



PROCEEDING

INTERNATIONAL SEMINAR

ENVIRONMENTAL HEALTH & SUSTAINABLE TOURISM

Widya Sabha Theatre, Faculty of Medicine, Udayana University

Bali, 23rd September 2016

**SCHOOL OF PUBLIC HEALTH
FACULTY OF MEDICINE
UNIVERSITAS UDAYANA**

**Proceeding of The International Seminar on
“Environmental Health and Sustainable
Tourism”**

Widya Sabha Theatre, Faculty of Medicine,
Udayana University
Bali, 23rd September 2016

**School of Public Health
Faculty of Medicine, Udayana University
Bali**

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PREFACE

The International Seminar on Environmental Health and Sustainable Tourism held in Denpasar, Bali on 23rd September 2016 by School of Public Health, Faculty of Medicine, Udayana University in collaboration with Indonesian Public Health Association (IAKMI) Bali Chapter. This International Seminar aimed to provide an opportunity for participant to increase their knowledge, sharing ideas and strategies, develop recommendation based on the recent research findings towards sustainable tourism and environmental health.

This volume of proceedings from the seminar provides an opportunity for readers to engage with a selection of refereed papers that were presented during the seminar. The paper published were ranging from issues under themes of sustainable development in Health Tourism, Environmental Health, Health Policy, Health Promotion, Occupational Health, Epidemiology, Maternal and Child Health, Community Nutrition and other topics related to Health and Tourism.

The seminar committee congratulates participants whose paper is finally published in this proceeding. The committee would like to thanks Indonesian Public Health Association (IAKMI), participants, sponsor, and Udayana Press for the contribution to the publishing to this proceeding.

Sincerely yours,

Committee of the International
Seminar

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Determinants of Pneumonia among Under-five Children in South Denpasar, Bali

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Abstract

Pneumonia is an acute infection of the lung tissues (alveoli). Pneumonia in under-five children in Indonesia remains a major health problem that can be seen from the high population density figure annually. One of the efforts to lower down the incidence is to know the determinants that related to pneumonia. This study aimed to determine determinants associated with the incidence of pneumonia in South Denpasar.

This research uses a quantitative analytical approach with case-control design (case - control study). The case sample of this study were 70. The respondents were 35 mothers who have children pneumonia (cases group) and 35 mothers who have children that are not pneumonia (control group). The sampling method use simple random sampling method. The analysis of the data include univariate and bivariate analysis.

The results shows that determinants which affect the incidence of pneumonia in children under five are toddler age factor (OR=4.18 95%CI=1.38-12.82;p=0.004), gender factor (OR=3.67,95%CI=1.23-1.10;p=0.008), weight infants (OR=4.18 95%CI=1.38-12.82;p=0.004), exclusive breastfeeding (OR=11.55 95% CI=3.33-41.73;p=<0.001), exposure to cigarette smoke (OR=8.43 95% CI=2.56- 28.69;p=<0.001), population density (OR=6,25 95% CI=1.98-20.14;p=0.0003).

It can be conclude that the determinants that influence pneumonia in under-five children are the host and environmental factors.

Keywords: determinant, pneumonia, under-five children

Background

Pneumonia is an acute infection of the lung tissue (alveoli) and can be identified based on the guidelines for other clinical signs and investigations when necessary. Pneumonia is also defined as the process of acute infection of lung tissue and the occurrence of pneumonia in children often coincides with the infection of the broncho called bronchopneumonia. Pneumonia is a global health problem because of the high death rate, not only in developing countries but also in developed countries like the United States, Canada and European countries

According to the World Health Organization or WHO (2010) pneumonia is one cause of death in children worldwide. Every year, pneumonia kills about 1.6

million children under five, or approximately 14% of all deaths worldwide. This figure is higher in the appeal of deaths due to HIV / AIDS is as much as 2%, malaria and measles as much as 8% by 1%.

In Indonesia, the death rate of pneumonia in children under five is estimated at 21% (UNICEF, 2006). Morbidity of 2.2% of pneumonia in infants, toddlers 3% while mortality in infants and young children 29.8% 15.5% (Basic Health Research, 2007). According to data obtained from Indonesia Health Profile 2005, the number of infants, people with pneumonia in Indonesia there are as many as 600 720 children under five which consisted of 155 children died at the age under 1 year, and 49 children died at the age of 1-4 years (Depkes RI, 2005).

Bali was the province with the second highest

incidence of pneumonia in Indonesia in 2007 amounted to 11.1% (Depkes RI, 2010). Denpasar is a regency / city with the highest pneumonia coverage number four in Bali for 18.73%, while pneumonia in 2013 at Bali detected are toddlers 6944 or 17.07% of total toddler in Bali reached 406 698 people were infected by the disease (Dinas Kesehatan Provinsi Bali, 2013). Bali Provincial Health Office to detect as many as 986 new target of 9174 cases of pneumonia (pneumonia) in infants in nine districts / cities in trimester I. For the achievement of the target of recording the number of sick children should be raised in accordance appeal the Ministry of Health.

The high incidence of pneumonia is inseparable from risk factors for pneumonia. The risk factors that have been identified

include: nutritional status, low birth weight (less than 2500 grams at birth), the lack of exclusive breastfeeding, measles immunization and density homes (five or more persons per room) (UNICEF-WHO, 2006).

Based on the data obtained from the City Health Office Denpasar 2015 get on the prevalence of pneumonia at health centers found 1 South Denpasar aged <1 year to 1-4 years with a total of 21 events, or by 37.51%. In the south of Denpasar puskesmas 2 of 4 events or by 14.22%, puskesmas 3 Denpasar south by 8 event or 36.15%, and health centers as much as 2 4 South Denpasar events or 11.20%.

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17.07% of total toddler in Bali reached 406 698 people were infected by the disease.

Method

This study is a case control study with approach quantitative methods. Case control study is an analytic study concerning how the risk factors studied using retrospective approach by comparing the case group and the control group based on the status of his exposure. The use of this study design is intended to examine the relationship between the effect (disease or health condition) with certain specific risk factors.

The population of this research is all mothers with infants and toddlers who are not pneumonia pneumonia in Puskesmas South Denpasar. The samples size of this study are sample case (case):

children under five suffering from pneumonia were recorded in the medical record in Puskesmas South Denpasar 2015

Control samples (control): infant pneumonia that is not recorded in the medical record in Puskesmas South Denpasar in 2015. The sample size in this study as many as 35 cases and 35 controls.

The sampling technique in this study using a random probability sampling the Probability Proportionate to Size (PPS). In this study, PPS is used determines the amount of each sample in every health center in South Denpasar, the amount of each sample in each health center is registered in South Denpasar Health Center 2015 by using simple random sampling method. Data used using primary data and secondary data.

Result

Characters samples according viewed from the mean maternal age and grouped form the two groups that age (<29 years) and the control group were aged (≥29 years). Based on Table 5.1 it is known that of the control group by 60% aged <29 years, while in the case of 57% aged <29 years. On the characteristics of mothers work in the control group had a job as a private arrives at 42.86%, while in the case group had a job as private sector amounting to 34.29%.

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Table 1. Overview Of Mother Characteristic

Variable	Case	Control
Age of Mother		
(mean)	20 (57.0)	21 (60.0)
<29 Age	15 (42.0)	14 (40.0)
≥29 Age		
Mother's Job		
Unemployed	10 (28.0)	11 (31.0)
Employed	0 (0.0)	1 (2.9)
PNS	7 (20.0)	7 (20.0)
Trader	12 (34.3)	15 (42.9)
Swasta, ect	6 (17.1)	1 (2.9)

Table 2. Characteristics Toddler

Variable	Case n (%)	Control n (%)
Age of Toddler (year)		
0-1	22 (62,86)	11 (31,43)
1-3	12 (34,29)	21 (60,00)
3-5	1 (2,86)	3 (8,57)
Sex		
Female	12 (34,29)	23(65,71)
Male	23 (65,71)	12 (34,29)
Weight		
>2,5 kg	35 (100,00)	35 (100,00)
<2,5 kg	-	-
Immunization Campak		
Get Immunization	34 (97,14)	34 (97,14)
None Immunization	1 (2,86)	1 (2,86)
Asi Eksklusif		
Get ASI	9 (25,71)	28 (80,00)
None ASI	26 (74,29)	7 (20,00)
Vitamin A		
Get Vit A	33 (94,29)	31 (88,57)
None Vit A	2 (5,71)	4 (11,43)

Table 2 above shows views from toddler age at the age of 0 to 1 year in case group amounted to 62.86% at the age of toddlers aged 1 to 3 years in the control group amounted to 60.00% at the toddler age 3 to 5 years age group control by 8.57% . Toddler's sex showed that the

toddler-sex male in the group amounted to 65.71% of cases, while in the control group most (65.71%) were female. Weight infants show that infants whose weight is >2.5 kg showed all samples of cases and controls by 100% which in this study weight infants <2.5 kg relatively unshowed. From

Table 3. Environment Characteristics

Variable	Case n (%)	Control n (%)
Mother's Education		
High	20 (57,14)	20 (57,14)
Low	15 (42,86)	15 (42,86)
Mother's Knowledge		
Good	16 (46,71)	24 (68,57)
Less	19 (54,29)	11 (31,43)
Smoke exposure		
Unexposed	8 (22,86)	25 (71,43)
Exposed	27 (77,14)	10 (28,57)
Residential		
Uncrowded	10 (28,57)	25 (71,43)
Crowded	25 (71,43)	10 (28,57)
Ventilation		
Have and Opened	22 (62,86)	29 (82,86)
Have and Unopened	13 (37,14)	6 (17,14)

the immunization status, toddlers immunized group case by 97.14% and amounted to 97.14% of infants in the control group immunized. Amounting to 74.29% of infants in the case group is not exclusively breastfed, while the control group 80% were exclusively breastfed. Judging from the provision of vitamin A, amounting to 94.29% of infants in the case group was

getting vitamin A, and in the control group by 88.57% to get vitamin A.

Based on the table above, the views from the mother's education in case group 57.14% have higher education and in the control group amounted to 57.14% have a college education. In the case group 54.29% of women had less knowledge, whereas the control group

amounted to 68.57% have a good knowledge. Exposure to cigarette smoke in case group amounted to 77.14% children exposed to cigarette smoke while in the control group amounted to 71.43% children are not exposed to cigarette smoke. Judging from the density of dwelling on the group amounted to 71.43% of cases have a dense residential homes, while the control group amounted to 71.43% do not have a solid occupancy. Amounting to 62.86% in the case group had an open vent and the control group amounted to 82.86% have ventilation openings.

Toddler age group there was no statistically significant association seen from the value of $p > 0.05$, but the views from the large effect or value or the age group 1-3 years had 1.71 times the risk of pneumonia compared with those aged 0-1 and 3-5 years

age group 5.9 times greater risk of developing pneumonia compared toddlers age 0-1 year. Toddler sex had significant effect on the incidence of pneumonia in infants (95%CI: 1.23 to 11.10; $p=0.008$). In view of the value of OR, gender male infants increased the odds of 3.67 for pneumonia in infants. The whole weight infants toddlers normal weight = 2.5 and there was no association between body weight and children against pneumonia in infants because of all samples have the same weight that is above 2,5.

Value of OR showed, weight infants < 3.2 kg increased the odds of 4.18 for the occurrence of pneumonia in infants. Measles immunization did not affect the statistics on the incidence of pneumonia in infants seen from the 95%CI: 0.12 to 80.77 and the value of $p= 1.000$.

Table 4. Pneumonia Determination in Toddlers

Variable	OR	95% CI OR		p
		<i>Lower</i>	<i>Upper</i>	
Todler age				
0-1Year	Reff	-	-	-
1-3 Years	1.71	0.15	18.36	0.656
3-5 Years	5.99	0.55	64.57	0.139
Sex				
Female	Reff	-	-	-
Male	3.67	1.23	11.10	0.008
Toddler's weight				
<2.5 kg	Reff	-	-	-
>2.5 kg	-	0	-	-
Measles Immun.				
Immunization	Reff	-	-	-
Unimmunization	1	0.12	80.77	1.000
Breatfed exclusive				
Exclusive	Reff	-	-	-
Unexclusive	11.55	3.33	41.73	<0.001
Vitamin A				
VIT A	Reff	-	-	-
Non VIT A	0.46	0.04	3.58	0.673
Mother's education				
High	Reff	-	-	-
Low	1	0.34	2.86	1.000
Mother's knowledge				
Good	Reff	-	-	-

Less	2.59	0.88	7.73	0.053
Variable	OR	95% CI OR		p
		Lower	Upper	
Smoke Exposure				
Unexposed	Reff	-	-	-
Exposed	8.43	2.56	28.69	<0.001
Residential				
Uncrowded	Reff	-	-	-
Crowded	6.25	1.98	20.14	0.0003
Ventilation				
Have and opened	Reff	-	-	-
Have and unopened	2.85	0.83	10.55	0.059

Exclusive breastfeeding is very significant effect on the incidence of pneumonia in infants seen from the 95%CI: 3.33 to 41.73 and $p < 0.001$. Toddlers who are not exclusively breastfed increased the odds of developing pneumonia by 11.55 compared to infants who were exclusively breastfed.

Giving vitamin A in children under five do not have a significant influence on the

incidence of pneumonia in infants (95%CI: 0.04 to 3.58; $p = 0.673$). Toddlers who do not get vitamin A lowers the odds of developing pneumonia by 54% compared to infants who received vitamin A. Dilihat of environmental characteristics, maternal education did not significantly affect the incidence of pneumonia in infants seen from the 95%CI: 0.34 to 2, 86 and $p = 1.000$.

Knowledge Capital in this study did not affect the

statistics on the incidence of pneumonia in infants (95%CI: 0.88 to 7.73; $p=0.053$). Judging from the value of OR, the mother's knowledge the less increased the odds in the incidence of pneumonia by 2.59 times compared to the knowledge of a good mother.

Exposure to cigarette smoke is very influential in the statistics on the incidence of pneumonia in infants seen from the 95%CI = 2.56 to 28.69 and $p<0.001$. Toddlers exposed to secondhand smoke increases the odds of developing pneumonia by 8.43 times compared with infants who are not exposed to smoke.

Density residential house effect on the incidence of pneumonia (95%CI: 1.98 to 20.14; $p=0.0003$). Judging from the value of OR, the density of dwelling increased the odds of 6.25 times for pneumonia. The existence of

ventilation in the house had no effect on the incidence of pneumonia in infants seen from the 95%CI: 0.83 to 10.55; $p=0.059$. Ventilation not open increased the odds of 2.85 times compared to home that ventilation is always open.

Discussion

In this study toddler age group are not meaningful views of the value of $p>0.05$ but when viewed from a large effect or value or the age group 1-3 years had 1.71 times the risk of pneumonia than the 0-1 years age group and age group 3-5 years 5.9 times greater risk of developing pneumonia compared with toddlers age 0-1 year. The results of this study are consistent with research Rizka (2011) which showed no statistical correlation between age infants with pneumonia in infants seen from 95%CI: 0.12

to 5.52 $p = 1.00$. Results of this study was not in line with research conducted by Anisa (2010) explains that children aged <12 months had odds of 3.24 times for pneumonia compared to infants under the age > 12 - <60 months (95%CI: 1,58 to 6,64). Infants and toddlers have a defense mechanism that is still weak compared with adults, so the toddler into the groups who are vulnerable to infection pneumonia. Children aged 0-24 months are more susceptible to pneumonia than children aged over 2 years. This is due to the immature immune and respiratory tract are relatively narrow (Depkes, 2010). Some theory is that children aged <1 year are more prone to pneumonia. The risk for pneumonia is greater in children under two years of rudimentary and lumen airway is still narrow, but that

number continues to decline with age (Grace, 2013).

The results of the analysis of the relationship between the variables birth weight infants in this study suggests all infants with normal weight is > 2.5 kg and no relationship between weight on the incidence of pneumonia in infants because of all the samples obtained have the same weight is >2.5 kg, The results are consistent with research conducted by Yushananta (2010) which states that toddlers who weigh <2.5 kg had 3.12 times the risk of developing pneumonia in infants.

Babies with low birth weight have a greater risk of death compared with normal birth weight, especially in the first months of birth for the formation of an anti-immunity is less, so are more susceptible Disease infections, particularly pneumonia and hospital

respiratory tract others. (Naim, 2013)

The results of the analysis explains gender affects toddlers statistically significant 95%CI: 1.23 to 11.10; $p=0.008$. In view of the value of OR, gender male infants increased the odds of 3.67 for pneumonia in infants.

The results are consistent with research conducted by Farida (2010) for 1.5 years stating that toddlers pneumonia is more common in children under five male sex than women.

Results of the study were not consistent by Rimasati (2013) in Puskesmas Miroto Central Java province indicate that the relationship was not statistically significant between the sexes with the incidence of pneumonia in infants with $p=0.111$.

Immunization against measles is believed to contribute immunity the

body's immunity against pneumonia. The results of the analysis in this study history of measles immunization did not affect statistically seen from (95%CI: 0.12 to 80.77) and $p=1.000$.

These results are consistent with research conducted by Rahmawati (2012) explained that no meaningful relationship between measles immunization status of children who do not complete the measles immunization status of children is not complete by 1.16 times compared with children who complete measles immunization. But in contrast to the results of research conducted in the United States for 58 years, representing a measles vaccination role in lowering deaths from pneumonia

And other studies that are inconsistent done by Hartati (2013) which states

that toddlers who are not immunized against measles are at risk 2.3 times more likely to suffer from pneumonia compared to infants who received immunization against measles.

The results of the analysis of the relationship between a history of breastfeeding with the incidence of pneumonia in this study infants who are not exclusively breastfed increased the odds of developing pneumonia by 11.55 compared to infants who are exclusively breastfed and test results obtained statistically significant relationship between the incidence of exclusive breastfeeding pneumonia (95%CI: 3.33 to 41.73 and $p < 0.001$).

Exclusive breastfeeding or rather exclusive breastfeeding is the infant only breast-fed only, without the addition of other

liquids such as milk formula, orange, honey and without the addition of solid foods such as bananas, porridge, biscuits, rice and rice porridge team. Granting exclusive Asi is recommended for a period of at least 6 months, and after six months of a baby is introduced to solid food. Toddler body's defense system will try to defend or fight foreign substances that enter the body, the immune system is best obtained by the ASI.

The results are consistent with research conducted by Heriyana (2011) found that the duration of breastfeeding is associated with the incidence of pneumonia (OR=7.954; 95% CI: 1.783 to 35.483).

Findings from this study is in line with research Naim (2010) in which children at age 4-24 months who are not exclusively breastfed get

showed a significant relationship to the occurrence of pneumonia ($p = 0.000$) and had 4.76 times the risk of pneumonia than children aged 4- 24 months were exclusively breast-fed.

Results of other studies that are not in line carried by Rizka (2011) there is no relationship between breastfeeding with the incidence of pneumonia in infants in Puskesmas Global Mongolato, based on the statistical values obtained value of $p = 0.604$.

The relationship between a history of vitamin A with the incidence of pneumonia in this study showed infants who did not receive vitamin A lowers the odds of developing pneumonia by 54% compared to infants who received vitamin A, but the statistical test showed no association history of giving vitamin A

with the incidence of pneumonia (95%CI: 0.04 to 3.58; $p=0.673$). Supplements of vitamin A was not statistically significant in other words, vitamin A supplementation has no effect on the incidence of pneumonia, because of the magnitude of the control group and the case that getting vitamin A supplements are relatively the same.

The results are consistent with research Yushananta (2010) regarding the incidence of pneumonia toddler in Bandar Lampung getting the same study OR = 1.30 (95% CI 0.65 to 2.60) that although there is a risk of children who did not receive supplements of vitamin A 1.30 times more likely to suffer from pneumonia than children who received vitamin A supplements, but this study did not reach statistical significance.

This result is not consistent with research Herman (2013) which found that toddlers can not get vitamin A had a 3.8 times chance of pneumonia than children who have a history of vitamin A and statistically has a significant relationship with a value of $p = 0.000$. This can be caused because of the number of samples studied to examine variable vitamin A.

On the results of the study describes the statistical test result there is no relationship significantly affect the incidence of pneumonia in infants seen from the 95%CI: 0.34 to 2.86 and $p=1.000$.

The results of this study are consistent with Herman (2013) explained that maternal education has no statistically bernakna relationship $p=0.848$ with the incidence of pneumonia in infants. Infants and children who have educated mothers

will suffer from primary or secondary pneumonia 1.1 times compared with a toddler who has a highly educated mother (Academy/ Diploma/Higher Education). However, this effect was not statistically significant meaning that the mother's level of education is not among the risk factors of pneumonia in infants.

Results of research conducted by Hananto (2011) is not in line with the study explained that there was a significant association between maternal education with the incidence of pneumonia in infants where less educated mothers have two times the risk of a toddler suffering from pneumonia compared with highly educated mothers. While educated mothers was 2.30 times the chance of having a toddler suffering from

pneumonia compared with highly educated mothers.

Statistical test results explained statistically no effect on the incidence of pneumonia in infants (95%CI: 0.88 to 7.73; $p=0.053$). Judging from the value of OR, the mother's knowledge the less increased the odds in the incidence of pneumonia by 2.59 times compared to the knowledge of a good mother. The results are consistent with research conducted by Herman (2013) explained that the knowledge of the mother does not have a significant relationship with the occurrence of pneumonia, with $p=0.83$. Relations cigarette smoke exposure in this study were divided into two categories which are not exposed to cigarette smoke and exposure to cigarette smoke. In this study exposure to cigarette smoke is very influential statistically the

incidence of pneumonia in infants seen from the 95%CI: 2.56 to 28.69 and $p<0.001$. Toddlers exposed to secondhand smoke increases the odds of developing pneumonia by 8.43 times compared with infants who are not exposed to smoke.

The results are consistent with research conducted by Sincere Aji Yuwono (2011) also concluded that the habit of smoking family members associated with the incidence of pneumonia in infants ($p=0.022$; OR=2.7). This study is also consistent with research conducted by Heriyana et al that toddlers who lived in a house with a family member who smokes has a risk of suffering from pneumonia 2.348 times greater than toddlers who lived in a house that no family members smoke. Andi Rosmeni (2013) showed

statistical test $p=0.000$ showed a significant correlation between the presence of cigarette smoke exposure to infants with pneumonia, where toddlers who lived one house with family members who smoke have pneumonia by 2.9 times compared toddlers who lived in a house whose family members do not smoke.

Results of the research were not in line carried by the Goddess (2013) about the relationship of exposure to cigarette smoke in the house with the incidence of pneumonia in Puskesmas Kedungmundu District Tembalang Semarang concluded that there was no association between exposure to secondhand smoke with the incidence of pneumonia in infants in which the value of $p=0.084$.

The existence of ventilation in this study were

divided into two categories: existing and open, is and is not open. In this study the statistical test result explains the presence of vents in the house had no effect on the incidence of pneumonia in infants seen from the 95%CI: 0.83 to 10.55; $p=0.059$. Ventilation there and not open increased the odds of 2.85 times compared to home that ventilation is always open.

The results of the study are in line with research conducted by Sinaga (2012), which found the house with no ventilation in the house but always opened qualify more likely to suffer pneumonia (75.2%) compared with homes that have ventilation in the house but not always opened by (66.7%).

The results of this study are not consistent with research Yusup (2011) wherein said statistical test

$p=0.000$ which shows that the ventilation in the house had a significant relationship with the incidence of pneumonia in infants who inhabit the house with vents that do not meet health requirements have the opportunity to pneumonia by 4.2 times compared with a toddler who inhabit the house with a qualified ventilation.

Statistical analysis showed an association between residential density on the incidence of pneumonia in infants (95%CI: 1.98 to 20.14; $p=0.0003$). Judging from the value of OR, the density of dwelling increased the odds of 6.25 times for pneumonia.

The results of this study are consistent with Oktaviani (2012) explains that the density of dwelling has a significant relationship with the incidence of pneumonia. Infants and children who live in crowded homes habitable

at risk for developing pneumonia 4.3 times compared with young children who live in homes with occupancy rates that are not solid.

Results of the study were not consistent with research conducted by Rahayu H.Akili (2013) states that residential density with the incidence of pneumonia in children under five do not have a significant association seen from the value of $p=1.000$. Statistical test results stating that there is no relationship between the level of residential density with the incidence of pneumonia in infants.

Conclusion

Toddler age there is no significant relationship seen from the value of $p>0.05$, and a group of children aged 3-5 years was 5.9 times greater

risk of developing pneumonia compared with toddlers age 0-1 years, relations Measles no effect statistically the incidence of pneumonia in young children, Vitamin A in children under five do not have a significant influence on the incidence of pneumonia in infants. Toddlers who do not get vitamin A lowers the odds of developing pneumonia by 54% compared to infants who received vitamin A, exclusive breastfeeding is very significant effect on the incidence of pneumonia in infants. Toddlers who are not exclusively breastfed increased the odds of developing pneumonia by 11.55 compared to infants who were exclusively breastfed, weight infants have no statistically significant relationship because of all children under five are overweight >2.5 kg. Density residential house effect on the

incidence of pneumonia in infants. Judging from the value of OR, the density of dwelling increased the odds of 6.25 times for pneumonia. Exposure to cigarette smoke is very influential in the statistics on the incidence of pneumonia in infants. Toddlers exposed to secondhand smoke increases the odds of developing pneumonia by 8.43 times compared with infants not exposed to smoke rokok. Keberadaan ventilation in the house had no effect on the incidence of pneumonia in infants. Ventilation not open increased the odds of 2.85 times compared with home ventilation and always opened, Knowledge Capital in this study did not affect the statistics on the incidence of pneumonia in infants. Knowledge mother less increased the odds in the incidence of pneumonia of

2.59 times compared with the mother's knowledge that baik.pendidikan mother does not significantly affect the incidence of pneumonia in infants

Suggestion

For health services

1. Health education on the dangers and effects of smoking certainly at families with children under five
2. Registration registers each patient health centers need to be improved because the system is to record each health center is still lacking, especially for general patient data
3. An understanding of the notion of exclusive breastfeeding needs to be improved because during the mother's perception is different

For society:

1. Especially to people who have a toddler should stop the habit of tobacco consumption
2. Keep toddlers from cigarette smoke
3. Increase ventilation (windows) in the room so that the room houses can obtain fresh air
4. Familiarize open the window every morning and evening.

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