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RISK FACTORS OF HYPERTENSION IN ELDERLY AND LATE ADULT HYPERTENSIONS' PATIENTS

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ABSTRACT

According to WHO data in 2024, about 1.28 billion adults worldwide have hypertension, with a slightly higher prevalence of men than women before the age of 50, and after the age of 50, the prevalence is almost the same. In Indonesia, the incidence of hypertension reaches 34.11% of the adult population. Risk factors for hypertension according to WHO include unhealthy lifestyles such as lack of physical activity, excessive salt consumption, alcohol and cigarette consumption, and obesity. In addition, genetic factors, age, and certain medical conditions such as kidney disease or diabetes also play an important role, so it needs to be detected early so that the incidence of hypertension can be suppressed and blood pressure controlled so that complications do not occur. The purpose of the study was to analyze the risk factors for hypertension in Puton Village, Diwek District, Jombang Regency. This study is a correlational study with a cross-sectional design using a purpusive sampling method. The research subjects were elderly people in Puton Village, Diwek District, Jombang Regency according to the research inclusion criteria in 2024, totaling 30 people. The instruments used were blood pressure measurements, data on gender, age, BMI, cholesterol levels, blood sugar levels, uric acid levels. Bivariate analysis using Chi Square statistical test. Results Most (53.3%) are classified as grade 1 hypertension, Almost. Chi Square test results Ha is rejected which means there is no relationship between age, gender, body mass index (BMI), cholesterol levels, blood sugar levels and uric acid levels on the incidence of hypertension. It is necessary to detect other factors that affect the incidence of hypertension such as stress levels, lifestyle and diet so that risk factors are detected so that the incidence of hypertension can be suppressed and morbidity and mortality due to complications of hypertension can be avoided

Keywords: Risk factors, Hypertension, Late Adult, Elderly

Introduction

Hypertension is known as a silent killer because it often occurs without significant symptoms or complaints, yet it can lead to complications and even death. Globally, hypertension ranks third among the six main risk factors for cardiovascular disease. The risk of heart disease, stroke, and kidney failure all increase significantly due to hypertension. This is because it often goes undetected early on, leading to delayed treatment. Therefore, early detection is one of the key strategies in the prevention and management of non-communicable diseases (NCDs) in Indonesia. In addition to maintaining a healthy lifestyle, hypertension can be prevented through early detection via anthropometric measurements (weight and height), blood pressure checks, cholesterol levels, and regular blood sugar tests. Currently, there has been a shift in the trend of hypertension. In public health, this is referred to as an epidemiological transition, which is a shift in disease patterns and mortality rates from being dominated by infectious and communicable diseases to non-communicable diseases (NCDs). Hypertension has the highest prevalence rate. We often encounter hypertension in the elderly. However, recent data shows that hypertension can develop as early as adolescence, and its prevalence has increased in recent years. Many people are unaware that hypertension that occurs during adolescence will continue into adulthood and increase the risk of illness and death. Adolescents here are those aged between 14 and 24 years. The most common type of hypertension in adolescents is essential hypertension, which occurs without symptoms and is often detected only during routine checkups. Adults who smoke, chew tobacco, drink alcohol, are obese, engage in sedentary behavior, consume too much salt, and have an unhealthy lifestyle are at higher risk of developing hypertension. In addition to these risk factors, there are other important risk variables such as illiteracy, lack of knowledge about the disease, neglecting health, and a society that values men more than women. Lifestyles have changed drastically as people adapt to Western culture. Smoking, drinking alcohol, being overweight, and consuming too much salt are the main risk factors for hypertension. This highlights the importance of improving public understanding and attitudes toward the prevention and management of hypertension to lead a happier and healthier life. Based on the above explanation researchers are interested in conducting a study on "The Relationship Between Smart Behavior and Blood Pressure in the Elderly in Puton Village, Diwek Subdistrict, Jombang District," given that the incidence of hypertension remains high in Puton Village, Diwek District, Jombang Regency, and complaints about a decline in quality of life due to hypertension.

Methods

This study is a correlational study with a cross-sectional design using purposive sampling as the data collection method. The subjects of the study were 43 elderly people in Puton Village, Diwek

District, Jombang Regency, who met the inclusion criteria for the 2024 study. The instruments used were blood pressure measurements, data on gender, age, BMI, cholesterol levels, blood sugar levels, and uric acid levels. Data collection was conducted over a one-week period in September 2024. The inclusion criteria for this study were hypertensive patients without comorbidities or severe complications. The exclusion criteria were elderly individuals who did not wish to participate in the study. The data analysis used was univariate analysis to examine frequency distribution and bivariate analysis using univariate and bivariate analysis using the Chi Square statistical test.

Results and Discussions

Table 1 Respondent Characteristics

No	Respondent Characteristics	Number	%
	Blood Pressure		
1	Stage 1 hypertension	16	53,3
2	Stage 2 hypertension	12	40
3	Stage 3 hypertension	2	6,7
	Age		
1	Middle age : 45–54 year	3	10
2	Elderly : 55–65 year	10	33,3
3	Young old : 66–74year	7	23,4
4	Old : 75–90 year	10	33,3
	Gender		
1	Man	11	36,7
2	Woman	19	63,3
	Total Number	30	100

Based on the table 1 it can be seen that Most (53.3%) were classified as having stage 1 hypertension, Almost half (33.3%) are elderly (55–65 years) and old (75–90 years) and Most (63.3%) are female

Table 2 Analyzing the body mass index (BMI) factor with the incidence of hypertension

No	Body mass index	Number	%
1	U*nderweight*): ≤ 18,49 kg/m².	0	0
2	ideal: 18,5–24,9 kg/m².	14	46,7
3	*overweight*): > 25–27 kg/m².	9	30
4	Obesity: > 27 kg/m	7	23,3
	Total Number	30	100%

Almost half (46.7) have a normal/ideal body weigh

Table 3. Analyzing cholesterol factors with the incidence of hypertension

No	Classification of Cholesterol Levels	Number	%
1	Normal: below 200 mg/dL	9	30
2	Threshold: 200–239 mg/dL	6	20
3	High: above 240 mg/d	15	50
	Total Number	30	100%

Almost half (50%) have high cholesterol levels above 240 mg/dL

Table 4. Analyzing blood sugar factors with hypertension events

No	Classification of Blood Sugar Levels	Number	%
1	Normal blood sugar levels are less than 140 mg/dL.	1	3,3
2	Prediabetes blood sugar levels range from 140 to 199 mg/dL.	8	26,7
3	Blood sugar levels of 200 mg/dL or higher indicate type 2 diabetes mellitus.	21	70
	Total Number	30	100

Most (70%) blood sugar levels of 200 mg/dL or more indicate that the patient is suffering from type 2 diabetes mellitus

Table 5. Analyzing uric acid factors with the incidence of hypertension

No	Classification of Uric Acid Levels	Number	%
1	Normal	9	30
2	High	21	70
		30	100%

Most (70%) have high uric acid levels

a. Analysis of Risk Factors for Hypertension Incidence Based on Age

The results show that nearly half (33.3%) of the cases involve the elderly (55–65 years old). Based on the chi-square statistical test, the calculated X value of 6.1609127 is smaller than the table X value of 12.592, so the alternative hypothesis (Ha) is rejected, meaning there is no association between age and hypertension incidence Age is associated with endothelial dysfunction and increased arterial stiffness in hypertension, particularly systolic hypertension in the elderly. Age is associated with hypertension due to natural changes in the body that cause the heart, blood vessels, and hormones to undergo changes in the vascular system, leading to increased blood pressure and resulting in hypertension. In this study, there was no effect of age on the incidence of hypertension, as most respondents still had grade 1 hypertension, while almost half of the respondents were elderly (aged 55–65 tahun dan Lansia tua (old): 75–90 tahun dimungkinkan tidak terpengaruh dengan usia dimana seharusnya semakin tinggi usia semakin tinggi derajat tekanan darah

b. Analyzing gender factors in relation to hypertension

Based on the research results, the majority (63.3%) were female. The chi-square statistical test results showed that the calculated T value of 1.56 was smaller than the table T value of 5.99, so Ha was rejected, meaning that there was no relationship between gender and hypertension. Gender is associated with the incidence of hypertension because postmenopausal women experience a decrease in estrogen levels, which play a role in increasing High-Density Lipoprotein (HDL) levels, thereby preventing the atherosclerosis process. A decrease in HDL, which causes atherosclerosis, leads to high blood pressure, which leads to hypertension. In this study, there was no relationship between gender and hypertension. Perhaps most of the respondents were female, but their age was still elderly, possibly because they had not yet reached menopause.

c. Analyze the relationship between Body Mass Index (BMI) and the incidence of hypertension.

Based on the research results, most respondents had a normal/ideal BMI. The chi-square statistical test found that the calculated X of 2.27 was smaller than the table X of 9.48, so Ha was rejected, indicating no relationship between BMI and the incidence of hypertension. BMI significantly influences the incidence of hypertension, where an excessive BMI or being overweight can trigger a higher risk of hypertension compared to someone with a normal BMI. In this study, there was no relationship between BMI and the incidence of hypertension, possibly because most respondents had a normal/ideal BMI.

d. Analyze the correlation between cholesterol levels and the incidence of hypertension.

Based on the research results, almost half (50%) had high cholesterol levels above 240 mg/dL. A chi-square statistical test showed that the calculated X of 2.27 was smaller than the calculated X of 9.48, so Ha was rejected, indicating no relationship between cholesterol levels and the incidence of hypertension. High cholesterol levels can increase the risk of hypertension. Increased cholesterol levels, especially bad cholesterol (LDL), can cause plaque buildup on blood vessel walls, which narrows blood vessels and increases blood pressure, thus triggering hypertension. In this study, there was no relationship between cholesterol levels and the incidence of hypertension, possibly because most respondents had high cholesterol levels, but most still had grade one hypertension.

e. Analyzing the relationship between blood sugar levels and the incidence of hypertension.

Based on the results of the study, the majority (70%) of patients with blood sugar levels of 200 mg/dL or higher indicated type 2 diabetes mellitus. Based on the chi-square statistical test, the calculated X of 1.90 was smaller than the X table of 9.48, so Ha was rejected, indicating there was

no relationship between blood sugar levels and the incidence of hypertension. High blood sugar levels, especially in diabetics, can increase the risk of hypertension (high blood pressure). This relationship is complex and interconnected, where high blood sugar can damage blood vessels and kidney function, which in turn can trigger hypertension. In this study, there was no relationship between blood sugar levels and the incidence of hypertension. It is possible that most respondents' blood pressure was in the grade 1 hypertension category, thus possibly being less affected.

f. Analyzing uric acid levels and the incidence of hypertension

Based on the research results, the majority (70%) of respondents had high uric acid levels. The chi-square statistical test showed that X-test 1.42 was smaller than X-table 3.48, so Ha was rejected, indicating no relationship between uric acid levels and the incidence of hypertension. High uric acid levels, or hyperuricemia, can be a risk factor for hypertension (high blood pressure). Elevated uric acid levels can trigger oxidative stress, decreased nitric oxide, and decreased renal artery pressure, all of which can contribute to the development of hypertension. Furthermore, uric acid can activate the renin-angiotensin system, which plays a role in regulating blood pressure, and cause endothelial dysfunction, which is also associated with hypertension. In this study, the results showed no relationship between uric acid levels and the incidence of hypertension. It is possible that most of the respondents' hypertension was still in the grade 1 category, possibly not yet significantly affected.

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