

## Correlation of Family History, Patterns Of Nutrition Consumption (Fat and Sodium) and Physical Activity With The Incidence of Hypertension

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**Abstract:** *Hypertension is a common blood vessel disease suffered by the community, characterized by an increase in systolic blood pressure above 140 mmHg and diastolic blood pressure above 90 mmHg. Objective: This study aimed to found out the correlation between family history, consumption patterns of dietary fat and sodium and physical activity with the incidence of hypertension in the work area of the Lolo Health Center, Paser Regency. Methods: This research was an analytic observational with a cross sectional design. The population was the entire population aged 35-59 years. Samples were taken as many as 48 people with accidental sampling technique. Data collection was collected through interviews with questionnaires. Results: based on the results of the study showed that there was a relationship between family history, dietary fat consumption patterns, physical activity with the incidence of hypertension, and there was no relationship between consumption patterns of sodium with the incidence of hypertension. Conclusion: respondents are expected to check their blood pressure regularly, limit the consumption of foods that contain high fat and sodium by replacing increased consumption of fruits and vegetables and routinely doing physical activities.*

**Keywords:** *hypertension, Family history, Patterns of nutrition consumption (Fat and Sodium), Physical activity*

### INTRODUCTION

The main health problems to date in both developed and developing countries are heart disease and blood vessel disease. Blood vessel disease that is commonly experienced by the community is high blood pressure or also known as hypertension. Hypertension is a condition where there is an increase in systolic blood pressure above 140 mmHg and diastolic blood pressure above 90 mmHg (Depkes, 2019). Hypertension is also called the silent killer disease because the signs and symptoms cannot be observed only from the outside, but run slowly and have a very dangerous impact because it can cause several complications such

as heart, brain and kidney disease (Maulidina, 2018).

Based on current data, there are 600 million people with hypertension worldwide and every year there are 3 million people who die. During the last 15 years the leading causes of death in the world were stroke and heart disease with a total of 15.2 million deaths in 2016 (WHO, 2018).

The problem of hypertension in East Kalimantan has increased the prevalence of cases from 29.6% in 2013 to 39.3% in 2018 and currently ranks third in the highest hypertension cases in Indonesia. Based on the results of measurements of the population aged 18 years

according to the Regency/City of East Kalimantan Province, the prevalence of hypertension in Paser Regency ranks fourth at 41.80% where this percentage exceeds the provincial average of only 39.3% (Riskasdas, 2018).

Risk factors for hypertension are divided into two, namely factors that can be changed and factors that cannot be changed. Age, gender, and family history are factors that cannot be changed, while obesity, physical activity, smoking habits, dietary fat and sodium and alcohol consumption are factors that can be changed (Paul, 2017).

Inappropriate eating patterns such as liking to consume foods with high fat and high sodium content can cause hypertension (Susanto, 2016). According to research, excessive fat intake can increase cholesterol levels which can cause disturbances in blood vessels so that blood volume experiences a greater increase in pressure (Ramadhani, 2017), while excessive sodium intake can shrink the diameter of the arteries as a result the heart has to pump harder, causing blood pressure to rise. Other risk factors such as lack of physical activity in working and non-working individuals can cause hypertension. So to reduce a person's risk of developing hypertension, they can do physical activities such as exercising. Regular exercise can reduce the risk of atherosclerosis, which is one of the causes of high blood pressure (Salman, 2015).

The incidence of hypertension can also occur because of the discovery of a history of hypertension in a family. Family history is related to genetics and is one of the risk factors for hypertension that cannot be changed. If your parents have high blood pressure, you have a 60% chance of contracting this disease (Depkes RI, 2006).

Based on the results of observations and also interviews with health workers at the Lolo Health Center and also local residents, the results obtained from 10 residents who have an age range of 35-59 years, there are 5 residents who have a history of hypertension in their family, 6 residents who have relatively light physical activity and also rarely exercise and 6 residents

like to consume foods containing fat and high sodium.

Based on the explanation of the background above, it is necessary to conduct research on the relationship of family history, consumption patterns of fat and sodium nutrients, physical activity with the incidence of hypertension in the work area of the Lolo Health Center, Paser Regency.

## **METHODS**

**Research type and design** This type of research is analytic observational. The research design is cross sectional. The research was carried out in the working area of Lolo Health center from November 2021 to March 2022.

**Population and sample** the population in this study is the entire population with the age of 35-59 years domiciled in the working area of the Lolo Health Center, totaling 2961 people and a sample of 48 people as part of the population. **Materials and Tools** The sampling technique used in this study is accidental sampling. **Data collection techniques** Primary data was obtained through interviews using a questionnaire and blood pressure measurements were carried out with the help of health workers, secondary data was obtained through archives and documents at the Lolo Health Center. **Data analysis** used Spearman Rank correlation test with 95% confidence level and  $\alpha = 0.05$ .

## **RESULTS AND DISCUSSION**

### **Bivariate Analysis**

Based on the results of the processing in table 1, the results showed that respondents who had a family history of hypertension were 33.3% in the category 2 hypertension. Meanwhile, respondents who did not have a family history of 55.6% were in the blood pressure category normal. The results of the Spearman Rank correlation test obtained a probability value of  $p(0.018) < (0.05)$  which means that there is a significant relationship between family history and the incidence of hypertension.

No	Variable	Category	The Incidence of Hypertension								Total	<i>p</i> value	
			normal		Pre-hypertension		Hypertension stage 1		Hypertension stage 2				
			n	%	n	%	n	%	n	%			n
1	Family History	Yes	8	26,7	5	16,7	7	23,3	10	33,3	30	100	0,018
		No	10	55,6	4	22,2	2	11,1	2	11,1	18	100	
	Total	18	37,5	9	18,8	9	18,8	12	25	48	100		
2	Fat Consumption Patterns	Over	3	15	3	15	4	20	10	50	20	100	0,001
		Well	13	56,5	4	17,4	5	21,7	1	4,3	23	100	
		Less	2	40	2	40	0	0	1	20	5	100	
3	Sodium Consumption Patterns	Over	5	26,3	2	10,5	6	31,6	6	31,6	19	100	0,099
		Well	13	44,8	7	24,1	3	10,3	6	20,7	29	100	
		Total	18	37,5	9	18,8	9	18,8	12	25	48	100	
4	Physical Activity	Light	5	19,2	6	23,1	6	23,1	9	34,6	26	100	0,003
		Medium	8	50	3	18,8	2	12,5	3	18,8	16	100	
		Heavy	5	83,3	0	0	1	16,7	0	0	6	100	
		Total	18	37,5	9	18,8	9	18,8	12	25	48	100	

### Family History

Based on table 1, the results showed that respondents who had a family history of hypertension, as many as 33.3% were in the category 2 hypertension. Meanwhile, respondents who did not have a family history of 55.6% were in the normal blood pressure category. The results of the Spearman Rank correlation test obtained a probability value of  $p(0.018) < (0.05)$  which means that there is a significant relationship between family history and the incidence of hypertension in the work area of the Lolo Health Center, Paser Regency.

It is known that most of the respondents have a family history of hypertension. The history of hypertension owned by these respondents mostly came from both of the respondents' parents. Individuals who have a history of hypertension in both parents have a 50-57% chance of experiencing hypertension, whereas if only one of both parents or other family members has a history, the chance of experiencing hypertension is only 4-20% (Mannan, 2013).

This hereditary factor does have an important role in the emergence of a disease carried by family genes. One of the family

members or parents has hypertension, then the offspring also have the same risk or maybe the risk is greater than that inherited by the parent's genes (Ikhwan, 2017).

Patients who have a genetic history of primary (essential) hypertension, if left naturally without therapeutic intervention, together with their environment will cause their hypertension to develop and in about 30-50 years, signs and symptoms of hypertension will appear with possible complications (Musfirah, 2019).

From this study it can be concluded that family history will have an influence on the incidence of hypertension because family history of hypertension is a genetic factor which is basically inherited from father, mother, grandfather, grandmother, uncle, aunt or siblings who are related by blood, thus allowing a person to experience hypertension.

Exposure to habits carried out by other family members can indirectly increase the risk of hypertension. These risk factors cannot be eliminated but can still be anticipated as early as possible by maintaining their health patterns by adopting a healthier lifestyle. Based on the study, it was explained that although 50% of respondents had a family history of hypertension, respondents carried out a healthy lifestyle such as

regulating and maintaining a diet, and regularly doing physical exercise, then it could reduce the emergence of hypertension (Ulva, 2021).

### **The pattern of consumption of fat nutrients**

Based on the results of the research conducted, it shows that there is a relationship between the pattern of consumption of fatty nutrients and the occurrence of hypertension in the Lolo Health Center Work Area, Paser Regency. Most of the respondents have a good fat consumption pattern as much as 47.9%.

Respondents who have a good fat consumption pattern consume an average of 52.534 grams of fat per day with variations in the processing of foodstuffs that are not always fried and tend not to consume a lot of other high fat sources of food such as beef, chicken, butter and other foodstuffs. Meanwhile, those who consumed fat in the higher category averaged 68.760 grams/day. This is because respondents often consume foods high in oil and fat content by processing foodstuffs that tend to be fried in every meal. And there are also those whose fat consumption is included in the less category because the amount of food source of fat they consume is not in accordance with the recommended amount. On average, respondents only consumed 41,238 g/day of fat, in addition to that because the food they consumed contained low fat with processing techniques that did not contain much oil or butter, such as peppered and boiled.

Consumption of foods containing fat per gram contains a greater number of calories compared to other food sources. Based on the recommendations of the health office as stated in the Regulation of the Minister of Health Number 30 of 2013 concerning Inclusion of Information on Sugar, Salt and Fat Content, it is recommended not to consume more than 67 grams of fat per day. The recommended daily intake of fat for adults is 44-47 grams/day or total fat intake from food consumption is 25-30% of total energy (Sugiyanto, 2017).

Consumption of foods that are high in fat can increase cholesterol levels in the blood, especially LDL cholesterol so that it can accumulate in the body. Fat deposits caused by

cholesterol will later stick to blood vessels which over time will form plaques. With the formation of this plaque can cause blockage of blood vessels or also known as atherosclerosis (Hanum, 2016). This situation causes the resistance to blood flow in the blood vessels to be high (Andria, 2013). Conditions caused by inelastic blood vessels and increased systolic blood pressure due to constriction of blood vessels can eventually lead to hypertension.

### **The pattern of consumption of Sodium nutrients**

Based on the results of the research conducted, it shows that there is no relationship between the consumption pattern of sodium and the incidence of hypertension in the working area of the Lolo Health Center, Paser Regency. The amount of sodium consumption is not always associated with hypertension, because hypertension can be caused by other factors such as a lack of knowledge due to a low level of education, as in other studies, where a person with hypertension mostly has a low or basic level of education (Podungge, 2020).

Most of the respondents have a moderate consumption pattern of sodium, which is 60.4%. Respondents who are included in the moderate category consume an average of 1634 mg/day of sodium. Meanwhile, those who are classified as high consume an average of 2215 mg/day of sodium. The consumption of salt recommended by the Minister of Health Regulation No. 30 of 2013 is 2000 mg/day or the equivalent of 1 teaspoon of salt. This method is believed to reduce the value of systolic blood pressure of 3.7 mmHg and diastolic blood pressure of 2 mmHg.

The occurrence of high blood pressure disease may not only be due to high sodium consumption at this time but a manifestation of sodium consumption in the long term. High blood pressure in this study may occur due to the long-standing habit of consuming foods high in sodium and supported by other factors that can affect blood pressure (Listiana, 2017).

Sodium consumed by a person may give different reactions from other individuals. In some people, who are healthy or who have high blood pressure, even if they consume unlimited sodium, the

effect on blood pressure is very little or almost no. Meanwhile, in other groups of individuals, too much sodium consumption can cause blood pressure to rise, triggering hypertension (Yusuf, 2015).

### **Physical Activity**

Based on the results of the research conducted, it shows that there is a relationship between physical activity and the incidence of hypertension in the work area of the Lolo Health Center, Paser Regency. Physical activity can have an effect on blood pressure stability. Based on other studies, individuals who have relatively light physical activity have a 30-50% tendency to suffer from high blood pressure compared to active individuals (Atun, 2014).

This happens because the activities carried out by respondents on a daily basis at home and at work are only routine physical activities. These activities include bathing, sleeping, making up, eating, drinking, sitting, walking around, driving a vehicle back and forth to work, washing dishes, taking care of children, cleaning the house, mopping floors, sweeping floors, washing clothes, drying clothes, ironing clothes, typing, writing, watching TV and others and there are also some respondents who do activities with sports such as jogging and work activities as civil servants, tailors, and private employees in a company that works a lot at night.

Someone who is less active in doing physical activities is more likely to have a higher heart rate. While physical activity that is done regularly can reduce stiff blood vessels and increase the endurance of the heart and lungs so that it can reduce blood pressure (Depkes RI, 2006)

Physical activity, including exercise, is needed by the body to maintain and improve the body's metabolic system, including blood circulation, and make the body feel more fit. A person who does not do physical activity can increase the risk of developing hypertension because it increases the risk of being overweight.

### **CONCLUSIONS**

Based on the research that has been done, it can be concluded that there is a relationship

between family history and the incidence of hypertension, there is a relationship between the consumption pattern of dietary fat and the incidence of hypertension, there is a relationship between physical activity and the incidence of hypertension, and there is no relationship between the consumption pattern of sodium nutrition and the incidence of hypertension. hypertension in the work area of the Lolo Health Center, Paser Regency.

It is expected that respondents are expected to have their blood pressure checked regularly, limit the consumption of foods that contain high fat and sodium by replacing the increased consumption of fruits and vegetables with increased frequency, type, and amount as well as regular physical exercise.

For further researchers, it is recommended to conduct research with different research designs such as case-control, prospective cohorts or experiments with more diverse variables such as knowledge, stress levels, fruit and vegetable consumption patterns, smoking habits and nutritional status. so that different research results will be obtained by looking at the influence of these factors with the incidence of hypertension.

### **CONFLICT OF INTEREST STATEMENT**

No potential conflict of interest was reported by the author

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