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CONTENTS

Volume 9, Number 6 June 2018

Indian Journal of Public Health Research & Development

www.ijphrd.com

CONTENTS

Volume 9, Number 6 June 2018

Indian Journal of Public Health Research & Development

www.ijphrd.com

CONTENTS

Volume 9, Number 6 June 2018

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CONTENTS

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Related Factors Increased Obesity Prevalence in Adult Women in Denpasar City, Bali

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ABSTRACT

Background: Obesity is a health problem whose prevalence increases every year. Obesity impacts on the incidence of dyslipidemia, hypertension and insulin resistance. Obesity is a multifactorial problem as a result of an interaction of biological factors, behavior, and environment.

Objective: The objective of the study was to investigate factors related to the increased prevalence of obesity in adult women in Denpasar city.

Materials and Method: This research is an observational research with a cross-sectional design. The study was conducted in Denpasar city with the subject is adult women. The samples were carried out by multistage random sampling, with a sample size was 274 people. The data collected included, obesity status, food intake, eating behavior and physical activities

Results: The results showed an average age of 39.3 years. 40,9% of samples were obese with BMI> 25 kg / m2. The sample proportion that consumed nutrient over the sufficiency of energy 52.9%, fat 51.5% and carbohydrate of 46.7%. 53.6% of samples have dinner habits> 19.00 pm, 50.2% consumeddense energy snack with frequent frequency and 79.9% stated access fast food easy to reach. A total 66.4% of samples have mild physical activity. Multivariate analysis showed that energy intake, dinner habits and physical activity were the major risk factors for increased prevalence of obesity ($p < 0.05$).

Conclusion: energy intake, carbohydrates, dinner and physical activity is a major risk factor for obesity that occurs in adult women in the city of Denpasar.

Keywords: risk factors, obesity, prevalence, adult women.

INTRODUCTION

Obesity is a growing health problem prevalence in the world in various age groups including adulthood. The results of Flemming's survey (2014) in a number of countries,the proportion of adults with a body mass index (BMI) of 25 or greater increased from 28.8% in 1980 to 36.9% in 2013 for men and from 29.8% to 38.0% for women[(1)]overweight and obesity were estimated to cause 3.4 million deaths, 3.9% of years of life lost, and 3.8% of DALYs globally. The rise in obesity has led to widespread calls for regular monitoring of changes in overweight and obesity prevalence in all populations. Comparative, up-to-date information on levels and trends is essential both to quantify population health effects and to prompt decision-makers to prioritize action. Methods We systematically identified surveys, reports, and published studies (n = 1,769.WHO data (2015), showing about 39% of population> 18 years are overweight and 13% are obese,[(2)]the prevalence of obesity in the Asian region of 2013 is about 19.0% -48.6%[(3)]. Basic Health Research Data (2013), showing an increasing prevalence of obesity and adult obesity in Indonesia from 21.75% in 2010 to 26.3% in 2013. The prevalence of obesity in Bali is about 28.8% in 2013and especially for Denpasar area the prevalence of obesity is around 30,1% [(4).]

Obesity can lead to increased dyslipidemia, hypertension, and hyperglycemia, a set of symptoms

known as a metabolic syndrome as a major risk factor for noncommunicable diseases such as diabetes mellitus and cardiovascular disease.[8] Obesity occurs due to energy imbalances as a result of interactions of biological factors, behaviors,and social environments characterized by lifestyles with an unhealthy diet and inadequate physical activity.[9] 670 participants from the Whitehall II cohort study (73% male; mean age 56 years[10] Currently, the pattern of eating behavior has led to western patterns with high energy fat characteristics and poor micronutrients[11] socio-demographic, lifestyle and anthropometric variables were collected. Dietary intake was assessed using a sixty-one-item FFQ. Dietary patterns were derived by factor analysis. The following two dietary patterns were identified: Western and traditional Lebanese. The Western pattern was characterised by high consumption of red meat, eggs and fast-food sandwiches. The traditional Lebanese pattern reflected high intakes of fruits and vegetables, legumes and fish. Female sex and a higher maternal education level were associated with a greater adherence to the traditional Lebanese pattern. As for the Western pattern, the scores were negatively associated with crowding index, physical activity and frequency of breakfast consumption. After adjustment, subjects belonging to the 3rd tertile of the Western pattern scores had significantly higher odds of overweight compared with those belonging to the 1st tertile (OR 2\u00b73; 95 % CI 1\u00b712, 4\u00b773. The proliferation of fast food restaurants with interesting dishes but high energy density is very easily accessible to the community[12-15]

Progress in the field of information technology also spoils the community with various facilities so lazy to move. WHO data (2015) states 23% of adult population is inactive.[16] The prevalence of obesity was higher in people with low physical activity and increased the risk of obesity 3-4 times greater than in high activity. [17] Sedentary activity causes less energy expenditure to be stored in the form of fat in adipose tissue.[18] no physical activity Other factors that are also considered to play a role against obesity are sociocultural factors such as socio-economic, and knowledge [19] In developing countries, economic progress increases the purchasing power and supply of foods that lead to excess intake and unhealthy eating behavior.[20] and outlines various justifications for government intervention in this area. The paper then focuses on the potential contribution of health economics in supporting resource allocation decision making for obesity prevention/treatment. Although economic evaluations of single interventions provide useful information, evaluations undertaken as part of a priority setting exercise provide the greatest scope for influencing decision making. A review of several priority setting examples in obesity prevention/ treatment indicates that policy (as compared with program-based[21]

MATERIALS AND METHOD

The study was an observational analytic study with the cross-sectional design was conducted in Denpasar for 5 months (April-July 2017). Subjects of the study were adult women with inclusion criteria aged 25-50 years, permanent residents in Denpasar city and willing as the sample by signing inform consent. The sample size of 274 people determined by Multi-Stage Random Sampling. Denpasar City consists of 4 districts and each district is taken one village randomly. The data collected include sample identity, food consumption and access to fast food, anthropometric data (weight, height and waist circumference), physical activity and other factors that support obesity. Identity data, food access and risk factor suspected to be associated with obesity were collected by interview, data of food intake was obtained by interview with recall method 1 x 24 hours, physical activity by interview using the International Physical Activities Questionaire (IPAQ),[22] Data analysis included bivariate analysis using Q-square and multivariate analysis with multiple logistic regression ($\alpha = 0,05$).

RESULTS

Obesity Prevalence

According to on measurement of waist circumference sample with cut off> 80 cm for the woman and> 90 cm for man, obtained as many as 51.8% samples have central obesity, as shown in the figure 1.

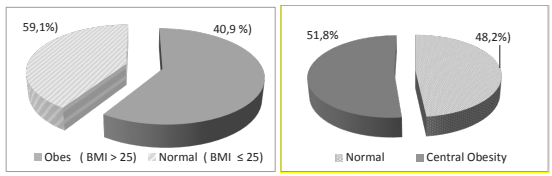

Figure 1. Proportion of Obesity by BMI and Waist Circumference

Level of Nutrient Intake

The result of the assessment of nutrient consumption

with recall 1 x 24 hours showed the average of nutrient intake of the sample that is energy 2060 Kcal (± 249,5 Kcal), fat 59,9 g (± 7.06 g) and carbohydrate 305,87 g (± 32.59 g), figure 2

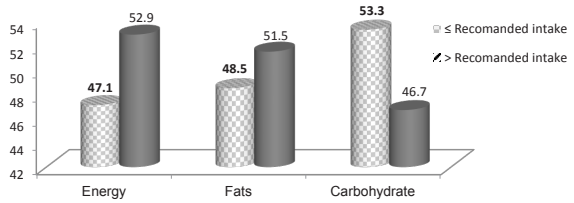

Figure 2. Percentage of Sample by Level of Nutritent Intake

Behavior and Eating Habits

Ease of access is not necessarily followed by frequency of visit, most of the sample states rarely visit fast food restaurant <1 times /week) as many as 65,7 % people, as seen in the figure 3.

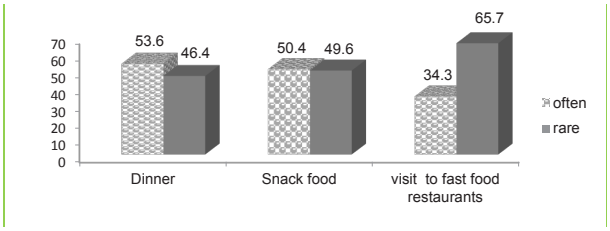

Figure 3.Percentage of samples according Eating Behavior

Physical activity and physical exercise

Physical activity of the sample ranged from mild to moderate. Seen from exercise habits, exercise are often done samples are aerobic exercise and healthy walking. There were 63.9% samples stated rarely exercise frequency <1 times a week and 66,4% samples have light physical activity, as shown in the following figure 4.

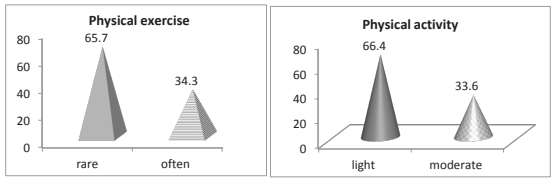

Figure 4. Percentage of Samples by Level of physical activity and physical exercise

The Risk Factors Of Obesity.

To find out the correlation between various risk factors with obesity was used bivariate analysis with Q square. The result of the analysis showed that there were correlation between various risk factors such as age, education, nutrient intake, eating behavioral and physical activity with increasing obesity prevalence (p <0,05), as shown in table 2.

Table 2 . Bivariate analysis of risk factors with prevalence of obesity

Risk Factors	Obesity status according to BMI						Q square	P value
	Obes		Normal		Total			
	n	%	n	%	n	%		
Age							7,448	0,023
< 30 years	20	7,3	6	2,2	26	9,5		
30-40 years	79	28,8	46	16,8	125	45,6		
> 40 years	63	23,0	60	21,9	123	44,9		
Occupation								
Not Work/Housewife	25	9,1	28	10,2	53	19,3		
Trader	14	5,1	14	5,1	28	10,2	6,03	0,196
Entrepreneur	43	15,7	27	9, 9	70	25,5		
Goverment employees	32	11,7	17	6,2	49	17,9		
Private employees	48	17,5	26	9,5	74	27,9		
Education Level							13,09	0,004
Primary scool	19	6,9	17	6,2	36	13,1		
Junior high school	13	4,7	21	7,7	34	12,4		
Senior High School	91	33,2	62	22,6	153	22,8		
College	39	14,2	12	4,4	51	186,		
Energy Intake level							31,315	0,000
> recomanded	82	29,9	63	23,0	145	52,9		

Cont... **Table 2 . Bivariate analysis of risk factors with prevalence of obesity**

≤ recomanded	30	10,9	99	36,1	129	47,1		
Fat Intake level							27,59	0,000
> recomanded	79	28,8	62	22,6	141	51,5		
≤ recomanded	33	12,0	100	36,5	133	48,5		
Carbohydrate Intake level							36,94	0,000
> recomanded	77	28,1	51	18,6	128	46,7		
≤ recomanded	35	12,8	111	40,5	146	53,3		
Dinner habits							19,48	0,000
often	78	28,5	69	25,2	147	53,6		
rarely	34	12,4	93	33,9	127	46,4		
Snack food							16,63	0,000
often	73	26,6	65	23,7	138	50,6		
Rarely	39	14,3	97	35,4	136	49,4		
Access of fast food							6,771	0,009
Mudah	98	35,8	121	44,2	219	20,1		
Sulit	14	5,1	41	15,0	55	79,9		
Physical activity							10,76	0,001
Light	87	31,8	95	34,7	182	66,4		
Moderate	25	9,1	67	24,4	92	33,6		
Exdercise							8,60	0,002
<rarely	83	30,3	92	33, 6	175	63,9		
>often	29	10,6	70	25,5	99	36,1		

The Mayor Risk Factors of Obesity

The results of multiple logistic regression analysis showed that the factors of energy and carbohydrate consumption, dinner habit, and physical activity were the main risk factors for the occurrence of obesity in the sample ($p< 0,05$), table 3.

Table 3. The Mayor Risk Factors of Obesity

Risk Factor	**B**	**SE**	**Wald**	**Df**	**Sig**	**Exp (B)**
Age	.321	.238	1.814	1	.178	1.378
Education Level	-.291	.165	3.108	1	.078	.747
Energy Consumption Level	.798	.337	5.611	1	.018	2.222
Fat Consumption Level	.072	.383	.035	1	.851	1.075
Carbohydrate Consumption Level	.845	.380	4.957	1	.026	2.329
Snack food	.294	.308	.915	1	.339	1.342
Dinner habits	.665	.304	4.782	1	.029	1.945
Access fast food	.948	.389	5.943	1	.015	2.580
Physical exercise	-.457	.342	1.788	1	.181	.633
Physical activity	-.863	.343	6.335	1	.012	.422

DISCUSSION

The Prevalence of obesity was 40.9% with BMI > 25 kg/m2. The prevalence of obesity increased when compared to Basic Health Survey data in 2013 with a range of 28.8% for Bali and 30.1% for Denpasar,[4] This figure is also higher than in some other studies such as Fleming's research in some countries, showed the prevalence of obesity in women around 38.6%[1] overweight and obesity were estimated to cause 3.4 million deaths, 3.9% of years of life lost, and 3.8% of DALYs globally. The rise in obesity has led to widespread calls for regular monitoring of changes in overweight and obesity prevalence in all populations. Comparative, up-to-date information on levels and trends is essential both to quantify population health effects and to prompt decision-makers to prioritize action. Methods We systematically identified surveys, reports, and published studies (n = 1,769, in the United Kingdom reached 37.08%[24] but lower than prevalence of obese women in the USA about 42.1% [25] obesity prevalence doubled in adults aged 20 years or older and overweight preva-lence tripled in children and adoles-cents aged 6 to 19 years. 3-5 This article provides the most recent prevalence es-timates of overweight and obesity based on national measurements of weight and height in 2003-2004 and compares these estimates with estimates from 1999-2000 and 2001-2002 to determine if the trend is continuing. METHODS Prevalence estimates of overweight and obesity were calculated using data from the National Health and Nutrition Ex-amination Survey (NHANES and in India about 41,4%.[5]

Obesity in women occurs from the age of 25 years to 55 years[24]. Adult women who have entered the age of 40 years, decreased production of estrogen, progesterone, and growth hormone. Weight is easier to ride, although the portion of the meal remains. This condition will be exacerbated by decreased physical activity.[26] While from the education level, the smallest proportion is experienced by the sample having higher education. In general, people with higher education are accompanied by sufficient knowledge about the function of food, will tend to be selective in eating food for themselves so avoid obesity.[12] Increased prevalence of obesity caused by multifactorial risk factors. In addition to demographic factors, that are more dominant influence our lifestyle and environment with unhealthy dietary characteristics and sedentary physical activity[26],[27].

Several similar research results support these results like Cizza (2012) and Anderson (2014) research in the United States and Lamb (2014) in Australia shows that the frequency and consumption of fast food as a Western diet continually increases BMI and has a strong relationship with obesity[13] we hypothesized that food allergy patients are more often born in fall or winter. Objective Investigate whether season of birth is associated with food allergy. Methods We performed a multicenter chart review of all patients presenting to three Boston emergency departments (EDs(28) especially from fast-food restaurants, has increased in the United States since the 1970s. The main objective of this study was to examine the frequency and characteristics of fast-food consumption among adults in Michigan and obesity prevalence. METHODS We analyzed data from 12 questions about fast-food consumption that were included on the 2005 Michigan Behavioral Risk Factor Survey, a population-based telephone survey of Michigan adults, using univariate and bivariate analyses and multivariate logistic regression, and compared these data with data on Michigan obesity prevalence. RESULTS Approximately 80% of Michigan adults went to fast-food restaurants at least once per month and 28% went regularly (\u22652 times/wk(14)Australia. Participants Sample of 882 women aged 18\u201346 years at baseline (wave I: 2007/2008. The snacks food and fast food contain high energy and high fat, low in fiber and micronutrients that increase body fat deposits. Dinner> 19-20.00 pm, also causes all energy is stored as a reserve because there is no physical activity. Research in China also shows that western consumption patterns have the higher risk for obesity compared to traditional diet [29] and Bowen (2015), showed that excessive energy intake positively associated with increased body fat where each addition of 100 calories increased energy intake 45 g of body fat.[17] Energy intake and fat suggestion lead to a positive energy balance stored in adipose tissue that leads to obesity.[30]

The demographic transition causes society including adult women to become less movement and communications tools to conduct their daily activities Availability of various needs that the nature of delivery and online services also make people become lazier to move. If physical activity is very low, will be a positive energy balance.[9]670 participants from the Whitehall II cohort study (73% male; mean age 56 years Other studies have shown that there is an increase in BMI and

the prevalence of obesity in women who perform the mild activity[17]). Physical activity has been identified as the fourth major risk factor for global mortality, which is about 3.2 million deaths worldwide.[31]

Multivariate analysis showed that the level of energy intake, carbohydrate intake, dinner habits and physical activity were the major risk factors for obesity ($p < 0.05$). Excessive energy consumption due to low physical activity will be buried in the body to form a positive energy balance, so that fat deposits more difficult to avoid that is reflected by obesity and obesity experienced by adult.[5][31]

CONCLUSION

The prevalence of obesity in adult women in the city of Denpasar by BMI is 40.9% and on waist circumference is 51.8% Food intake is mostly above recommended of energy 52.9%, fat 51.5% and carbohydrates 46, 7%, whereas most eating behaviors commonly consume energy-intensive desserts, regular dinners and very easy access to ready-to-eat foods. Energy intake, carbohydrates, dinner habits and physical activity are the main determinants of the increase of obesity adult women in the city of Denpasar.

Conflict of Interest: Authors declare that there is no conflict of interest within this research, publication paper and funding support

Ethical Clearence : Research has obtained approval from Udayana University Ethics Commission with Number.1558 / UN.14.2 / KEP / 2017.

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