THE RELATIONSHIP BETWEEN NUTRITIONAL STATUS AND DIET WITH THE INCIDENCE OF HYPERTENSION IN THE ELDERLY IN CEPOGO DISTRICT, BOYOLALI

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ABSTRACT

Hypertension is a disease characterized by blood pressure that is high above normal and persistent. This disease has become a health problem in Indonesia and in the world, so it is called the silent killer and often occurs with increasing age. The aim of this study was to determine the relationship between nutritional status and diet with the incidence of hypertension in the elderly in Cepogo Boyolali District. Observational analytical research with a cross sectional design, where the population in this study is the entire community in Cepogo District, with a sample size of 160 respondents who meet the inclusion criteria, the sampling technique is purposive sampling. Statistical tests used Chi-Square with research results showing that there was a relationship between nutritional status (p= 0.003) and diet (p= 0.000) with the incidence of hypertension in the elderly in Cepogo Boyolali District. Efforts should be made to increase motivation among the elderly regarding hypertension prevention and control programs.

Keywords: *Nutritional Status, Diet, Hypertension, Elderly*

INTRODUCTION

Hypertension is a chronic disease suffered by many elderly. This disease is one of several important risk factors for cardiovascular disease such as heart failure, stroke and coronary heart disease. The disease is characterized by an increase in blood pressure.

Based on JNC 7 (*Joint National Committee*) hypertension is characterized by an increase in systolic pressure $\geq$ 140 mmHg and / or diastolic $\geq$ 90 mmHg. Systolic blood pressure in the range /normal 120-139 mmHg and diastolic 80-89 mmHg defined as prehypertensive. The pre-hypertensive condition will also increase the risk of hypertension (Lusiyana, 2020).

According to (World Health Organization, 2018) recorded 1 billion people in the world suffer from hypertension and it is estimated that

there are 7.5 million deaths or about 12.8% of all total deaths caused by hypertension. According to *the American Heart Association* (2014), about or 1 in 3 adults suffer from this disease. In fact, it is expected to continue to increase by 7.2% or around 83.5 million people in 2030. The elderly are currently estimated at more than 629 million worldwide (One in 10 people over 60 years old), and by 2025, the elderly are estimated to reach 1.2 billion (Langingi, 2021). Based on old age, it has been classified into four, namely (middle age) *middle age* 45-59 years, (*elderly*) elderly aged 60-74 years, (old) elderly 75-90 years, and (very old) *very old* age > 90 years, classification according to WHO (Rihiantoro, T and Widodo, 2018).

The high prevalence of hypertension does not only occur in developed countries but also in developing countries such as in Indonesia. Based on Riskesdas in 2018, the prevalence of hypertension sufferers in Central Java Province was 37.57%, while hypertension cases in Boyolali Regency based on a doctor's examination were 38.63%. This means that the estimated number of people with hypertension in Boyolali Regency in 2021 is 199,370. Hypertension cases in Cepogo District rank 4th highest at 11,184 cases.

Hypertension is actually a preventable disease if risk factors can be controlled and *healthy behavior*, namely behavior or activities related to efforts to maintain and improve health. These efforts include regular blood pressure monitoring, a healthy living program without cigarette smoke, increased physical activity/exercise, a healthy diet with balanced calories through high-fiber, low-fat and low-salt consumption. This is a combination of independent efforts by individuals / communities and supported by existing health service programs and must be done as early as possible, in hypertensive patients need routine care so that they can know their blood pressure (Soesanto, 2018).

As humans get older, they will experience a degenerative aging process that has an impact on changes in the human body, not only experiencing physical, cognitive, emotional, social but sexual changes will also experience changes. Increasing a person's age will be followed by an increase in the incidence of hypertension, this is due to natural changes in the heart, blood vessels, and hormone levels. Therefore, health problems that often occur in the elderly are hypertension or high blood pressure (Purba, T.H., Mariyanaq, 2023)

The purpose of this study was to determine the relationship between nutritional status and diet with the incidence of hypertension in the elderly in Cepogo Boyolali District.

METHOD

This type of research is observational analytical research with *a Cross Sectional* approach. Research site in Cepogo Boyolali sub-district.

The population in this study was all people in Boyolali District, while the sample was 160 with

purposive sampling techniques based on predetermined inclusion criteria.

The data analysis used was bivariate analysis using *the Chi-Square* test.

RESULT

1. Characteristics of Respondents

Table 1. Characteristics of Respondents

Variable	Incidence of hypertension			
	It doesn't hurt		Sick	
	n (70)	%	n (90)	%
Age (Years)				
55-59	28	40	47	52,22
60-65	42	60	43	47,78
Gender				
Man	33	47,14	36	40
Woman	37	52,86	54	60

Based on the table above, it shows that most respondents who do not suffer from hypertension are aged 60-65 years and are female, while respondents who suffer from hypertension are mostly aged 55-59 years and are female.

2. Bivariate Analysis

Bivariate analysis was performed using the *Chi-Square* test to determine the relationship between nutritional status and diet with the incidence of hypertension in the elderly.

Table 2. Cross Table between Nutritional Status and the Incidence of Hypertension in the Elderly

Nutritional Status	Incidence of hypertension				Sum		P value
	It doesn't hurt		Sick				
	n	%	n	%	N	%	
Usual	55	78,57	25	27,78	80	50	
More	15	21,43	65	72,22	80	50	
Sum	**70**	**100**	**90**	**100**	**160**	**100**	0,003

Based on the *chi-square* test, a value of p = 0.003 (p < 0.05) was obtained, this shows that there is a relationship between nutritional status and the incidence of hypertension in the elderly in Cepogo Boyolali District.

Table 3. Cross Table between Diet and the Incidence of Hypertension in the Elderly

Diet	Incidence of hypertension				Sum		P value
	It doesn't hurt		Sick				
	n	%	N	%	N	%	
Good	53	75,71	33	36,67	86	53,75	
Bad	17	24,29	57	63,33	74	46,25	
Sum	**70**	**100**	**90**	**100**	**160**	**100**	0,000

Based on the *chi-square* test, a value of p = 0.000 (p < 0.05) was obtained, this shows that there is a relationship between diet and the incidence of hypertension in the elderly in Cepogo Boyolali District.

DISCUSSION

1. Relationship between Nutritional Status and Incidence of Hypertension in the Elderly in Cepogo Boyolali District

Based on the *chi-square* test, a value of p = 0.003 (p < 0.05) was obtained, this shows that there is a relationship between nutritional status and the incidence of hypertension in the elderly in Cepogo Boyolali District.

This study is in line with research conducted (Purba, T.H., Mariyanaq, 2023) that there is a relationship between nutritional status and the incidence of hypertension in the elderly.

More nutritional status can increase the risk of hypertension because the greater the body mass, the more blood is needed to supply oxygen and food to body tissues. This means that the volume of blood circulating through the blood vessels increases so that it puts greater pressure on the artery walls, which will cause an increase in blood pressure (Paputungan, M.F.S. Pricilya, Waruwu, 2019).

One of the factors that trigger the onset of hypertension is unbalanced nutritional status. Excess nutrition is usually associated with prosperity and lifestyle. Lifestyle changes in adulthood have led to an increase in cases of non-communicable diseases in Indonesia, including hypertension. The occurrence of hypertension is influenced by unhealthy eating behavior, smoking habits, alcohol consumption, stress and lack of physical activity (Purba, T.H., Mariyanaq, 2023).

The risk of developing hypertension with more weight, 2.3 times the chance compared

to normal weight and thin. Respondents with more weight will accumulate fat tissue, which can cause an increase in vascular resistance in improving the work of the heart to be able to pump blood throughout the body.

In this study, the results obtained a relationship between nutritional status and the incidence of hypertension in the elderly in Cepogo Boyolali District, this can be seen from the results of the Body Mass Index (BMI) of respondents by measuring weight and height, from the measurement results it was obtained that respondents suffering from hypertension had more nutritional status than respondents who did not suffer from hypertension, Therefore, respondents who have more nutritional status will be more likely to experience the incidence of hypertension.

Nutritional status is the state of health of individuals or groups determined by the degree of physical need for energy and nutrients obtained from food and food whose physical impact is measured antropemetrically. Nutritional problems that occur in the elderly in addition to occurring due to decreased physiological function in the elderly are also nutritional problems that occur from a young age whose manifestations occur in the elderly. Several studies show that nutritional problems in the elderly are mostly nutritional problems which are risk factors for degenerative diseases such as coronary heart disease, diabetes mellitus (DM), hypertension, rheumatic gout, kidney, fatty liver, and others (Fariqi, 2021).

2. The Relationship between Diet and the Incidence of Hypertension in the Elderly in Cepogo Boyolali District

Based on the *chi-square* test, a value of $p = 0.000$ ($p < 0.05$) was obtained, this shows that there is a relationship between diet and the incidence of hypertension in the elderly in Cepogo Boyolali District.

This research is in line with research conducted by (Akbar, H., Royke Calvin Langingi, A., Rahmawati Hamzah, 2021) that there is a relationship between diet and the incidence of hypertension in the elderly. This is because the quantity and quality of food and beverages consumed will affect nutritional intake so that it will affect individual and community health such as the main diet of fatty foods obtained from the consumption of meat, coconut milk foods and fast food and fried foods.

This study shows that diet affects blood pressure in the elderly. Where along with the increase in appetite and preference of someone in consuming foods that contain high nantrium and fat which basically respondents do not know what foods trigger increased blood pressure. Even though at an elderly age the immune system will experience decreased function and disruption of blood vessels, so

that it can increase blood pressure in the elderly in Cepogo Boyolali District.

The results of the study (Sya'id, A, Hella Meldy Tursiana, 2023), show that a poor diet tends to be at risk of hypertension. Based on the results of data analysis that has been carried out with statistical tests (*Sperman Rank*) obtained p values of $0.001 < 0.05$, then H0 is rejected Ha accepted which means there is a relationship between diet and the incidence of hypertension in middle *adulthood (Middle Age)* at the Tempeh Health Center.

Diet is one of the main modifiable risk factors in hypertensive disease. A diet high in red and processed meats, fast food, fatty foods and sweet desserts can cause an increase in blood pressure, but a diet rich in vegetables, whole grains, fruits, lean meats has been shown to be associated with a decrease in blood pressure.

The Indonesian Ministry of Health explained that excess nutrition in the elderly is usually associated with excessive lifestyle and consumption patterns from a young age and even since childhood. In addition, decreased metabolic processes in the elderly if not balanced with increased physical activity or decreased amounts of food result in excess calories will be converted into fat, causing obesity. This suggests that overweight and obesity should also remain a concern as they can spur the onset of degenerative diseases (Fariqi, 2021).

CONCLUSION

The results showed that there was a relationship between nutritional status ($p = 0.003$) and diet ($p = 0.000$) with the incidence of hypertension in the elderly in Cepogo Boyolali District.

SUGGESTION

1. Health workers can increase the intensity of counseling to all communities, especially the elderly about the prevention and control of hypertension and activate the role of the elderly in existing PTM Posbindu activities.

2. For the community to increase awareness and awareness of their health conditions by screening early blood sugar levels, applying a healthy and nutritionally balanced diet.

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