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The Relationships of Modifiable Risk Factors with Hypertension Client Recurrence Prevention Behaviors

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Abstract

Hypertension is still a major problem in the world, both in developed countries and in developing countries, including Indonesia. The number of people with hypertension continues 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 10.44 million people die from hypertension and its complications. The prevalence of hypertension in Indonesia from year to year tends to increase. This study uses a correlational analytical design with a case-control approach. The population in this study is all hypertension clients in the working area of the Bangsal Health Center. The sample was taken from a part of the population that met the criteria with a purposive sampling technique of 58 respondents. The results of the study showed that the risk factors that affected the prevention behavior of hypertension clients in Pacing village, the working area of the Bangsal Mojokerto Health Center were physical activity, fruit and vegetable consumption habits, smoking habits, and alcohol consumption habits. Where the factors that most affect the prevention behavior of hypertensive clients are physical activity factors with a Correlation value of 0.646 and a p-value of 0.000. Hypertensive clients should be willing to do physical activity in daily life and the importance of increasing fruit and vegetable consumption and being able to reduce the habit of consuming cigarettes and alcohol.

Keywords: Risk factors, hypertension, prevention behavior.

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1. Introduction

Hypertension is a condition when blood pressure in the blood vessels increases chronically. Uncontrolled hypertension will cause various complications, including myocardial infarction, coronary heart, congestive heart failure, stroke in the brain, invasive encephalopathy, and chronic kidney failure, hypertensive retinopathy. Hypertension also has an impact on the psychology of sufferers due to a low quality of life (Evi Martina et al., 2022). High blood pressure is caused by the accumulation of collagen in the muscle layer due to the thickening of the artery walls, which gradually narrows and hardens the blood vessels. The narrowing of the circulatory system causes blood pressure to increase above normal, namely systolic ≥ 140 mmHg and diastolic pressure ≥ 90 mmHg (Setiati et.al, 2014; Palomo-Piñón S, Rosas-Peralta M, Paniagua-Sierra JR. 2016).

Data from the World Health Organization (WHO) in 2015 showed that around 1.13 billion people in the world have hypertension, meaning that 1 in 3 people in the world are diagnosed with hypertension. The number of people with hypertension is still quite high, it is estimated that by 2025 there will be 1.5 billion people affected by hypertension, and it is estimated that every year 10.44 million people die from hypertension and its complications (Ministry of Health of RI, 2019). According to WHO, around 972 million people, or 26.4% of people worldwide have hypertension and this figure is likely to increase to 29.2% by 2025. Of the 972 million people with hypertension, 333 million people are in developed countries and the remaining 639 are in developing countries, including Indonesia (Ministry of Health of RI, 2019). The number of people with high blood pressure is increasing year by year, In 2013 there were 1.13 billion people worldwide experiencing high blood pressure. In the world, there are an estimated 1.5 billion people who die each year, 9.4 million people due to complications (Riskesdas, 2018; SKI, 2023).

The prevalence of hypertension based on the results of measurements in the population aged >18 years is increasing, namely in 2007: 25.8%, in

2013; 31.7% (Riskesdas, 2018), in 2018: 34% and in 2023: 30.8% (SKI, 2023). The results of the research show that the prevalence of hypertension clients in Indonesia is still quite increasing. The prevalence of hypertension patients in East Java Province in the last 3 years has risen to 14.10%, especially based on female gender, reaching 52.3% (SKI, 2023). The prevalence of hypertension patients in 2022 in the Mojokerto Regency reached 30.4% (Satu Data Palapa Mojokerto, 2023). Based on data at the Bangsal Health Center, the number of hypertension sufferers reached 29.30% (Health Office, 2021).

Many factors affect the high prevalence of hypertension in Indonesia. Based on the results of several studies, it is shown that risk factors for hypertension include: age factors, education level, knowledge, perception, previous experience, heredity/genetics, weight, obesity, physical activity (sports), food and beverage consumption (pickles, fatty, fried foods, alcoholic beverages), smoking habits and nutritional status (Ambarika, Agoes and Kristanto (2015); Barbosa, et al. (2017); Bernabé-Ortiz, et al. (2016). Among these causative factors, the most likely factors for the risk of recurrence of hypertension are dietary factors and daily lifestyle factors (Mathur M., et, al. (2018); Hamo, et al. (2022).

According to WHO, there are five common risk factors for NCDs, namely tobacco use, lack of physical activity, alcohol abuse, unhealthy diet, and exposure to air pollution. The main factors for the occurrence of hypertension are divided into two large groups, namely non-modifiable risk factors (age, gender, and family history) and modifiable risk factors (obesity, central obesity, smoking, insufficient consumption of fruits and vegetables, lack of physical activity, consumption of alcoholic beverages, and abnormal lipid profiles (One Palapa Mojokerto Data, 2023)

This study aims to analyze the relationship between modifiable risk factors (obesity, smoking habits, fruit and vegetable consumption, alcohol consumption, and physical activity) with hypertension recurrence prevention behaviors in the working area of the Bangsal Health Center, Mojokerto Regency.

2. Method

The population in this study is all hypertension clients in Pacing Village, the working area of the Bangsal Health Center Mojokerto, which totals 114 people. The sampling technique uses purposive sampling. Samples were taken from a population that met the following criteria: 1. Clients of grade I and II hypertension 2. Pre-elderly and elderly aggregate hypertension clients 3. Cooperative hypertensive clients 4. Clients with hypertension are not accompanied by complications.

The data collection instrument used in this study is a questionnaire. The data collection process was carried out after receiving a research permit from the agency, the researcher approached the respondents to obtain informed consent from the respondents as a sample. Furthermore, the researcher explained the purpose and objectives of the research. After the respondent is willing, the research can be carried out by paying attention to research ethics, including Informed Consent, Anonymity, and Confidentiality.

3. Results and Discussion

Table 1 shows that half (50%) are aged 30-50 years, more than half (58.6%) are male and almost half (34.5%) have primary school education.

Table 1. Frequency Distribution of Respondent Characteristics

Characteristics	Frequency (f)	Percentage (%)
Age		
< 30 years	15	25.9
30-50 years	29	50.0
> 50 years	14	24.1
Gender		
Men	34	58.6
Women	24	41.4
Education		
Elementary	20	34.5
Junior High	19	32.8
High School	15	25.9
University	4	6.9

Table 2 shows that more than half (63.8%) of respondents in the obesity category, almost half (48.3%) do physical activity, more than half (55.2%) have a smoking habit, more than half (58.6%) usually consume fruits and vegetables and more than half (55.2%) have a habit of consuming alcohol.

Based on the results of the correlation test in Table 3, it shows that of the 5 risk factors that affect the prevention behavior of hypertension clients, there is 1 risk factor that does not affect the prevention behavior of hypertension, namely the obesity factor with a p-value of 0.157, while the other 4 factors, physical activity, smoking habits, fruit and vegetable consumption and alcohol consumption, have a great influence on hypertension prevention behavior. Meanwhile, the factors that most affect the prevention behavior of hypertensive clients are physical activity factors with a Pearson Correlation value of 0.646 and a p-value of 0.000.

Table 2. Distribution of Respondent Frequency by Hypertension Risk Factor

Risk Factor	Frequency (f)	Percentage (%)
Obesity		
Yes	37	63.8
No	21	36.2
Physical Activity		
Yes	28	48.3
No	30	51.7
Smoking Habits		
Yes	33	56.9
No	25	43.1
Fruit and Vegetable Eating Habits		
Yes	34	58.6
No	24	41.4
Alcohol Consumption		
Yes	32	55.2
No	26	44.8

Table 3. Correlation Table Test Results of Risk Factors Associated with Hypertension Prevention Behavior

Variabel	Sig	Correlation
Obesity	0.157	0.188
Physical Activity	0.000	0.646
Smoking Habits	0.000	0.583
Fruit and Vegetable Eating Habits	0.000	0.630
Alcohol Consumption	0.000	0.585

Based on the results of statistical tests, it was shown that of the 5 risk factors that affect the prevention behavior of hypertensive clients, namely the Obesity factor, the p value was 0.000, Physical Activity was 0.000, Smoking Habit was 0.000, Fruit and Vegetable Consumption Habits was 0.000 and Alcohol Consumption Habits was 0.000. This shows that 4 risk factors have a very significant effect on the behavior of preventing hypertension in the working area of Bangsal Health Center.

This result is in line with research conducted by Muhammad Cristanto, Monica Saptiningsih and Maria Yunita Indriarini (2021) through a literature review obtained the results that physical activity is significantly able to reduce systolic and diastolic blood pressure and can prevent hypertension and other non-communicable diseases. The recommended length of physical activity to prevent hypertension is 150 minutes, with a frequency of five or more days a week. These results show that physical activity is very influential on the incidence of hypertension, so every hypertensive client must do physical activity according to their ability to be able to prevent the recurrence of hypertension. In another study, the results of Ying Tian and Yaqun Zhang's research in China in 2022 in the middle-aged and elderly people group, showed that there was a statistically significant relationship between Physical Activity and hypertension (P <.05). Investigation in adults over 50 hypertension clients.

The results of this study are also in line with the research of Dyah Samsiati, Nurhamidi, and Rosihan Anwar (2023) through the Rank Spearman correlation test showing that there is a relationship between physical activity and the incidence of hypertension with a value of ρ: 0.007.

Meanwhile, the consumption of fruits and vegetables with the incidence of hypertension showed a value of ρ: 0.001, meaning that there was a significant relationship between fruit and vegetable consumption and the incidence of hypertension in the working area of the Martapura I Health Center (Dyah Samsiati, Nurhamidi and Rosihan Anwar, 2023). The results of Fajarwati, et.al (2022) explained that based on bivariate descriptive analysis, 77.8% of respondents with hypertension had a low intake of fruits and vegetables. This shows that the care of fruits and vegetables greatly affects the incidence of hypertension.

According to the results of Helga Madsen, et. al's research in 2023 through a systematic review and meta-analysis of prospective studies, showing that there is a significant relationship between fruit and vegetable consumption and hypertension. This result is also in line with Nouri's 2023 et.al study which showed that increasing fruit consumption was related to reducing hypertension odds (Nouri, et.al, 2023).

Another supporting research is the research of Cecchini et.al (2024) explaining that there a causal association between alcohol consumption and risk of hypertension, especially above an alcohol intake of 12 g/d, and are consistent with recommendations to avoid or limit alcohol intake. The results were strengthened by the research of Rahardjo, Stevanus Agus and Samudera, Wahyu Sukma (2021) that there was a relationship between alcohol consumption and the incidence of hypertension in adolescents at the Tompe Health Center, Donggala Regency, with a correlation coefficient value of 0.732 which means that it has a strong relationship strength and a positive relationship direction which means that the more often alcohol is consumed, the more severe the incidence of hypertension in adolescents at the Tompe Health Center, Donggala Regency.

Following the results of Ningxin Gao's research et.al. 2023 show that heavy smokers exclusively from rolled machine cigarettes have a significantly increased risk of hypertension compared to non-smokers. In addition, smoking and drinking can work together to significantly increase the risk of hypertension in the future. For hypertension prevention, limiting tobacco and

alcohol consumption at the same time can lead to better health outcomes in reducing the risk of hypertension (Ningxin Gao, et.al. 2023). Alexandre Vallée's research on the 2023 UK Biobank population shows that Smoking and alcohol are associated with higher blood pressure in current smokers with synergistic effects. These findings show the importance of considering smoking and alcohol consumption in blood pressure control in addition to antihypertensive medications and public health practices (Alexandre Vallée, 2023). Another study, by Memah Meylin, Grace D. Kandou, and Jeini Ester Nelwan (2019) explained that there is a relationship between smoking habits and the incidence of hypertension (p=0.000, r=0.726) and there is a relationship between alcohol consumption habits and the incidence of hypertension (p=0.000, r=0.799). This study concludes that there is a relationship between smoking habits and alcohol consumption and the incidence of hypertension with a strong correlation in the positive direction.

Based on the discussion, it can be explained that the risk factors that greatly affect the prevention behavior of hypertensive clients in Pacing Village, the working area of the Bangsal Health Center, are physical activity factors, fruit and vegetable consumption habits, smoking habits, and alcohol consumption habits.

4. Conclusions and Suggestions

Physical activity factors, fruit and vegetable consumption habits, smoking habits, and alcohol consumption habits are strongly related to the prevention behavior of hypertensive clients.

Hypertensive clients can do physical activity in daily life, the importance of increasing the consumption of fruits and vegetables and being able to reduce the habit of consuming cigarettes and alcohol.

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