
Relationship between Diet and Physical Activity with Blood Pressure of Hypertension Patients in the Gandus Palembang Health Center 2021

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Abstract

Hypertension can be a serious problem because when it is not well taken care of as early as possible, it will develop and cause dangerous complications such as heart failure, congestive kidney failure, stroke, sight problem and kidney problem. Hypertension can be prevented by avoiding the factors that cause it. This study aims to find out and analyze the relationship of diet and physical activity with blood pressure of people with hypertension. Type of analytic observational research with cross sectional design. Sampling in this study using non probability sampling technique, with a purposive sampling approach of 42 respondents. The results of data analysis conducted are univariate analysis and bivariate analysis with Chi Square test. From the data analysis carried out, namely univariate analysis and bivariate analysis with Chi Square test. The results of this study showed that 64.0% had a poor diet with uncontrolled hypertension, and 69.6% had mild activity with uncontrolled hypertension. This study showed that there was a significant relationship between diet and blood pressure in hypertension patients (p -value 0.004, $OR=8.296$) significantly and physical activity significantly increased blood pressure in hypertensive patients (p -value 0.002). So that further researchers are advised to consider other factors that can affect the increase in blood pressure in patients with hypertension, so that they have different criteria and maximize research results.

Keywords: Dietary, Physical Activity, Hypertension, Blood Pressure.

INTRODUCTION

Hypertension is a condition of increasing systolic blood pressure of more than or equal to 140 mmHg and diastolic of more than or equal to 90 mmHg. Hypertension often causes no symptoms, while persistently high blood pressure over a long period of time can cause complications. Therefore, hypertension needs to be detected early, namely by checking blood pressure regularly. According to the World Health Organization, 2013. Hypertension is a global public health problem where hypertension contributes to heart disease, stroke, kidney failure, death, premature and disability.

Based on data from the World Health Organization in 2015, it shows that around 1.13 billion people in the world suffer from hypertension, meaning that 1 in 3 people in the world is diagnosed with hypertension. Patients with hypertension continue to increase every year, it is estimated that by 2025 there will be 1.5 billion people affected by hypertension, and it is estimated that every year 9.4 million people die from hypertension and its complications.

The prevalence of hypertension in developed and developing countries is still relatively high, while the prevalence of hypertension in developed countries is equal to that of the adult population and the prevalence of hypertension in developing countries is that of the adult population. Hypertension based on measurements of the population aged 18 years in the city of Palembang was ranked first. The prevalence of hypertension in the city of Palembang is as much as the population. While the prevalence of hypertension in the population aged 15 years, the city of Palembang contributed the highest number, while the city of Pagaralam became the area with the lowest hypertension sufferers. According to Najmi Raihan & Pristiana Dewi, 2014, the exact cause of hypertension is unknown. However, there are several factors that have been associated with

hypertension, including age, family history of hypertension, gender, education, obesity, lack of physical activity, unhealthy diet, smoking, alcohol consumption, mental stress, and caffeine consumption. The highest risk factors for non-communicable diseases are less consumption of vegetables and fruit, smoking, central obesity, and lack of physical activity.

Diet is one of the main modifiable risk factors in hypertension. A diet high in red and processed meats, fast food, fatty foods and sweet desserts can cause an increase in blood pressure. Poor diet, such as foods that are high in saturated fat, high in salt, lack of vegetables and fruit, and canned foods and beverages triggers hypertension because these foods are not in accordance with the calories needed and contain a lot of preservatives.

Good and regular physical activity will train the heart muscle and peripheral resistance which can prevent an increase in blood pressure. Regular exercise can stimulate the release of endorphins which cause a euphoric effect and muscle relaxation so that blood pressure does not increase. According to research conducted by Husnah.MPH, 2019 regarding the relationship between diet and physical activity with the degree of hypertension, it was found that there is a relationship between diet and the degree of hypertension $p = 0.013$, $RR = 2.012$ and there is a relationship between physical activity and the degree of hypertension $p\text{-value} = 0.008$. It can be concluded that diet and physical activity are related to the degree of hypertension, patients with the wrong diet are at risk of 2.012 times of suffering from hypertension grade II. In line with the research conducted by Rihiantoro & Widodo, 2018. The results show the relationship between diet and the incidence of hypertension with $p\text{-value} = 0.000$ and there is a relationship between physical activity and the incidence of hypertension with $p\text{-value} = 0.005$, so there is a relationship between diet and activity. physical activity with the incidence of hypertension in Tulang Bawang district. Furthermore, research conducted by Istianah, 2018. There is a relationship between diet and blood pressure, a $p\text{-value}$ with a correlation coefficient of 0.533 is obtained, and physical activity on blood pressure is a $p\text{-value}$ with a correlation coefficient of 0.566, so it can be concluded that there is a relationship between diet and physical activity. on blood pressure with a moderate relationship.

A preliminary study conducted on January 7, 2021 through an interview with one of the officers of the Gandus Public Health Center, obtained data on hypertension sufferers in 2020 as many as 1441 people.

RESEARCH METHODS

This type of research is a quantitative research with a cross sectional research design. The population in this study were all patients with hypertension and did not suffer from other comorbidities such as kidney disease, diabetes mellitus, heart disease, congestive kidney failure, and stroke, who were in the working area of the Gandus Palembang Health Center, totaling 180 people (data for November and December) with a total of 42 samples. Sampling in this study using purposive sampling technique. Data analysis used chi-square statistical test.

RESULTS AND DISCUSSION

The study was conducted from May 18 to May 29 at the Palembang Health Center. The results obtained are:

1. Univariate Analysis

a. Age

Table 1
Frequency Distribution of Respondents by Age in The Working Area of The Gandus Public Health Center in 2021 (n=42).

Variable	Mean	Median	SD	Min- Max	95% Ci
Age	49,50	51,00	9,034	32-62	46,50- 52,31

Source: Primary Data, 2021

Based on table 1 describing the frequency distribution based on the age of respondents in the Gandus Palembang Health Center Work area 2021, it is found that the average age is 49.50 years, with a range of 46.50-52.32 years. The youngest age who became the respondent of this study was 32 years old, while the oldest age was 62 years old.

b. Gender

Table 2
Frequency Distribution of Respondents by Gender in The Working Area of The Gandus Public Health Center in 2021 (n=42).

Gender	Frequency	Percentage %
Male	3	7,1 %
Female	39	92,9 %
Total	42	100,0 %

Source: Primary Data, 2021

Based on table 2 above, describing the frequency distribution based on the gender of the respondents in the Gandus Palembang Health Center Work area 2021, it was found that the average hypertension sufferer was 39 women (92.9%) and 3 men (7.1%)

c. Education Level

Table 3
Distribution of Respondents Frequency Based on Education Level in The Working Area of The Gandus Health Center in 2021 (n=42).

<i>Variable</i>	<i>Frequency</i>	<i>Percentage %</i>
<i>Education Level</i>		
<i>Low (SD-SMP)</i>	33	78,6 %
<i>Medium (SMA/SMK)</i>	8	19,0 %
<i>High (Perguruan Tinggi)</i>	1	2,4 %
<i>Total</i>	42	100,0%

Source: Primary Data, 2021

Based on table 3 above describes the frequency distribution based on the education level of respondents in the working area of the Gandus Palembang Health Center 2021, the most respondents with low education (SD – SMP) are 33 people (78.6%), secondary education (SMA/SMK) is 8 people (19.0%), and those with higher education (college) amounted to 1 person (2.4%).

d. Blood Pressure

Table 4
Distribution of Respondents Frequency Based on Blood Pressure in The Working Area of The Gandus Health Center in 2021 (n=42).

<i>Variable</i>	<i>Frequency</i>	<i>Percentage %</i>
<i>Blood Pressure</i>		
<i>Uncontrolled Hypertension</i>	19	45,2 %
<i>Controlled Hypertension</i>	23	54,8 %
<i>Total</i>	42	100,0 %

Source: Primary Data, 2021

Based on table 4 above, it describes the frequency distribution of respondents based on the level of blood pressure (hypertension) in the working area of the Gandus Palembang Health Center 2021, respondents who have uncontrolled hypertension are 19 people (45.2%), and controlled hypertension is 23 people (54.8%).

e. Dietary Pattern

Table 5
Distribution of Respondents Frequency Based on Eating Patterns in The Working Area of Gandus Public Health Center in 2021 (n=42)

<i>Variable</i>	<i>Frequency</i>	<i>Percentage %</i>
<i>Dietary Pattern</i>		
<i>Poor</i>	25	59,5%
<i>Good</i>	17	40,5%
<i>Total</i>	42	100,0%
<i>Source: Primary Data, 2021</i>		

Based on table 5 above, it describes the frequency distribution of respondents based on eating patterns in the working area of Gandus Health Center Palembang 2021. Most of the respondents have a bad diet as many as 25 people (59.5%) and 17 people (40.5%).

f. Physical Activity

Table 6
Frequency Distribution of Respondents Based on Physical Activity in The Working Area of The Gandus Health Center in 2021 (n=42)

Variable	Frequency	Percentage %
Physical Activity		
Low	23	45,8%
Medium	16	38,1%
High	3	7,1%
Total	42	100,0%
Source: Primary Data, 2021		

Based on table 5.6 above describes the frequency distribution of respondents based on physical activity in the work area of the Gandus Health Center Palembang 2021. Some respondents The majority had low physical activity as many as 23 people (45.8%), moderate physical activity 16 people (38.1%) and heavy physical activity 3 people (7.1%).

2. Bivariate Analysis

a. Relationship between diet and blood pressure

Table 7
Distribution of the Relationship between Diet and Blood Pressure of Patients with Hypertension in The Gandus Health Center Working Area in 2021 (n=42)

Variable	Blood Pressure						OR (95%)	p-value
	Uncontrolled Hypertension		Controlled Hypertension		Total			
	n	%	n	%	n	%		
	Dietary Pattern							
Poor	16	64,0	9	36,0	25	100		
Good	3	17,6	14	82,4	17	100	8,296 (1,869-36,832)	0,004
Total	19	45,2	23	54,8	42	100		

Source: Primary Data, 2021

Based on table 7 above the results of the analysis between diet and increased blood pressure (hypertension) it was found that there were 16 people (64.0%) having a bad diet with uncontrolled hypertension, and 3 people (17.6%) having a good diet with uncontrolled hypertension. While respondents who have a bad diet with controlled hypertension are 9 people (36.0%), and respondents who have a good diet with controlled hypertension are 14 people (82.4%).

The results of statistical tests between diet and blood pressure of patients with hypertension obtained p-value = 0.004 (sig < 0.05). So it can be concluded that there is a significant relationship between diet and blood pressure in patients with hypertension. From the results of the analysis, the OR value is found in the Odds ratio , which is 8.296 (95% CI = 1.869-36.832), which means that respondents who have a bad diet are 8.2 times more at risk of developing uncontrolled hypertension, compared to people who have a good diet.

b. Relationship between physical activity and blood pressure

Table 8
Distribution of The Relationship between Physical Activity and Blood Pressure in Patients with Hypertension in The Gandus Health Center Working Area in 2021 (n=42)

Variable	Blood Pressure						OR (95%)	p-value
	Uncontrolled Hypertension		Controlled Hypertension		Total			
	n	%	n	%	n	%		
	Physical Activity							
Low	16	69,6	7	30,4	23	100		
Medium	2	12,5	14	87,5	16	100	α	0,002
High	1	33,3	2	66,7	3	100		
Total	19	45,2	23	54,8	42	100		

Source: Primary Data, 2021

Based on table 8 above, the results of the analysis between physical activity and blood pressure (hypertension) were obtained as many as 16 people (69.6%) with mild physical activity with uncontrolled hypertension, while moderate physical activity was 2 people (12.5%) and severe 1 person (33.3%) with uncontrolled hypertension. Meanwhile, controlled hypertension with light physical activity was 7 people (30.4%), 14 people (87.5%) and 2 people (66.7%). The results of statistical tests between physical activity and blood pressure of patients with hypertension obtained a p-value of 0.002 (sig <0.05). So it can be concluded that there is a significant relationship between physical activity and blood pressure in patients with hypertension.

Discussion

Characteristics of Respondents (Age, Gender, Education Level)

In this study, respondents were 92.9% Women in the working area of the Gandus Palembang Health Center 2021. According to age characteristics, the majority of respondents had an age level between 32-62 years, the average 49.50 years old with a median value of 51.00 years and a standard deviation of 9.034 years. estimation that is believed that 95% of respondents' average age is in the range of 46.68-52.32 years. At the age of 49, women are at a higher risk of developing hypertension than men. This is because in women after menopause, women are not protected by the hormone estrogen which plays a role in increasing HDL, where HDL plays an important role in preventing atherosclerosis.

At the education level, the majority of respondents with low education are 33 people (78.6%), 8 people are intermediate (19.0%), and 1 person has higher education (2.4%). This means that most of the patient's education is still low, so their understanding of health is still lacking. A person's level of education affects a person's ability to receive information and process it before it becomes good or bad behavior so that it has an impact on his health status.

Relationship between diet and blood pressure in patients with hypertension.

The results of this study showed a significant relationship between diet and blood pressure in patients with hypertension, with a p-value of 0.004 (sig < 0.05). The results of the analysis of the relationship between diet and blood pressure of patients with hypertension showed that it was more common in respondents who had a bad diet with uncontrolled hypertension, namely 16 people (64.0%) and 14 people (82.4%) having a good diet with hypertension. controlled hypertension.

The diet that causes hypertension is due to the consumption of unhealthy foods such as offal, salty chips, brains, canned food and drinks (sardines, corned beef). This is because the foods above are not in accordance with the calories needed and contain many preservatives, these eating patterns can trigger hypertension.

In this study, there were respondents whose diet was good but had uncontrolled hypertension (17.6%) and respondents whose diet was poor but had controlled hypertension (36.0%). This can happen because the risk factors for hypertension are not just diet. The results of Najmi Raihan & Pristiana Dewi, 2014 research prove that factors related to the incidence of hypertension include age, family history of hypertension, gender, education, obesity, lack of physical activity, unhealthy diet, smoking, alcohol consumption. , mental stress, and caffeine consumption.

Poor diet causes our body to become susceptible to disease. In this study, more respondents with a bad diet. An unbalanced diet between intake and the need for both the amount and type of food, such as eating high-fat foods, consuming less vegetables, fruits and so on, also eating foods that exceed the body's needs can cause obesity or obesity.

The habit of consuming saturated fat is closely related to increasing body weight which is at risk for hypertension. Consumption of saturated fat also increases the risk of atherosclerosis, which is associated with increased blood pressure. A reduction in the consumption of saturated fat, especially fat in foods of animal origin and an increase in the consumption of moderately

unsaturated fats from vegetable oils, seeds and other plant-sourced foods, can lower blood pressure. Some respondents realized that the habit of consuming saturated fat was a risk factor for hypertension. But most of them can not avoid the habit of consuming saturated fat because they are used to foods that contain saturated fat.

The results of this study are in line with the results of research conducted by Wijaya et al., 2020 at the Internal Medicine Poly Hospital of Raden Said Sukanto Jakarta which stated that there was a significant relationship between diet and the incidence of hypertension at the Internal Medicine Poly Hospital of Raden Said Sukanto Jakarta, with p value = 0.000 and the chi square value is 8.325. A bad diet will cause several disorders such as high cholesterol, increased blood pressure and increased sugar levels.

The results of this study are also in accordance with the results of research conducted by Suoth et al., 2014 at the Kolongan Health Center, Kalawat District, North Minahasa Regency which stated that there was a significant relationship between lifestyle in the form of food consumption and the incidence of hypertension at the Kolongan Health Center, Kalawat District, District. North Minahasa. In this study, it was found that more respondents in the case group had a bad diet, this indicates that the respondents in the case group mostly ate meat, ate fatty foods, fried foods, and foods containing salt 3 times a week by 70%. This situation will spur the incidence of hypertension.

The relationship between physical activity and blood pressure in patients with hypertension

The results showed that there was a relationship between physical activity and blood pressure in patients with hypertension with a p-value of 0.002 (sig < 0.05). The results of the analysis of the relationship between physical activity and blood pressure showed that more respondents had light activity with uncontrolled blood pressure 16 people (68.6%) and moderate activity with controlled blood pressure 12 people (87.5%).

In this study we can see that more respondents do not do enough physical activity than 30 minutes every day, this proves that respondents are still lacking in doing sports activities every day, walking and carrying out daily activities, but respondents are more active home and gardening in a day. Physical activity is very important for controlling blood pressure. Sufficient physical activity can help strengthen the heart. A stronger heart can certainly pump more blood with less effort. The lighter the work of the heart, the less pressure on the arteries so that blood pressure will decrease.

Along with the advancement of the world of technology, it is easier for all activities that cause us to be less mobile (hypokinetic), such as the use of remote controls, computers, elevators and elevators, without adequate physical activity. This condition can eventually cause disease due to lack of movement. Sedentary lifestyle and lack of activity/movement coupled with risk factors such as smoking, unhealthy eating patterns can cause various diseases such as high blood pressure (hypertension), heart disease, blood vessels, diabetes. , overweight, osteoporosis, colon cancer, depression and anxiety.

This study is in line with the results of research conducted by Karim, 2018 at the Tagulandang Health Center which stated that there was a relationship between physical activity and the degree of hypertension in outpatients in the work area of the Tagulandang Public Health Center, Sitaro Regency, with the results obtained a p-value of 0.039. The results of this study are also in line with the research conducted by Manan and Rismayanti (2012) in Bangkala, Jeponto Makassar Regency which stated that physical activity is a risk factor for hypertension with OR = 2.67. This shows that respondents who lack physical activity or exercise have a 2.67 times risk of suffering from hypertension compared to respondents who often do physical activity.

CONCLUSION

The results of the research on the relationship between diet and physical activity with blood pressure in patients with hypertension in the Gandus Palembang Health Center Work Area in 2021 can be concluded as follows:

1. the characteristics of the youngest respondent's average age are 32 years, while the oldest age is 62 years. Based on gender 39 (92.9%) were female, and the most respondents with low education were 33 people (78.6%);
2. 25 (59.5%) had a bad diet, and 17 (40.5%) had a good diet;
3. 23 (45.8%) respondents who have low activity, 16 (38.8%) have moderate activity and 3 (7.1%) strenuous activity;
4. 19 (45.2%) respondents had uncontrolled hypertension, and 23 (54.8%) had controlled hypertension;
5. There is a relationship between diet and blood pressure in patients with hypertension.
6. There is a relationship between physical activity and blood pressure in patients with hypertension.

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