

Relationship Between Diet and Incident Hypertension in the Work Area Health Center Kabaena

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ABSTRACT

Background: Hypertension is an increase in systolic blood pressure of more than 140 mmHg and diastolic blood pressure of more than 90 mmHg, which is caused by disorders in the blood vessels that result in the supply of oxygen and nutrients carried by the blood being blocked to the body tissues that need it.

Objective: The purpose of this study was to determine the relationship between diet and the incidence of hypertension in the Kabaena Health Center work area.

Methods: uses a quantitative research type, descriptive design with a Cross Sectional approach. The population in this study were all people suffering from hypertension at the Kabaena Health Center, totaling 57 people. The sample in this study was 57 respondents using a sampling technique, namely total sampling. Measurement of variables using an instrument in the form of a Frequency Food Questionnaire (FFQ). Data management using SPSS. The analysis used was univariate analysis and bivariate analysis using the chi square test ($p < 0.05$).

Results: bivariate analysis showed a relationship between the type of food and the incidence of hypertension ($p = 0.041$), and no relationship between the amount and frequency of eating and the incidence of hypertension ($p = 0.899$, $p = 0.245$).

Conclusion: The conclusion of this study is that there is a relationship between the type of food and the incidence of hypertension and there is no relationship between the amount and frequency of eating and the incidence of hypertension in the Kabaena Health Center work area.

Keywords: Hypertension, Dietary Habits, Kabaena Health Center

INTRODUCTION

Hypertension or high blood pressure is an increase in systolic blood pressure of more than 140 mmHg and diastolic blood pressure of more than 90 mmHg, which is caused by disorders in the blood vessels that result in the supply of oxygen and nutrients carried by the blood being blocked to the body tissues that need it (Sistikawati et al., 2021).

According to WHO (2018), the prevalence of hypertension in the world is 26.4% or 972 million people suffer from hypertension, this figure has increased in 2021 to 29.2%. WHO (2018) estimates that 9.4 million people die each year due to complications of hypertension. In developed countries (2018) there were 333 million cases of hypertension out of 972 million hypertension sufferers and 639 million others were found in developing countries including Indonesia (Casmuti & Fibriana, 2023).

Based on data from the 2018 National Riskesdas, the prevalence of hypertension in Indonesia continues to experience a significant increase, from 2013 to 2018, where it rose from 25.8% to 34.1%. Therefore, it is estimated that there are 63,309,620 individuals in Indonesia who suffer from hypertension. The data also shows around 427,218 deaths due to hypertension. Hypertension can affect various age groups: ages 31-44 years have a prevalence of 31.6%, ages 45-54 years have a prevalence of 45.3%, and ages 55-64 years have a prevalence of 55.2%. The islands of Kalimantan and

Java have the majority of hypertension in Indonesia in people over 18 years, according to national measurements. Among the 34 provinces in Indonesia, Southeast Sulawesi (2018) ranks 18th with a prevalence of hypertension, with around 29.75% (Albah, Sety, & Harleli, 2023).

According to data from the Southeast Sulawesi Provincial Health Office, the prevalence of hypertension cases in 2017 was 6.24%, then in 2018 it increased to 9.16%, and increased further in 2019 to 10.26%. Likewise in 2020, the prevalence of hypertension in Southeast Sulawesi reached 12.81% (Southeast Sulawesi Provincial Health Office, 2021). Hypertension cases in Bombana Regency in 2020 ranked fourth for the highest hypertension cases after Kendari City, Central Buton and North Buton Regency. The prevalence of hypertension in Bombana Regency in 2018 was 1.82%, then increased in 2019 to 2.21% and increased further in 2020 to 3.75% (Fitri, Ihsan, & Ananda, 2022).

Based on the results of quantitative initial data collection, the number of hypertension sufferers in April 2024 in the Kabaena Health Center Area was 57 sufferers. Based on a preliminary study at the Kabaena Health Center, information from health workers said that hypertension was suspected of having an unhealthy diet because the local community was used to or had the habit of eating unhealthy foods such as often eating salted fish.

Uncontrolled hypertension can cause complications that cause damage to other organs. To

prevent complications that cause damage to other organs in elderly people with hypertension, several things can be done, such as changing their diet to less salt, controlling their obesity, and changing their lifestyle. Everyone's knowledge of how to prevent hypertension is closely related to making lifestyle changes (Widianto, Romdhoni, Karita, & Purbowati, 2019).

Eating patterns are one of the risk factors for increasing hypertension. Eating patterns are a person's habits related to the type of food, the amount of food and the frequency of eating consumed each day. Consumption of foods that trigger hypertension include excess sodium intake, excess fat intake, and lack of consumption of foods that are sources of potassium (Elivia, 2022).

Diet is one way to regulate the type or amount of food according to the proportion of the body's needs to maintain health, nutritional needs, and prevent diseases, especially hypertension (Putri, Sutresna, & Rahmat, 2023).

The amount of food consumed by hypertensive patients should be adjusted to the nutritional needs and health conditions of the individual. Food portions should not be excessive and it is recommended to consume food in sufficient quantities to meet daily nutritional needs. In addition, it is also important to pay attention to the quality of the food consumed, such as choosing foods that are low in salt, high in fiber, and nutritionally balanced. By regulating the amount and type of food consumed appropriately, hypertensive patients can help lower blood pressure and improve their health conditions (Taqiyah, Ramli, & Najihah, 2021) (Sulfikar & Rajab, 2024).

Eating frequency refers to the number of meals and snacks a person consumes in a day. Research shows that eating frequency can affect a variety of health factors, including blood pressure and the risk of hypertension. In addition, increasing eating frequency can also increase the intake of important nutrients such as potassium, calcium, and other vitamins (Kim et al., 2014).

Based on a preliminary study at the Kabaena Health Center, information from health workers stated that hypertension was suspected to be due to poor eating habits because the local community was used to or had the habit of eating unhealthy foods.

Based on the background description above, the researcher is interested in conducting research on "The Relationship between Dietary Patterns and Hypertension Incidence in the Work Area of the Kabaena Health Center, Bombana Regency 2023"

METHODS

This study uses a quantitative research type. The research design used is descriptive, with a cross-sectional design to determine the relationship between variables where the independent variable and the frontal variable are identified at a time. This

study was conducted on June 24-July 7, 2024. The variables in this study are divided into two variables, namely independent and dependent variables. The independent variable is dietary patterns, the dependent variable is the incidence of hypertension. The population in this study were all people suffering from hypertension at the Kabaena Health Center, totaling 57 people. The sample in this study was 57 respondents using a sampling technique, namely total sampling. Measurement of variables using an instrument in the form of a Frequency Food Questionnaires (FFQ) questionnaire. The data processing technique in this study uses the SPSS application for data tabulation. The data analysis used is univariate analysis to see the frequency distribution of each variable and bivariate analysis to see the relationship between the independent variable and the dependent variable using the Chi-Square test with a significance level of <0.05, which means Ha is accepted. This research has passed the ethical quality with number 169/STIKES-NH/KEPK/VI/2024 issued on June 20, 2024 Nani Hasanuddin Health Sciences College.

RESULTS

1. Univariate Analysis

Table 1. Frequency Distribution and Percentage of Gender Characteristics of Community Respondents in the Kabaena Health Center Area

Gender	Frequency (n)	Percent (%)
Man	13	22.8
Woman	44	77.2
Total	57	100.0

Based on Table 1, it shows that the gender characteristics of the majority of respondents were female, with 44 respondents (77.2%), and male, with 13 respondents (22.8%).

Table 2. Frequency Distribution and Percentage of Gender Characteristics of Community Respondents in the Kabaena Health Center Area

Age	Frequency (n)	Percent (%)
Adulthood (26-35)	1	1.8
Adulthood (36-45)	7	12.3
Elderly (45-55)	10	17.5
Elderly (56-65)	26	45.6
Seniors (>65)	13	22.8
Total	57	100.0

Based on table 2, it shows that out of 57 respondents, it was found that the age characteristics of the respondents were mostly in the late elderly age (56-65), namely 26 respondents (45.6%), and the fewest were in early adulthood (26-35), namely 1 respondent (1.8%).

Table 3. Frequency Distribution and Percentage of Respondents' Education in the Kabaena Health Center Area

Education	Frequency (n)	Percent (%)
Elementary School	22	38.6
Junior High School	10	17.5
Senior High School	20	35.1
Associate Degree	1	1.8
Bachelor's Degree	3	5.3
Master's Degree	1	1.8
Total	57	100.0

Based on table 3, it shows that out of 57 respondents, the characteristics of the respondents' jobs that are most likely to be in elementary school education, namely 22 respondents (38.6%), and the least likely to be in D3, namely 1 respondent (1.8%).

Table 4. Frequency Distribution and Percentage of Respondents' Occupations in the Kabaena Health Center Area

Work	Frequency (n)	Percent (%)
Doesn't work	5	8.8
Housewife	41	71.9
Self-employed	1	1.8
Civil Servant/ Employee	5	8.8
Farmer/ Laborer	3	5.3
Etc	2	3.5
Total	57	100.0

Based on table 4, it shows that out of 57 respondents, the characteristics of the respondents' jobs that were most common were housewives, namely 41 respondents (71.9%), and the least were self-employed, namely 1 respondent (1.8%).

Table 5. Frequency Distribution and Percentage of Food Types of Community Respondents in the Kabaena Health Center Area

Types of Food	Frequency (n)	Percent (%)
No Risk	3	5.3
At risk	54	94.7
Total	57	100.0

Based on table 5, it shows that out of 57 respondents, there were 3 respondents (5.3%) who had “non-risky” food types and 54 respondents (94.7%) who had “risky” food types. **Table 6.** Frequency Distribution and Percentage of the Number of Foods of Community Respondents in the Kabaena Health Center Area

Amount Food	Frequency (n)	Percent (%)
In accordance	53	93.0
It is not in accordance with	4	7.0
Total	57	100.0

Based on Table 6, it shows that of the 57 respondents, 53 respondents (93.0%) had an “appropriate” eating frequency and 4 respondents (7.0%) had an “inappropriate” eating frequency. **Table 7.** Frequency Distribution and Percentage of Respondents' Food Frequency in the Kabaena Health Center Area

Frequency Food	Frequency (n)	Percent (%)
Often	7	12.3
Seldom	50	87.7
Total	57	100.0

Based on Table 7, it shows that out of 57 respondents, there were 7 respondents (12.3%) who had a “often” eating frequency and 50 respondents (87.7%) who had a “rarely” eating frequency.

Table 8. Frequency Distribution and Percentage of Hypertension Incidents in Community Respondents in the Kabaena Health Center Area

Incident Hypertension	Frequency (n)	Percent (%)
Prehypertension	10	17.5
Stage 1	13	22.8
Stage 2	34	59.6
Total	57	100.0

Based on Table 8, it shows that of the 57 respondents, there were 10 respondents (17.5%) who were "prehypertensive", 13 respondents (22.8%) who were "stage 1" and 34 respondents (59.6%) who were "stage 2".

1. Bivariate Analysis

Table 9. Relationship between Diet Patterns (Types of Food) and the Incidence of Hypertension

Types of Food	Blood pressure								ρ
	Prehypertension		Stage 1		Stage 2		Total		
	n	%	n	%	n	%	n	%	
No Risk	2	3.5	1	1.8	0	0.0	3	5.3	0.041
At risk	8	14.0	12	21.1	34	59.6	54	94.7	
Total	10	17.5	13	22.8	34	59.6	57	100.0	

Based on the results of statistical tests in table 9, it can be seen from 57 respondents in the Kabaena Health Center Working Area, showing that the results of dietary patterns (types of food) are not at risk for prehypertension blood pressure as many as 2 respondents (3.5%) and dietary patterns (types of food) are at risk for prehypertension blood pressure as many as 8 respondents (14.0%) while dietary patterns (types of food) are not at risk for stage 1 blood pressure as many as 1 respondent (1.8%) and dietary patterns (types of food) are at risk for stage 1

Table 10. Relationship between Diet Patterns (Number of Meals) and Hypertension Incidence

Amount Food	Hypertension								<i>p</i>
	Prehypertension		Stage 1		Stage 2		Total		
	n	%	n	%	n	%	n	%	
In accordance	9	15.8	12	12.1	32	31.6	53	93.0	0.899
It is not in accordance with	1	1.8	1	1.8	2	3.5	4	7.0	
Total	10	17.5	13	22.8	34	59.6	57	100.0	

Based on the results of statistical tests in table 10, it can be seen from 57 respondents in the Kabaena Health Center Working Area, showing the results of eating patterns (amount of food) in accordance with prehypertension blood pressure as many as 9 respondents (15.8%) and eating patterns (amount of food) not in accordance with prehypertension blood pressure as many as 1 respondent (1.8%) while eating patterns (amount of food) in accordance with stage 1 blood pressure as many as 12 respondents (12.1%) and eating patterns (amount of food) not in accordance with

Table 11. Relationship between Eating Patterns (Eating Frequency) and Hypertension Incidence

Frequency Food	Hypertension								ρ
	Prehypertension		Stage 1		Stage 2		Total		
	n	%	n	%	n	%	n	%	
Seldom	10	17.5	10	17.5	30	52.6	50	87.7	0.245
Sering	0	0.0	3	5.3	4	7.0	7	12.3	
Total	10	17.5	13	22.8	34	59.6	57	100,0	

Based on the results of statistical tests in table 5.11, it can be seen from 57 respondents in the Kabaena Health Center Working Area, showing the results of eating patterns (eating frequency) often with prehypertensive blood pressure as many as 0 respondents (0.00%) and eating patterns (eating frequency) rarely with prehypertensive blood pressure as many as 10 respondents (17.5%) while eating patterns (eating frequency) often with stage 1 blood pressure as many as 3 respondents (5.3%) and eating patterns (eating frequency) rarely with stage 1 blood pressure as many as 10 respondents (17.5%) while eating patterns (eating frequency) often with stage 2 blood pressure as many as 4 respondents (7.0%) and eating patterns (eating frequency) rarely as many as 30 respondents (52.6%).

These data show that Ha in this study was accepted with a p value = 0.245, which is greater

blood pressure as many as 12 respondents (21.1%) while dietary patterns (types of food) are not at risk for stage 2 blood pressure as many as 0 respondents (0.0) and dietary patterns (types of food) are at risk as many as 34 respondents (59.6%)

These data show that Ha in this study was accepted with a p value = 0.041, which is smaller than 0.05 (indicating a significant relationship), between dietary patterns (types of food) and the incidence of hypertension in the Kabaena Health Center Work Area.

stage 1 blood pressure as many as 1 respondent (1.8%) while eating patterns (types of food) in accordance with stage 2 blood pressure as many as 32 respondents (31.6%) and eating patterns (amount of food) not in accordance as many as 2 respondents (3.5%).

These data show that Ha in this study was accepted with a p value = 0.899, which is greater than 0.05 (indicating no significant relationship), between dietary patterns (amount of food) and the incidence of hypertension in the Kabaena Health Center Work Area.

than 0.05 (indicating no significant relationship), between eating patterns (meal frequency) and the incidence of hypertension in the Kabaena Health Center Work Area.

DISCUSSION

1. Relationship between Diet Patterns (Types of Food) and Hypertension Incidence in the Kabaena Health Center Work Area

Based on the results of this study, it shows that there is a significant relationship between the type of food and the incidence of hypertension in the community in the Kabaena Health Center Working Area, with a value of $p = < 0.05$ or 0.000 or in other words Ho is rejected and Ha is accepted.

From table 5.9, there are 2 respondents (3.5%) who experience prehypertension with types of food that are not risky because they have reached the late elderly phase to the elderly. This is in line

with research conducted by (Nurhayati, Ariyanto, & Syafriakhwan, 2023) which states that as age increases, the cardiovascular system in the body will experience a decline which will result in an increase in the incidence of hypertension, this is due to natural changes in the body in the heart, blood vessels, and hormones. Age is associated with endothelial dysfunction and increased arterial stiffness in hypertension, especially systolic hypertension in older adults.

This result is also in line with research conducted by (Nuraeni, 2019) which explains that research conducted by the Paceda Health Center regarding age shows that most respondents who suffer from grade I and grade II hypertension are 55-65 years old. This study also shows that increasing age has an effect on the occurrence of grade I and II hypertension.

The results of the study showed that there was 1 respondent who experienced stage 1 hypertension with a type of food that was not at risk, caused by having female gender. This is in line with research (Falah, 2019) which states that risk factors for hypertension are divided into two factors, namely unmodifiable risk factors and modifiable risk factors, gender is a risk factor that cannot be modified. So it is necessary to take prevention so that hypertension does not occur. Hypertension is responsible for at least 45% of deaths due to heart disease and 51% of deaths due to stroke. It is very dangerous for clients who do not care about high blood pressure, because this can increase the chance of life-threatening complications.

The results of the study also showed that the types of food associated with hypertension were known from 57 respondents, there were prehypertension with 8 (14.0%) types of risky foods, while stage 1 hypertension with 12 (21.1%) types of risky foods, and stage 2 hypertension with 34 (59.6%) types of risky foods.

These results are in line with previous research (Hasanuddin, Zainab, & Purnama, 2023) which examined the relationship between diet and physical activity with the incidence of hypertension, where it was found that respondents who had a good diet who experienced prehypertension were 32 (64.0%) and experienced stage 1 hypertension were 1 (2.0%). For respondents who had a poor diet who experienced prehypertension were 5 (10.0%) and experienced stage 1 hypertension were 12 (24.0%). Based on the chi square test, a p value of 0.000 was obtained, meaning that there was a relationship between diet and the incidence of hypertension.

Researchers assume that the type of food can trigger hypertension due to the many food contents that enter the body such as high fat, high protein, high carbohydrates, high fat and fiber. Various types of food that enter the body especially in old age are very susceptible to hypertension because in the elderly there is a decline in organ function. Hypertension also occurs in women who have gone through

menopause which is caused by a decrease in estrogen levels.

2. Relationship between Diet Patterns (Number of Food) and Hypertension Incidence in the Kabaena Health Center Work Area

Based on the results of this study, it shows that there is no significant relationship between the amount of food and the incidence of hypertension in the community in the Kabaena Health Center Work Area, with a value of $p = > 0.05$ or 0.000 or in other words H_a is rejected and H_o is accepted.

These results are in line with previous research (Safitri, Apoina, & M.Zen, 2018) which examined the relationship between food intake (fat, sodium, magnesium) and lifestyle with blood pressure in elderly coastal areas (study in the working area of Tegal Barat Health Center, Tegal City), where it was found that 46.7% of respondents were included in the prehypertension category, while 48.3% of respondents had diastolic blood pressure in the prehypertension category. The results of statistical tests showed that there was no relationship between fat intake and systolic and diastolic blood pressure. The source of fat that was widely consumed by respondents came from oil. The side dishes available were mostly fried. In addition, other sources of fat came from coconut milk, chicken, chicken eggs, seafood (fish and shellfish). However, there were several respondents with fat intake that exceeded the recommended limit, usually found in elderly people who often consume dairy products such as cow's milk or goat's milk.

The results of the study found that there was no relationship between the amount of food eaten and the incidence of hypertension in the Kabaena Health Center Work Area caused by hypertension sufferers who had previously suffered from hypertension, and had been able to control their diet in this case the amount of food consumed. This is because hypertension sufferers have followed the program from the Health Center (POSBINDU) where in the program sufferers are given medication and how to control blood pressure in hypertension sufferers.

Research (Efendi, Adha, & Febriyanti, 2022) states that eating patterns are the arrangement of types and amounts of food consumed by a person or group of people at a certain time consisting of meal frequency, type of food, and portion size. A balanced menu needs to be started and well known so that a habit of eating balanced foods will be formed in the future. Eating habits is a term used to describe habits and behaviors related to regulating eating patterns. An irregular and poor diet can cause disorders in the digestive system.

The researcher assumes that the community in the Kabaena Health Center work area has begun to control the amount or portion of their food because the Kabaena Health Center has a POSBINDU (General Development Post) program where one of its activities is to control

patients suffering from hypertension.

3. Relationship between Eating Patterns (Eating Frequency) and Hypertension Incidence in the Kabaena Health Center Work Area

Based on the results of this study, it shows that there is no significant relationship between food frequency and the incidence of hypertension in the community in the Kabaena Health Center Work Area, with a value of $p = > 0.05$ or 0.000 or in other words H_a is rejected and H_o is accepted.

These results are in line with previous research (Saragih & Karimah, 2023) which examined the factors that influence hypertension in young adults, where it was found that there was a relationship between age and hypertension but there was no relationship between nutritional status, potassium intake, sodium intake with hypertension which based on the chi square test obtained a p value = 0.432 meaning there is no relationship between sodium intake and the incidence of hypertension.

Hypertension is a non-communicable and chronic disease, but hypertension can be prevented by regulating the appropriate diet, namely by maintaining ideal body weight, maintaining a diet (not consuming excessive fat and salt) and lifestyle such as not smoking, not consuming alcohol, regular physical activity (exercise), dealing with stress, and checking blood pressure regularly. What is meant by diet for hypertension is regulating the diet by reducing sodium levels, reducing fat consumption and increasing consumption of fruits, vegetables, grains and foods with high calcium, magnesium and potassium content. In regulating body weight, it can be done by adopting a good lifestyle and diet such as regular physical activity and limiting calorie intake. It is recommended that patients minimize the use of seasonings every time they cook and food that is often reheated. Seasonings contain chemicals that are not good for health, while food that is reheated too often can increase Low Density Lipoprotein (LDL) cholesterol levels in the blood so that it can cause plaque that will clog blood vessels and blood circulation is not smooth.

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Research conducted by (Arifin, Zaenal, & Irmayani, 2020) also states that dietary lifestyle is related to the incidence of hypertension. This shows that severe hypertension tends to be more experienced by respondents who have irregular eating patterns and respondents who consume a lot of foods high in salt. Poor diet can also reduce the diameter of blood vessels so that the heart pumps blood harder, this is what can affect increased blood pressure. Therefore, it is necessary to know foods that can increase blood pressure to prevent increased blood pressure in patients.

According to the assumption of researchers, there are many factors that cause hypertension that can be controlled by sufferers, some of which are food consumption, daily activities and stress. However, many people do not understand properly how to properly control hypertension. Therefore, increasing public understanding, especially those suffering from hypertension, about hypertension management is very necessary at this time. Many sufferers know what to avoid and do, but do not understand properly how to apply it in everyday life.

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