervision from the head of ward was effective in improving the nurse's compliance to do hand hygiene in treatment ward at Bali Royal Hospital. This result indicated that Bali Royal Hospital needs to maintain the supervision and evaluation to increase the compliance of the nurses on hand hygiene

Keywords: Effectiveness, supervision, nurses' compliance, hand hygiene.

ICASH-P55

UTILIZATION OF HIV-AIDS VOLUNTARY COUNSELING AND TESTING (VCT) CLINIC IN GENERAL HOSPITAL OF BANGLI-BALI

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ABSTRACT

Background: HIV-AIDS cases in Indonesia increase each year. The high prevalence due to low surveillance of high-risks, medicines and equipment, utilization of VCT and lack of behavioral intervention. The low utilization is closely related to education, employment, knowledge, health care access, stigmatization, discrimination, family, health workers, NGO's support and personnel skills.

Aims: To describe analytically VCT clinics access in General Hospitals of Bangli, Bali.

Methods: A mix method of quantitative was employed with qualitative approach to elaborate factors related to utilization of VCT clinics. The population was all respondents who visited the VCT clinic. The samples were taken consecutively, all with reactive result who visiting the VCT clinic from January to November 2016, who signed informed consent (n=21). Qualitative research conducted to further clarify factors related to utilization of VCT clinics. Informants were selected using snowballing method to fulfill appropriateness and adequacy until all answer collected. Data was triangulated by sources, methods and data, to gain it is validity and reliability. Collected data was transcribed and content analysis method was used to gather themes and sub-themes related to research questions.

Results: There were 84 respondents visited the clinic where 21 subjects (25%) were reactive (HIV-AIDS), mostly male, of productive age (20-49 years), junior high school education, did not have any jobs and were not married. About 71.43% have no good knowledge on HIV-AIDS and 80.95% have no good knowledge about VCT. All patients experienced social stigma (100%) and 90.48% discrimination. However, they admitted the service quality, family support, officials and NGO's support, personnel skills and access to health service are adequate.

Conclusions: The level of knowledge and utilization of VCT among the visitors was low; but experienced to negative stigma and discrimination. Comprehensive programs are required at local government to further improve utilization of VCT as a part of health care system development.

Keywords: HIV-AIDS, VCT clinic utilization, stigmatization and discrimination.

ICASH-P56

AVERAGE LENGTH OF STAY AMONG MULTI-DRUG-RESISTANT TUBERCULOSIS (MDR-TB) INPATIENT IN WEST NUSA TENGGARA GENERAL HOSPITAL

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ABSTRACT

Background: Safety, efficiency, and hospital service quality could decrease if Multi-drug-resistant tuberculosis (MDR-TB) inpatients have long average length of stay (ALOS). Long ALOS may increase treatment cost, workload, healthcare associated infections (HAIs) occurrences, and morbidity as well as mortality in the MDR TB Patients. Long ALOS was identified caused by limited number of well-trained doctors, lack of clinical pathway, frequently late availability of MDR TB drugs, slow laboratory turnaround time, patient with severe comorbidity (i.q. malnourished, HIV positive, diabetes, and drug allergies), external references not optimally executed, primary health care refused treating patient due to lack of proper training. In West Nusa Tenggara General Hospital, now, there is still lacking periodic evaluation towards MDR TB treatment.

Aims: The objective of this research is to assess the average time of treating MDR TB inpatients In West Nusa Tenggara General Hospital.

Methods: This present study employed descriptive analytic method, by reviewing MDR TB patient's medical record which hospitalized in West Nusa Tenggara General Hospital from 2015 to 2016.

Results: From 29 inpatients, 21 (72.4%) patients were male and 8 (27.6%) patients were female. The average length of stay (ALOS) was 23.14 (sd ± 15.05) days, with range from 11 to 68 days. There were 2 patients were deceased. Patients with severe comorbid and broad pulmonary abnormality were identified with ALOS of 23.45 (sd±14.96) days.

Conclusion: Overall, West Nusa Tenggara General Hospital has ALOS duration approximately about 10 days longer than the standard stay. Having comorbid and broad pulmonary abnormality increased the ALOS of MDR TB inpatients. This research could be used as reference in measuring the quality of hospital treatment.

Keywords: Average length of stay (ALOS), Multi-drug-resistant tuberculosis (MDR-TB) inpatients, medical record, West Nusa Tenggara General Hospital.

ICASH-P58

**ANALYSIS OF WASTEWATER MANAGEMENT SYSTEM IN PRIMA
MEDIKA HOSPITAL DENPASAR**

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ABSTRACT

Background: Hospital wastewater contains organic and inorganic compounds, chemicals, and harmful microorganisms which caused community and environmental health problems. The stench and polluted rivers result to lawsuits against hospitals. Preliminary observation and laboratory data showed that wastewater management system in Prima Medika Hospital Denpasar has not been optimally managed following the standards.

Aims: Purpose of this study was to analyze the wastewater management system in Prima Medika Hospital Denpasar.

Methods: This was a qualitative study. Data were collected through in-depth interviews, document's review, and direct observation. Informants were Director of Prima Medika Hospital, General Financing Director, the head and staffs of Wastewater Treatment Plant, the head of ward and the staff of training and financing department. Triangulation methods and informants were conducted to ensure validity of the data. In depth interview data was analyzed thematically.

Results: It showed that the root of the problem is the policy has not been implemented into a completed and written standard operating procedures (SOP) as well as its socialization to every ward. This was caused by ineffectively information systems lead to the absence of periodically monitoring and evaluation procedures. Other problems were in the human resources management including inappropriate employee's competency, lack of training and no implementation of performance benefits system among employees. Wastewater treatment plant's infrastructure was un-optimally functioning due to insufficient budget. There was also no concern to patients and employee's safety, characterized by the absence of using personal protective equipment such as safety helmet and goggles, masks, aprons, boots, and gloves.

Conclusion: Wastewater management system in Prima Medika Hospital had not been effectively and sufficiently implemented, both in terms of quality control, management process and focus on patients and employees. It is recommended to make efforts toward the improvement of each component of wastewater management system.

Keywords: Analysis, wastewater treatment plant, wastewater management system, hospitals

ICASH-P59

**PREDICTION OF BEDS REQUIREMENT IN 2017-2021 BASED ON
BED OCCUPANCY RATES TRENDS IN SANGLAH GENERAL
HOSPITAL BALI**

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ABSTRACT

Background: One of the things that need to be considered in hospital services management, especially inpatient care, is effective and efficient beds utilization. Sanglah General Hospital currently has 765 beds which are scattered in different rooms, but the Bed Occupancy Rates (BOR) value in 2016 is quite high about 97.40%. Beds availability should be adjusted in order to reduce BOR value in between 75-85% per year in accordance with the standard from Ministry of Health.

Aims: The purpose of this study is to find out how many beds requirement to be provided by Sanglah General Hospital in 2017-2021 to match BOR ranges value standard.

Methods: This study used the descriptive method with time series analysis and used secondary data from inpatient daily census which is obtained from Medical Record Department in Sanglah General Hospital. The variables in this research including total treatment days, total beds availability, time period, BOR value, and beds requirement prediction.

Results: To predict beds requirement in the future, we need to know how many beds availability and total treatment days each year by analyzing the data with time series estimation methods and find out the trend. Based on the research in 2012-2016, the bed's availability in Sanglah General Hospital increased from 685 beds (2012), 703 beds (2013), 720 beds (2014), 743 beds (2015), and 765 beds (2016). Total treatment days each year is increased from 211.973 (2012), 216.072 (2013), 241.007 (2014), 248.106 (2015), and 260.150 (2016).

Conclusions: There total treatment days was increased about 4.09% annually, or approximately 48.177 treatment days each year. With the increased in total treatment days, beds availability in Sanglah Hospital should be increased 2.8% annually. So that in subsequent years the bed's availability should be 786 beds (2017), 808 beds (2018), 831 beds (2019), 854 beds (2020), and 877 beds (2021).

Keywords: Prediction, BedCapacity, Bed Occupancy Rates

ICASH-P60

ANALYSIS OF FACTORS AFFECTING THE INCREASING ACCOUNT RECEIVABLE IN ARI CANTI HOSPITAL BASED ON INACBGs PAYMENT SYSTEMS IN THE ERA OF NATIONAL HEALTH INSURANCE

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ABSTRACT

Background: Policies and procedures claimed by National Health Insurance (NHI) that has to be completed by the hospital and delayed payment received by them caused increase the significant amount of hospital account receivable in the era of NHI. On the other hand, the total claims are not fully paid, depends on approval result of BPJS verification.

Objectives: This study analyzed the factors that influence increased of receivable account in Ari Canti Hospital at the National Health Insurance era

Methods: The study design was descriptive qualitative research based on the billing report data, the acceptance of the claim of the year 2016 and in-depth interview results. The results of the recording billing reports and claims payment analyzed with paired t-test. The factors that caused the difference of the claims then will be analyzed on a descriptive with in-depth interviews from respondents related to the implementation of the claims.

Results: The highest difference in the claim that resulted in an increasing amount of account receivable at Ari Canti Hospital from January until October 2016, is in August (23.29%). Delayed payment only occurred in January and April 2016. The results of paired t-test indicated that there is a significant difference between the total number of billing claims and paid ($p < 0.05$). It is found that the discrepancy between the claims with the amount paid was a factor that caused an increasing account receivable of Ari Canti Hospital. The in-depth interview found that it is caused by the incomplete data on medical records, untrained coding officers, and nonoptimal billing system.

Conclusion: An increase in account receivable at Ari Canti Hospital during the year 2016 is caused by a discrepancy between the claims billing and claim payment that influenced by the incomplete medical report, untrained coding officers and non-optimal billing system.

Keywords: Analysis, Account Receivable INA-CBG, NHI

ICASH-P61

**THE EFFECTIVENESS OF SOCIAL MEDIA IN SUPPORTING
HOSPITAL INFORMATION SYSTEM AT BALI ROYAL HOSPITAL
(BROS)**

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ABSTRACT

Background: Hospital information technology systems need to present information quickly and efficiently. The health information system is a combination of devices and procedures used to manage the information lifecycle to support the implementation of appropriate measures in the planning, implementation and monitoring of health system performance. As well as an information management across all levels of government systematically in order services to the community.

Aims: The purpose of this study is to know how effective the hospital information system implementation at Bali Royal Hospital (BROS) based on the patient's questionnaire.

Methods: This is a quantitative study using cross sectional approach, where 30 patients were chosen as the respondents using simple random sampling methods. The 30 samples were given questionnaire with 21 questions to determine the level of hospital information system effectiveness. While secondary data obtained from documentation according to research relating to hospital information system. Secondary data were also taken from reference books and journals related to the research.

Results: Now with the advent of social media, people can use it as a place to ask and share health experiences. But we must remember that there are always two sides to every situation. The emergence of the health community, forums and support groups have allowed patients from all over the world to connect with one another. Through social media are also people, both doctors and patients, can raise awareness about different health conditions or health products that can benefit others. The bottom line is how far social media goes, nothing can replace the direct physician diagnosis. Statistical analysis showed 30 respondents educational background: 3 peoples completed primary school (10%), 20 persons graduated from high school (66.7%), and 7 people are postgraduate (23.3%). 30 respondents (100%) were satisfied with the performance, presentation, and profesionalism of the hospital information system implementation at Bali Royal Hospital. Despite 15 (50%) respondents were disappointed by the administrative process, and technical support.

Conclusion: From the results above, we conclude that eventhough, social media cannot simply be used as a replacement method of "traditional" of medicine or health care, but can be used to raise awareness and create a global community that is knowledgeable and able to absorb the information that continues to grow. There is still rooms for improvement, specially in the administration and technical support process.

Keywords: Health Information Systems, Hospital Management Information Systems, Social Media.

ICASH-P63

THE RELATIONSHIP BETWEEN PERCEPTION TO QUALITY OF SERVICE WITH THE LEVEL OF INPATIENTS' SATISFACTION AT BULELENG HOSPITAL 2016

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ABSTRACT

Background: The government as one of service providers, forced to improve the quality of services to the people so that satisfaction of people served fulfilled. The level of satisfaction is quite depends on the quality of service. Patient dissatisfaction of health care services is strongly influenced by the patient's perception of the quality of service providers, so the service quality remains a problem that must be dealt with hospital management.

Aims: Aim of this study was to know quality of health services in Buleleng Hospital from the perspective of customers through health services, and barrier and factors driving the quality of services.

Methods: Customers satisfaction measurement, which was related to the service performance, was done using measurement instruments by Zeithaml, Parasuman and Berry, which was community called as SERVQUAL. The indicators were the five dimensions namely quality, reliability, responsiveness, guarantee, empathy, and display. This type of research was observational survey method with cross sectional approach. The actual population of this research was the hospitalized patients in Buleleng Hospital on December 2016 who have been treated at least 1x24 hour in Buleleng Hospital and the patient in aware condition when they are being a respondent.

Results: The service barrier factors in quality of health service are including problems in implementing the standard of health service quality, the suitability between the amount of patients and officers, and also the suitability between financial rewards and their workload. The service motivating factors in quality of health service are including the function of management as a form of internal motivation, reward system, motivation from people, and motivation from the internal costumers. Not many patients (38.81%) said that the service quality was high, but the majority (68.66%) were already satisfied. The analysis result shows that there is a relation between hospitalization service quality and satisfaction status of the patients

Conclusion: The present study concluded that patients' perception to quality of service significantly increased the level of inpatients' satisfaction at Buleleng Hospital 2016. The implication of this research was that management should decide the scope of service to maintain customer service level as part of the implementation process and the organization policy. Management should also decide the implementation plan that covered timetable, tests, and report cycle.

Keywords: Patients' perception, level of satisfaction

ICASH-P64

**STRATEGIC PLANNING FOR THE DEVELOPMENT OF MEDICAL
TOURISM SERVICES IN MATARAM DISTRICT HOSPITAL**

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ABSTRACT

Background: *Medical tourism is a new form of tourism that organized trip to the local environment beyond the individual to the maintenance, enhancement, and restoration of health by medical intervention. The benefit of it is not only medical care but also when they enjoy the trip and stay in one travel-tourist destination popular in the world. Lombok, Mataram, as one of the strategic development of tourism in Indonesia, even more after getting the title as the World's Best HALAL Destination in 2015, has a huge potential to develop health tourism.*

Aims: *To asses planning for development of medical tourism services in Mataram District Hospital (RSUD Kota Mataram) from 2017-2021.*

Methods: *This research used qualitative method to develop a strategic planning using SWOT analysis. Primary data were obtained from an in-depth interview and Focus Group Discussion (FGD) that involved Board of Directors and the management team in RSUD Kota Mataram. While interviewed also involved doctors, nurses and other health professionals, the researchers invited Chairman of the Medical Committee and the Head Installation in RSUD Kota Mataram to the FGD. Secondary data was collected from the data Indonesian Ministry of Tourism and Tourism Department of West Nusa Tenggara, as well as RSUD Kota Mataram Performance Report, included the classification of external variables and the internal variables. Data was then presented in tabular form.*

Results: *The results highlight the needs to communicate the strategic plan for the development of medical tourism in RSUD Kota Mataram for the period 2017 – 2021. External factors are an opportunity where the development of tourism in Indonesia because Nusa Tenggara Barat has strategic accessibility. The internal factors are a strength where hospital has complete medical infrastructure, integrated SIMRS, excellent services, and the hospital has been accredited. Conditions of the service according to analysis results using IE matrix is Grow and Build (Developing and Build).*

Conclusion: *This research is able to formulate strategic planning document for the development of Medical Tourism services in RSUD Kota Mataram. RSUD Kota Mataram has potential and enormous opportunities to develop medical tourism services in support of the tourism sector in Indonesia and Nusa Tenggara Barat*

Keywords: *Strategic planning, medical tourism service, RSUD Kota Mataram.*

ICASH-P65

**A SYSTEMATIC INSIGHT INTO CULTURING CONDITIONS
EFFECTS ON APOPTOSIS INDUCTION IN GS-NS0 CELL CULTURE**

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ABSTRACT

Background: Mammalian cell culture systems are widely utilised as platforms for manufacture of bio-therapeutics, ones of which are monoclonal antibodies (mAbs). Global demand for mAbs is increasingly growing given their medical applications in treatments for chronic diseases including cancers, causing necessity of improving mAbs production. Culturing conditions (i.e. temperature, nutrient feeding strategies etc.) are often online adjusted in large-scale platforms so as to ensure enhanced mAb yield; however, this is not always achievable. Variable effects of the culturing conditions on yield and cell culture performance have been reported, attesting the difficulty optimising the culturing conditions toward higher mAbs production.

Aims: This study aims to investigate the culturing condition effects on cell growth, death and mAb secretion and their interrelation. This is necessary for devising strategies where optimal culturing conditions and improved mAb production can be achieved.

Methods: In this study, apoptosis, which was previously reported as the main cause of viability loss in the platforms, as well as cell cycle progression and mAb production were simultaneously evaluated as the culturing conditions: temperature and nutrient feeding scheme, were changed.

Results: Cell cycle arrest and the corresponding relatively lower degree of apoptosis induction were observed when the culture was at 35°C. The cultures at both 35°C and 39°C showed improved mAb production, indicating the effect of temperature on proteins involving mAb synthesis. Improved mAb production was also achieved in the culture with nutrient feeding, despite no improvement in mAb productivity. There was a significant difference in apoptosis and cell cycle profiles between the cultures with and without nutrient feeding, indicating the link between cellular metabolic states and cell growth as well as cell death.

Conclusion: Our results confirm the interrelationship between cell cycle progression and apoptosis and its effects on mAb production. They can be the basis for development of strategies to control the degree of apoptosis and cell cycle progression while enhancing mAb production/productivity in the GS-NS0 cell culture.

Keywords: Monoclonal antibody, Mammalian Cell Culture, Apoptosis, Cell Cycle

ICASH-P66

**INSURANCE CLAIMS IN GENERAL HOSPITAL IN WEST NUSA
TENGGERA PROVINCES**

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ABSTRACT

Background: *Quality services in hospital can be interrupted if insurance claims is not optimal. Continuous claims influence planning process, decision making process, hospital cash flow, employee and patient satisfaction. The quality services in general hospital in West Nusa Tenggara Provinces may be influenced by incompetent human resource and lack facility support. These causes distract doctors in charge to document medical record since having different perception about diagnosis coding.*

Aims: *The purpose of this research is to identify the causes that may influences the insurance claims in general hospital West Nusa Tenggara Provinces.*

Methods: *This research employed descriptive analytic where data collection was done by in-depth interview and through questionnaire to the key source doctors and nurses in ward unit. Medical records of 2015- 2016 period were observed in this research comprised of the doctor observation to the medical record, planning and management of data claims, and also doctors and insurance's perception about diagnosis coding, and human resource's competence and their coordination with insurance.*

Results: *One hundred involved doctors and nurses agreed that there were several causes of the failure to claim insurance in general hospital West Nusa Tenggara Provinces including incomplete medical record (40%); different perception about diagnosis coding among doctor, insurance and external assessor (25%); incompetent human resource (15%); ineffective planning and data input management (10%); and ineffective coordination to the insurance provider (10%).*

Conclusion: *The findings suggest a need to standard procedure operational (SOP) development to claim the insurance. Moreover, a periodic evaluation from management to employees about discipline to complete medical record, and also the highlighted in need to regular coordination and evaluation may improve the insurance claims. This research can be useful for hospital management in general hospital West Nusa Tenggara Provinces and be used for further research.*

Keywords: *Insurance claims, general hospitals, West Nusa Tenggara Provinces, human resources, medical record, hospital planning and management.*

ICASH-P67

THE CORRELATION BETWEEN PREGNANCY EXERCISES WITH PERENNIAL LACERATION INCIDENCE AMONG PRIMIGRAVID DELIVERY MOTHER AT PAGERUYUNG HEALTH CENTRE IN INDONESIA

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ABSTRACT

Background: One of the recommended exercises for pregnant women is pregnancy exercise. The benefits of pregnancy exercise are to strengthen and maintain the elasticity of the abdominal wall muscles, ligaments, pelvic floor muscles, and inner thigh muscles. Thus the process of contraction and relaxation associated with the delivery process can be controlled. The risk for perennial laceration during delivery can be prevented by doing exercise during pregnancy as the physical preparation to face delivery process.

Aims: This is to find a correlation between pregnancy exercises with perennial laceration incidence among primigravid delivery mother at Pageruyung Health Centre, Indonesia.

Methods: This research was an analytical survey research with cross sectional approach. The population in this study was 66 primigravida mothers at delivery Pageruyung Health Centre in 2012 who do pregnancy exercise. The respondents was chosen through a simple random sampling. Chi-square test was used for data analysis

Results: The result showed that pregnancy exercise was significantly associated with perennial laceration incidence during delivery among primigravida mother in Pageruyung Health Centre (p -value < 0.001).

Conclusion:The significant relationship alarms a need to provide pregnancy exercise in health service units to lower the risk for perennial laceration during delivery.

Keywords: Pregnancy exercise, perineal laceration, primigravida

ICASH-P68

**ASSOCIATION OF PREECLAMPSIA TO SECTIO CAESAREA RISK
AT PANEMBAHAN SENOPATI BANTUL HOSPITAL, INDONESIA**

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ABSTRACT

Background: *The mortality rate of new born baby in Indonesia is still high. The causes include neonatal mortality asphyxiation (49-60%), infection (24-34%), and low born weight (15-20%). One of the triggering factors related to this is preeclampsia/eclampsia mothers that can lead to the baby's death.*

Aims: *The purpose of this study was to investigate the relationship between preeclampsia and high-risk of new born baby on caesarean section labor at Panembahan Senopati Bantul Hospital in 2014.*

Methods: *This study employed the analytical survey research with cross sectional approach. The data was gathered from the secondary data of medical records of Preeclampsia Patients with caesarean section labor at Panembahan Senopati Hospital in Bantul. Data analysis used Chi-Square test with confidence level of $P < 0.05$.*

Result: *There was a relationship between preeclampsia and asphyxia newborn baby on caesarean section labor. However, there is no relationship found between preeclampsia with icterus newborn baby on caesarean section labor.*

Conclusion: *The study suggests health practitioners to enhance the quality of antenatal services optimally and improve the health education program on preeclampsia for pregnant mothers.*

Keywords: *preeclampsia, high risk newborn baby, section caesarean*

ICASH-P69

RELATIONSHIP BETWEEN SELF-CONFIDENCE AND STAGE ANXIETY AMONG MIDWIFERY STUDENTS IN 'AISYIYAH UNIVERSITY, YOGYAKARTA

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ABSTRACT

Background: Effectivity of communication is critical in the studied process to get student's competence. An educator must have effective communication skills. One of the main inhibiting factors is speech anxiety. Anxiety when speech in public is the biggest fear among the students, where self confidence is one factor that influences speech anxiety. Self-confidence influences 44,9 % in effectivity of communication.

Aims: This is to find out the relation between self-confidence and anxiety when speech in the class among Diploma IV of midwife education students in Universitas 'Aisyiyah Yogyakarta, Indonesia.

Methods: This research method was used analytical survey method with cross-sectional time approach. We collected data of self-confidence (independent variable) and anxiety speaking in front of a class (the dependent variable) from 69 students, selected by total sampling technique. Kendall Tau test was employed to find out the relationship between the two observed variables.

Results: The result showed there was significant negative correlation between self confidence and speech anxiety (p value 0.025).

Conclusion: The finding suggest the higher student's self-confidence, the lower anxiety they have during the speech. It suggested to diploma IV of midwife education students to conduct an evaluation of the anxiety experienced by doing exercises and more often speak to the class and learn how to increase their confidence so that students can eliminate the anxiety when speaking in front of the class.

Keywords: self-confidence, speech anxiety in the class

ICASH-P70

HUSBAND'S KNOWLEDGE OF OXYTOCIN MASSAGE AND ITS ASSOCIATION TO BREASTFEEDING PRACTICE AMONG MOTHERS IN PUSKESMAS CIBEBER, CILEGON, INDONESIA

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ABSTRACT

Background: International guidelines recommend exclusive breastfeeding for the first six months based on scientific evidence about the benefits of breastfeeding for infant survival, growth, and development.

Aims: The purpose of this study is to find a relationship between husband's knowledge to oxytocin massage with their wife's breastfeeding practice.

Methods: The research design used in this research was a descriptive correlative with the entire population was 63 coupled parents with children 0-6 months in the village of Kali Timbang. The sampling technique used was convenient sampling. Husband's knowledge to oxytocin

Results: Of 31 involved husbands understand oxytocin massage, only 20 families practiced breastfeeding (33.3%). There was no relationship between husband's knowledge to oxytocin massage against breastfeeding feeding among their wife (p value = 0.104).

Conclusion: This study indicates husband's knowledge to oxytocin massage will not encourage the mother for breastfeeding practices. It is expected to health educators to to expand the outreach targets – not only the mother but the husband – to support successful breastfeeding.

Keywords: Massage oxytocin, breastfeeding, husband support breastfeeding mothers.

ICASH-P71

THE RELATION AMONG AGE, CLASS GROUP, KNOWLEDGE, EXPERIENCE WITH THE ABILITY IN FILLING PARTOGTAPH

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ABSTRACT

Background: One of the tools that can be used in controlling the progress of childbirth is partograph. As a caregiver in controlling childbirth, the midwife should be competent and capable in using partograph, therefore, midwives can detect complication in every childbirth as early as possible. Meanwhile, the use of partograph in the workplace was not as expected because partograph should be filled after finishing childbirth.

Aims: The purpose of this research was to understand the relation of the age, class group, knowledge, and experience in filling partograph, with the ability to fill partograph.

Methods: This study used analytical survey design or cross-sectional approach conducted in Akademik Kebidanan Bhinneka of Jakarta in June 2014. The sampling technique used total sampling with a total of the sample was 42 students. Data analysis used Chi-Square statistical test. The dependent variable in this research was the ability to fill the partograph, while the independent variables were age, class, knowledge, and experience in filling partograph. Population and sample were students of the fifth semester, by using primary data.

Results: The result of this research showed that there was no significant relationship between age and the skill to fill partograph with p -value $0.151 > 0.05$. While the variable that related was a class group with p -value of 0.004, knowledge with a p -value of 0.011, the experience in filling partograph with a p -value of 0.000.

Conclusions: The variable of the class group, knowledge, experience in filling partograph, had significant relations with the ability to fill partograph. There were still students in the fifth semester that had no skill to fill the partograph. It was expected to the lecturers, especially lecturers of midwifery to emphasize the way to fill partograph correctly and often give training in filling partograph so that students understand how to fill the partograph correctly.

Keywords: Midwifery Students, Partograph, Skillfulness

ICASH-P72

OVERVIEW OF FACTORS AFFECTING THE NUTRITION STATUS OF CHILDREN IN THE HEALTH WORK AREA Paal V JAMBI CITY

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ABSTRACT

Background: Nutritional status of infants and children had several problems, while still experiencing malnutrition problem, it was found other problem of the excessive nutrients such as energy, fat, and salt. Low health nutrition causing general body condition decreased the endurance thus susceptible to illness. A healthy child will not be susceptible to various types of diseases, including infectious disease. Indirect factors affecting the nutritional status, namely food security in families, parenting, economic status, family knowledge about the nutrition status and health services.

Aims: This study aimed to describe the factors that affect the nutrition status of children in Health Center Paal V Kota Jambi

Methods: This was a descriptive study with the study population including mothers with children under five years old in the region of Health Center Paal V Jambi. This study used random sampling technique with total 101 samples. The data used primary and secondary data. Data analysis used univariate analysis.

Results: The results show as many as 66 respondents (65.3%) had a good parenting, 70 respondents (69.3%) had lower economic status, 80 respondents (79.2%) had not experienced infections and 55 respondents (54, 5%) had good nutrition.

Conclusion: The majority of respondents had a good parenting, low economic status did not have an infectious disease and had good nutritional status, parents were expected to improve parenting, as well as health workers could gather toddlers who have malnutrition status.

Keywords: Economic Status, Infectious Diseases, Nutritional Status Toddler, Parenting

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**THE FACTOR RELATED TO THE FOURTH ANTENATAL (K4) VISIT
IN THE AREA OF PUSKESMAS WONOREJO SAMARINDA,
INDONESIA**

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ABSTRACT

Background: Fourth antenatal visit (K4) is required to prepare for the birth, physical and mental a pregnant woman, but many pregnant women did not attend fourth antenatal. K4 coverage below 60% (compared Term Goals maternal hearts One year period). The fundamental cause of maternal mortality in the non-technical is the level of knowledge, education, attitude and behavior of pregnant women.

Aims: The purpose of this study was to explore the factors associated with prenatal visit four (K4) in Puskesmas Wonorejo Samarinda in 2011.

Methods: This study used cross-sectional design; the sampling technique was total sampling. The independent variable was the fourth antenatal (K4) visit. The dependent variables were the knowledge, education, and employment. The subjects of this study were 45 respondents who did prenatal (K4) fourth visit and gestational age over 36 weeks. This study was concluded on December 12, 2011 until January 7, 2012 in Puskesmas Wonorejo Samarinda.

Results: The results showed that factors associated with antenatal visit four (K4) were knowledge (p-value $0.039 < \alpha 0.05$), education (p-value $0.028 < \alpha 0.05$), and employment (p-value of $0.018 < \alpha 0.05$). It was concluded that there was a significant correlation between fourth antenatal visits with knowledge, education, and employment.

Conclusions: It is recommended for health workers to be actively involved in Communication, Information, and Education (IEC) program or intensive counseling to pregnant women both in the health services (such as health centers) and in the community. Conducting special programs such as distributing leaflets, brochures, and involve activist to educate and involve the patient's family.

Keywords: four antenatal visits (K4), knowledge, education, employment.

ICASH-P74

EFFECT OF PRE-ECLAMPSIA SEVERE TOWARD THE INCIDENCE OF PRETERM LABOR

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ABSTRACT

Background: Preeclampsia and eclampsia is a complication in pregnancy which is one cause of mortality and morbidity of mothers and babies around the world. In Indonesia preeclampsia and eclampsia into one of the largest causes of death of mother and baby. Preeclampsia also greatly affect the process of childbirth, One factor in the etiology of preterm labor that is the condition of the preeclampsia during pregnancy.

Aims: This research was conducted to find whether there was an effect of preeclampsia toward preterm labor.

Methods: The type of research is a form of medical record with Cross Sectional approach. The sampling technique using the total sampling, with the characteristics of respondents is the women who inpartu with pre-eclampsia severe at the gestational age <37 weeks. Total of respondents obtained during research period lasts is 32 respondents. Intervention be given with looking at the incidence of maternal inpartu who experienced pre-eclampsia severe <37weeks and the control group in women inpartu >37weeks who did not experience pre-eclampsia.

Results: Data shows there 40 respondents from 115 respondents were positive with preeclampsia, and the incidence of preterm labor <37 week in the preeclampsia case as many as 32 respondent from 115 respondents. There were mothersexperiencing preeclamsia severe and did the termination of pregnancy <37 weeks as many as 24 people from 40 respondents. There is significant relationship between preeclampsia with the incidence of preterm labor (p value < 0.001)

Keywords: Preeclampsia severe, medical action decision, Preterm Labor

ICASH-P76

**RELATIONSHIP BETWEEN LEARNING MOTIVATION TO
LEARNING ACHIEVEMENT AMONG MIDWIFERY STUDENTS IN
WEST JAVA, INDONESIA**

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ABSTRACT

Background: The national education system must be able to guarantee equal education, improved quality and relevance and efficiency of education management to meet the challenges in accordance with the guidance for local, national, and global changes so the need to make education reform is planned, directed, and sustainable.

Aims: The purpose of this study is to determine the relationship between learning motivation and academic achievement of diploma III Midwifery

Methods: The method used in this research is non-experiment using analytical description with cross-sectional approach, to determine the relationship of students' learning motivation and of students' academic achievement. The populations in this study were all diploma III midwifery students with 84 female students at the College of Health Sciences, West Java Indonesia. The sample in this research is all students of diploma III midwifery students in the College of Health Sciences, West Java Indonesia. The sampling technique used in this study is total sampling, the entire student of diploma III midwifery students as many as 84 people.

Results: Student learning motivation of diploma III midwifery students, West Java Indonesia is in the high category (83.3%). Students' academic achievement of diploma III midwifery students, West Java Indonesia was at the good category ranged from 2.76 to 3.50 by 95.2%.

Conclusion: The significant relationship between students' learning motivation and academic achievement of D III Level II half IV Midwifery program at Muhammadiyah College of Health Sciences Tasikmalaya West Java Indonesia brings to a recommendation to further improve teaching methods, curriculum, educators' relationships with students, the relationships among students, school discipline, education standards, state building, and housework. That requires skills in directing the motivation; study results can be achieved as expected. Students should always be open in dealing with problems in learning so that the problems that

Keywords: Motivation, achievement, learning, student.

ICASH-P77

**ANALYSIS OF FACTORS AFFECTING THE SUCCESS OF
PULMONARY TB TREATMENT IN BALIMED HOSPITAL**

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ABSTRACT

Background: Tuberculosis (TB) is an important public health problem in the world. Report from World Health Organization (WHO) in 2015 estimated 10.4 million new (incident) TB cases worldwide, in which 5,9 million (56%) were among men, 3.5 million (34%) among women and 1 million (10%) among children. A third of the world's population has been infected with tuberculosis germs and according to WHO, regional largest number of TB cases occur in Southeast Asia, namely 33% of all TB cases in the world. As many as 95% of TB cases and 98% of TB deaths in the world, occur in developing countries. TB is the number one cause of death among infectious diseases and it's the third of the 10 highest killer disease in Indonesia which causing 100,000 deaths annually.

Aims: This study aims to know deeper into the factors that influence the success of treatment of pulmonary tuberculosis in BaliMed hospital.

Methods: The study used design observational analytic method with cross sectional study. Preliminary data collected through search records. Case is already positive TB patients through thorax X-ray examination and sputum. Total population of this research are 25 people who are positive with pulmonary TB and visited BaliMed Hospital during 2015. Inclusion criteria were patients with complaints of cough for more than 2 weeks, the results of thorax photos and sputum were positive for pulmonary tuberculosis, and patients had not received prior TB drugs. By entering the inclusion criteria, obtained 20 study subjects because 5 subjects had started therapy since 2014. Tests were performed with SPSS 2 tail discriminant analysis to see the relationship between medication adherence variable, family support, home sanitation, doctor's explanation and the distance between home and hospital/health centre.

Results: Research showed that the factors influence the recovery of patients TB are family support (p value 0,013) and the distance between home and hospital / health center (p value 0,029). The other factors such as medication adherence, doctors' explanation, and home sanitation has no effect.

Conclusion: The variables that affect the success of TB treatment are family support and the distance between home and hospital / health center. In this case family support is the strongest discriminant factor.

Keywords: Cure TB patients, treatment of TB patients, factors affecting the succes of TB treatment.



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