Dairy Food Consumption, BMI, and Their Relation with Evelated Blood Pressure (EBP) in Middle Adulthood

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Keyword: Dairy Food Consumption, EBP, Middle Adulthood.

Abstract: Background: The habit of consuming smoked food, or preserved with salt like salted fish, low consumption of fresh fruits and vegetables, and the habit of smoking in the population of the Coastal Region of Surabaya is a trigger factor of Elevated Blood Pressure. Excessive levels of sodium and water will increase total volume and blood pressure. Preliminary study results show there were 48.4% of coastal residents who suffer from hypertension. The purpose of this study was to analyze the relationship between dairy food consumption, BMI with elevated blood pressure in middle adulthood. Methods: This research used analytic observational design with Cross Sectional approach. Population amounted to 93 people while the sample amounted to 46 by using simple random sampling technique. Statistic test used spearman rho test. Results: The results showed that dairy food consumption and BMI were associated with hypertension with p value 0.006 for dairy food consumption and 0.037 for BMI. Conclusions: The implication of this research is expected the society to be more concern about that BMI and do more sport and always check the health status at the nearest Medical Center so that the risk of Elevated Blood Pressure can be reduced.

1 INTRODUCTION

EBP is defined as the persistent elevation of systolic BP 140 mmHg or more and diastolic BP 90 mmHg or more (Black & Hawks, 2014). Food selection is based on sensory, social, psychological, emotional, cultural, health, economic, food preparation methods and other factors (Arora, 2007). The habit of consuming smoked food, or preserved with salt like salted fish, low consumption of fresh fruits and vegetables, and the habit of smoking in the population of the Coastal Region of Surabaya is a trigger factor of EBP. Patients with hypertension rapidly increase blood pressure if not treated, causing death within 1 or 2 years (Vinay Kumar, Ramzi S. Cotran, 2013). Excessive levels of sodium and water will increase total volume and blood pressure (Black & Hawks, 2014).

Data World Health Organization (WHO), in 2008 about 40% of adults over 25 years have been diagnosed with hypertension around the world. The highest prevalence of EBP in the area of Africa 46% of adults aged over 25 years, while the lowest prevalence of 35% was found in the United States. Overall, high-income countries have a lower prevalence of hypertension (World Health Organization, 2013).

Data of Riset Kesehatan Dasar by Health Ministry of Republic Indonesia in 2007 and 2013 showed that the prevalence of hypertension aged 18 years and over in 2007 in Indonesia was 31.7% and decreased in 2013 by 5.9% (from 31.7% to 25.8%). In 2013, the prevalence of hypertensive women (31.9%) was higher than males (28.8%) (kementerian kesehatan RI, 2014). Assessment of individual diet conducted by researchers in coastal Surabaya in December 2016 showed that of 192 people there were 93 (5.67%) who suffer from hypertension, the consumption of side dish was high compared with vegetable consumption, that is 343 (81,09%) for side dish consumption and 223 (52,72%) for consumption of vegetables.

(Aaronson & Ward, 2010) states that consuming foods with high salt can lead to impaired sodium excretion in the kidneys, the resulting sodium retention increases blood volume, and further increases CO and Arterial Blood Pressure (ABP). This condition will result in increased blood pressure. Hypertension is commonly referred to as a 'silent killer' and can not be ignored simply because

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it can increase the likelihood of complications such as stroke, heart failure, diabetes mellitus and kidney failure.

The pattern of food consumption among the coastal population of Surabaya should be appropriate to the needs. By knowing the symptoms and risk factors for the occurrence of hypertension patients are expected to do prevention and management with diet or lifestyle modifications or drugs so that complications can be avoided. the purpose of this study was to analyze the relationship between diet and physical activity with the incidence of hypertension in middle adulthood population in coastal areas in Surabaya.

2 METHODS

The design of this study was observational analytic with cross sectional approach in which the dependent and independent variables examined in the same time. The research was conducted in February - April 2017 in Coastal Area of Surabaya City. Population in this research were middle adulthood with EBP in Coastal Area of Surabaya City which amount to 93 people. The sample in this study amounted to 46 respondents taken randomly using simple random sampling so that samples in this study have the same opportunity to be selected as a sample. Data were analyzed using Spearman Rho test.

The diet in this study was measured using a Food Frequency (FFQ) Questionnaire. Researchers determine the value of each category of diet with the following conditions (Nadimin, 2011): Good : ≥ skor $\bar{X}$FFQ, Less : < skor $\bar{X}$FFQ.

The evaluation criteria for hypertension (Aaronson & Ward, 2010) with the following conditions: Mild hypertension: 140-159/90-99 mmHg, Moderate hypertension: 160-179/100-109 mmHg and High hypertension: 180-210/110-119 mmHg.

3 RESULT

In this section described about the results from data collection on the relationship dairy food consumption and BMI with elevated blood pressure.

Table 1 showed that form a total of 46 responden there were 32 (69.6%) female respondents and male respondents were 14 (30.4%).

Table 1: Characteristics of respondents by sex in middle adulthood.

Sex	Frequency	Percentage (%)
Male	14	30.4
Female	32	69.6
Total	46	100

Table 2: Characteristics of respondents by age in middle adulthood.

Age	Frequency	Percentage (%)
30-45 th	9	19.6
46-60 th	26	56.5
> 60 th	11	23.9
Total	46	100

Table 3: Characteristics of respondents by consumption of fruits and vegetables in middle adulthood.

Consumption of Fruits and Vegetables	Frequency	Percentage (%)
Yes	31	67.4
Rarely	9	19.6
Never	6	13
Total	46	100

Table 4: Characteristics of respondents based on body mass index in middle adulthood

BMI	Frekuensi (f)	Persentase (%)
Very thin	0	0
Skinny	1	2,2
Normal	19	41,3
Obes	17	37
Obesitas Level I	7	15,2
Obesitas Level II	2	4,3
Obesitas Level III	0	0
Total	46	100%

Table 2 showed that form a total of 46 responden whom aged between 46-60 years as many as 26 (56.5%) respondents, age over 60 years as many as 11 (23.9%) respondents and age between 30-45 years as many as 9 (19.6%) respondents.

Table 3 showed that 31 (67.4%) respondents consumed vegetables and 9 (19.6%) respondents rarely consume fruits, and 6 (13%) did not consume vegetables.

Table 4 showed that 19 people (41.3%) Normal, 17 people (37%) obese, 7 people (15.2%) Obesity Level 1, 2 people (4.3%) Obesity Level 2, and 1 person (2.2%) skinny.

Table 5: The relationship between dairy food consumption and EBP in middle adulthood.

Diary food consum-ption	EPB							
	Mild		Moderate		High		Total	
	f	%	f	%	f	%	f	%
Good	16	84.2	2	10.5	1	5.3	19	100
Less	12	44.4	8	29.6	7	25.9	27	100
Total	28	60.9	10	21.7	8	17.4	46	100
Spearman Rho test ρ = 0,006								

Table 5 showed that of 28 respondents with low EBP rate there were 16 (57.1%) with good diet. of 10 respondents with moderate hypertension rate were 8. (80%) who had less diet, of 7 respondents with high EBP level there are 6 (85.7%) who have less diet and respondents who had extremely high hypertension levels all had less diet. Spearman correlation test results show the value of ρ = 0.006. it's means that there were correlation between dairy food consumption with EBP in middle adulthood.

Table 6 showed that respondents who had normal BMI were 12 (63.1%) with mild hypertension status, while respondents with obesitas level 2 all of them suffer from severe hypertension. Spearman correlation test results show the value of ρ = 0.037. it's means that there were correlation between BMI with elevated blood pressure in middle adulthood.

4 DISCUSSION

4.1 Dairy Food Consumption with Elevated Blood Pressure in Middle Adulthood

Based on the table 5 showed that of 28 respondents with low hypertension rate there were 16 (57.1%) with good diet. of 10 respondents with moderate hypertension rate were 8 (80%) who had less diet, of 7 respondents with high hypertension level there are 6 (85.7%) who have less diet and respondents who had extremely high hypertension levels all had less diet. This shows that the better the diet, the lighter category of hypertension experienced. Factors that affect blood pressure include, overweight, lack of exercise, consuming high salt foods, consuming less fresh fruits and vegetable s, drinking too much alcohol and smoking (Palmer, 2007).

The results of interviews conducted by researchers found that respondents often consume side dishes such as fresh fish, salted fish, smoked fish, chicken meat and rarely consume vegetables and fruits every day. Respondents only consume fruit 3-5 times a month, whereas according to dietary guidelines in the prevention of EBP recommend to consume 4-5 servings with serving size 1 medium fruit. Researcher assume that the habit of consuming high processed sodium side dishes and the lack of consumption of fruits is one of the factors that contribute to the increase in blood pressure. This is in accordance with the research conducted by (D. Rose Ewald, Sarah Howle Bond, & Lauren A. Haldeman, 2017) that excessive sodium intake is a risk factor for higher blood pressure. Sodium intake that attracts fluid from intracellular and retains water in extracellular, if not controlled causes blood volume to increase so that heart will work harder in pumping blood to blood vessels (Aaronson & Ward, 2010).

4.2 Body Mass Index with Elevated Blood Pressure in Middle Adulthood

The results of cross-tabulation between BMI with blood pressure showed that in 19 respondents with normal BMI, 12 (63.2%) respondents with mild EBP and EBP 5 (26.3%) respondents with moderate EBP. In 17 respondents with fat BMI there were 11 (64.7%) respondents with mild EBP and 4 (23.5%) respondents with moderate EBP. This is in accordance with the results of research conducted by Rahajeng and Tuminah (2009) which shows that people with obesity nutritional status at risk 2.79 times exposed to EBP.

Obesity is also often associated with the development of hypertension (Ardiansyah, 2012). Obesity could potentially cause increased levels of insulin which results in increased blood volume. Changes in hormone levels affect blood pressure regulation. Production of cortisol by increased adipose tissue, leptin and angiotensinogen released from adipose tissue leads to direct hypertension effects (Barasi, 2007). Researchers assume that nutritional status can affect blood pressure because it is associated with increased amount of fat in the body that can affect cardiac output and blood circulation volume. Lifestyle modification is very important in preventing obesity (Xiaohui Hou,

2008). Changing lifestyles in adults is very difficult therefore, it's needed full support (Ewald & Haldeman, 2016).

5 CONCLUSIONS

Diary food consumption and Boddy Mass Index has a relationship with hypertension in Middle Adulthood. Respondent are expected to be more concern about their dairy food consumption, BMI and do more sport and always check the health status at the nearest Medical Center so that the risk of Elevated Blood Pressure can be reduced.

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