Relationship between Physical Activities, Stress and Eating Patterns with the Risk of Hipertension in Women in Baiturrahman Community Health Centers Banda Aceh

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Abstract

The pattern of disease events at this time has experienced a change marked by changes in disease and death that were originally dominated by infectious diseases switch to non-communicable diseases. In the 2018 Riskesdas results the prevalence of hypertension in Aceh increased compared to 2013. Purpose: to find out the factors associated with the incidence of hypertension in women at the Baiturrahman Health Center in Banda Aceh City. Research Methods: This research is a type of quantitative research with cross-sectional study design conducted on 124 samples. Sampling was carried out using the Accidental Sampling technique. Data analysis uses univariate, bivariate and multivariate. Statistical analysis using chi-square and logistic regression. Results: The results showed that there was a significant relationship between family history (p-value = 0.007, OR = 2.8), food consumption patterns (p-value = 0.025, OR = 2.5), obesity status (p-value = 0.046, OR = 2.2), Physical activity (p-value = 0.012, OR = 3.2) and Stress (p-value = 0.017, OR = 2.9) with the incidence of hypertension in women. Multivariate analysis results indicate that family history is a dominant factor in the incidence of hypertension (OR = 4.7). Conclusion: Family history, food consumption patterns, obesity, physical activity and stress are related to the incidence of hypertension and the most dominant factor in the incidence of hypertension in women in the working area of the Baiturrahman Health Center in Banda City is family history of hypertension.

I. Introduction

The pattern of disease events at this time has experienced a change marked by changes in disease and death which were originally dominated by infectious diseases switch to non-communicable diseases (Purnamasari, 2019). Non-communicable diseases (PTM), also known as chronic diseases, tend to last long and are the result of a combination of genetic, physiological, environmental and behavioral factors (WHO, 2018). Non-communicable diseases (PTM) kill 41 million people each year or 71% of all deaths globally influenced by lifestyle such as unhealthy diets, inadequate physical activity, exposure to tobacco smoke or dangerous alcohol use (WHO, 2018) . The results of Riskesdas in 2018 showed an increase in PTM in Indonesia such as diabetes mellitus, hypertension and obesity (Kemenkes RI, 2018).

Health is a very important element of the quality of life in national development. The national health system has established that the goal of health development is to increase awareness, willingness, and ability to live healthy for everyone so that a high degree of public

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health can be realized - high human resources, as an investment for socially and economically productive development. (Hasibuan, 2020).

An unhealthy lifestyle can increase blood pressure, overweight, hyperglycemia (high blood glucose levels) and hyperlipidemia (high blood fat levels) which are metabolic risk factors that can cause cardiovascular disease (WHO, 2018). Changes in lifestyle that are increasingly modern at this time cause an increasing number of PTM events such as hypertension (WHO, 2018). Hypertension is a condition of an increase in blood pressure higher than 140/90 millimeters of mercury (mmHG) (WHO, 2019). The number 140 mmHG refers to systolic and the number 90 mmHG refers to diastolic. Systolic pressure is the pressure when the heart pumps blood throughout the body and diastolic blood pressure is the pressure when the heart muscle relaxes, before returning to pump blood (WHO, 2019).

Current trends show that the number of adults with hypertension is increasing, with an increase seen mainly in low and middle income countries and it is estimated that by 2025 hypertension will increase to 1.56 billion in adults (Tabrizi et al., 2016). According to the results of the Basic Health Research (Riskesdas) in 2007, 2013 and 2018 aimed at increasing the prevalence of PTM such as hypertension, nationally the results of the 2018 Riskesdas showed that the prevalence of people with high blood pressure was 34.1%.

Based on the 2018 Riskesdas data, cases of hypertension in Aceh province experienced fluetime, in the results of Riskesdas in 2013 the prevalence of hypertension in Aceh decreased compared to 2007, but in the results of riskesdas in 2018 the prevalence of hypertension in Aceh increased again. Hyperteni prevalence data obtained by researchers from the Banda Aceh City Health Office, showed that during the last 3 years, the highest hypertension cases were in the Baiturrahman Health Center in Banda Aceh City. Based on several things that have been stated previously, the researcher wants to conduct research on the determinants of hypertension in the working area of the Baiturrahman puskesmas.

II. Research Method

This research is a type of quantitative research with a Crossectional Study design. The sample in this study was 124 people, carried out matching (matching) based on age and gender. Sampling was carried out using the Accidental Sampling technique at the Baiturrahman Health Center, Banda Aceh City. Data collection was carried out using a standard questionnaire. Hypertension is a dependent variable, while family history, food consumption patterns, obesity, physical activity, and stress are the independent variables studied. The statistical analysis conducted in this study was the Chi-Square test and multiple logistic regression analysis using SPSS IBM 25 software, with a significance level of $p < 0.05$. This study has received permission from the Health Research Ethics Commission of the Faculty of Medicine at Syiah Kuala University / Regional General Hospital Dr. Zainoel Abidin Banda Aceh with registration number 072 / EA / FK-RSUDZA / 2020.

III. Discussion

The number of respondents in this study was 124, all respondents were women aged 25-55 years. Of the 124 respondents, 51.6% had a family history of hypertension, 63.7% often consumed foods that trigger hypertension. 56.5% were obese, 53.2% had moderate physical activity, and 52.4% had moderate stress levels (table 1).

Table 1. Description of the Independent Variables

Variable	n	%
Family history of hypertension		
Yes	64	51,6
No	60	48,4
Food consumption patterns		
Often	79	63,7
Not often	45	36,3
Obesity		
Yes	70	56,5
No	54	43,5
Physical activity		
Light	37	29,8
Medium	66	53,3
Heavy	21	16,9
Stress level		
Heavy	39	31,5
Medium	65	52,4
Light	20	16,1

The results of the multiple logistic regression analysis showed that family history, stress, obesity, and food consumption patterns had a significant relationship with the incidence of hypertension (table 3). Family history is the most dominant risk factor for hypertension, with OR = 4.7. Negelkerke R Square value obtained from this analysis is 0.382. This value indicates that family history, stress level, obesity, and consumption of foods that trigger hypertension contribute 38.2% to the incidence of hypertension, while the rest is determined by other variables outside this study.

Table 2. Logistic Regression Test Results

Variable Name	P-Value	OR	CI 95,0%	
			Lower	Upper
Family history	0.001	4.772	1.864	12.215
Stress	0.032	4.204	4.204	1.133
Obesity	0.035	2.630	1.071	6.456
Food consumption patterns	0,039	2.755	1.050	7.227

Genetic factors are one of the important factors that influence essential hypertension (Peng et al., 2020). Essential hypertension is a multifactorial disease caused by genetic and environmental factors (Peng et al., 2020 and Staessen et al., 2003), this is consistent with the results of research showing that there are two main factors that influence the incidence of hypertension, namely genetic factors and factors environment (Aune et al., 2016). The results showed that the influence of genetic factors on hypertension was around 20-55% (Fang et al., 2019 and Levy et al., 2009).

Based on the results of research conducted in Japan, consumption of foods high in sodium can cause hypertension by 1.2 times in those with higher sodium intake compared with lower (Takase et al., 2015). The effect of high sodium intake on the onset of hypertension occurs through an increase in plasma volume, cardiac output, and blood pressure (Shils and Shike, 2006). Excess intake of sodium will increase fluid from cells, where water will move towards an electrolyte solution that has a higher concentration, this result in an increase in blood plasma volume and will increase cardiac output, so that blood pressure increases (Muliyati et al., 2011). In addition, high sodium intake can reduce the diameter of the arteries, so that the heart pumps harder to push the increased blood volume through narrow spaces (Shils and Shike, 2006a).

The results of research conducted by Cahyahati (2018) on 100 elderly coastal areas showed there was a relationship between sodium intake with systolic and diastolic blood pressure. The most source of sodium consumed by respondents came from table salt and sea preparations (anchovies, salted fish and shellfish). The results of this study are in line with the results of research from Astuti (2017) which states that there is a very significant relationship (0,000) in the consumption patterns of hypertension-triggering foods with hypertension events such as high cholesterol, milk and processed foods, as well as foods with high MSG content. Epidemiological studies have shown that people with high sodium intake are more likely to have hypertension compared to those with relatively low sodium consumption (Pressure, 1988; Mente et al., 2014). Although excessive sodium intake causes an increase in blood pressure, high sodium intake does not in fact cause hypertension in all people because the sensitivity of individuals to sodium intake is influenced by genetics (Luft et al., 1979; Murray et al., 1978). Another study conducted by Feryadi (2012) also showed that respondents with the consumption of fatty foods in the moderate category mostly did not experience hypertension (68.57%) and respondents with the consumption of fatty foods in the category often often experienced hypertension (84.21%). this shows the more frequent consumption of fatty foods the more risk of hypertension (Feryadi et al., 2014).

Based on the results of research conducted by Lestari (2010), it is known that subjects who are included in the IMT category> 25 kg / m2 have a 1.8 times risk of suffering from hypertension compared to subjects who are included in the IMT category <25 kg / m2. Physiological changes in the body that can occur due to obesity include an increase in the amount of free fatty acids that will narrow blood vessels and an increase in blood volume which causes the heart to work harder to pump blood throughout the body so that blood pressure will increase. In addition, an increase in the sympathetic nervous system, insulin resistance, and increased activity of the angiostensin aldosterone renin system (Shils and Shike, 2006b). Study of Trials of Hypertension Prevention Phase II, shows that weight loss is associated with a decrease in blood pressure and a reduced risk of developing hypertension (Neter et al., 2003).

The results of this study indicate that there is a significant relationship between the level of physical activity and the incidence of hypertension with OR = 3.2 times more risk in people with mild physical activity. The results of this study are in line with research conducted by Lestari (2010) which shows that there is a significant relationship between physical activity and the incidence of hypertension in women aged 30-40 years. Increased physical activity can reduce the risk of hypertension. This research is in accordance with the results of a meta-analysis study which states that high physical activity can reduce systolic and diastolic blood pressure by 3 mmHg (Kelley and Kelley, 2000).

Stress can trigger the occurrence of hypertension which is thought to be a relationship through increased sympathetic nerve activity so as to raise blood pressure intermittently or erratically (Martono, 2015). Excessive stress can trigger the onset of increased adrenaline

horomon so that the heart pumps blood faster and increases (Sukma et al., 2019). Some risk factors that might explain gender differences in stress prevalence include differences in sex hormones, differences in dealing with problems, differences in socialization, differences in frequency and reactions to stress in life, differences in social roles and cultural influences (Sudawam and Livana, 2017). The results of this study indicate that the stress level is related to hypertension, the lower the stress level of the respondent, the lower the prevalence of prehypertension and hypertension. The results of this study are in line with the research of Hu et al., (2015) and Agustina and Raharjo (2015) where stress is significantly related to hypertension. Research Liu et al., (2017) also states that psychosocial stress is associated with an increased risk of hypertension.

IV. Conclusion

The results showed that there was a significant relationship between family history (p-value = 0.007, OR = 2.8), food consumption patterns (p-value = 0.025, OR = 2.5), obesity status (p-value = 0.046 , OR = 2.2), Physical activity (p-value = 0.012, OR = 3.2) and Stress (p-value = 0.017, OR = 2.9) with the incidence of hypertension in women. Multivariate analysis results indicate that family history is a dominant factor in the incidence of hypertension (OR = 4.7). Family history, food consumption patterns, obesity, physical activity and stress are related to the incidence of hypertension and the most dominant factor in the incidence of hypertension in women in the working area of the Baiturrahman Health Center in Banda City is a family history of hypertension.

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