CORRELATION BETWEEN DEGREES OF HYPERTENSION AND COGNITIVE FUNCTION IN ELDERLY PEOPLE IN BANYUATES VILLAGE SAMPANG MADURA

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ABSTRACT

Background: Hypertension was the first of the ten most common diseases in the elderly in 2013. Data from the World Health Organization (WHO) in 2015 showed that around 1.13 billion people had hypertension, meaning that 1 in 3 people worldwide was diagnosed with hypertension.
Objective: To examine the correlation between the degree of hypertension and cognitive function in the elderly in Banyuates Village, Sampang Madura.
Methods: This research is an observational analytic study with a cross-sectional approach. The sampling technique is purposive sampling. The correlation test for the two variables was carried out using the Spearman test. The correlation between variables is considered significant if the p-value <0.05 is obtained.
Results: The correlation between the degree of hypertension and cognitive function in the elderly was statistically significant (p= 0.000). The correlation value of -0.732 indicates a significant negative correlation between the degree of hypertension and cognitive function.
Conclusion: The results of this study indicate that most of the older people studied suffer from grade 1 hypertension and abnormal cognitive function. There is a significant negative correlation between the degree of hypertension and cognitive function. The discourse of this research can be socialized in health promotion/education for older people to control their blood pressure, which tends to be high, to have reasoning power and good quality of life.
Keywords: Hypertension, cognitive function, and the elderly.

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INTRODUCTION

Law Number 13 of 1998 concerning the Welfare of the Elderly stipulates that the limit for older people in Indonesia is 60 years of age or older (Depsos RI, 2004). [1]

It is estimated that about 50% of the elderly in the age group above 60 years suffer from hypertension. This contributes to the annual death rate of the elderly. [2]

The 2015 World Health Organization (WHO) survey showed that around 1.13 billion people worldwide have hypertension, meaning that 1 in 3 people worldwide is diagnosed with hypertension. The prevalence of hypertension sufferers is increasing every year. It is estimated that in 2025 as many as 1.5 billion people will experience hypertension, and annually 9.4 million people will die due to hypertension and its complications. [3]

Hypertension was first among the ten most common diseases in the elderly in 2013. Basic Health Research (Riskesdas) in 2018 shows that there has been an increase in prevalence in Indonesia by 34.1% of a total of 260 million people. Hypertension in East Java is 22.71%, or equal to 2,360,592 people. Especially in Sampang Regency, the percentage of hypertension is 82.5% or equivalent to 208,652 residents. [4]

Hypertension is a condition of increasing systolic blood pressure to 140 mmHg and/or diastolic blood pressure to 90 mmHg on two measurements with an interval of five minutes in a fairly calm state. [2]

Complications of hypertension on the central nervous system, other than stroke, can cause cognitive function disorders, which are a type of memory function disorder if neglected for a long time, can lead to dementia (Vascular Cognitive Impairment).[5]

In this study, researchers linked the correlation between the degree of hypertension to cognitive function to provide information and educate the public to prevent cognitive decline, especially in the elderly.

METHODS

This research is an analytic observational study with a cross-sectional design type. The subjects of this study were elderly hypertension sufferers who were outpatients at the Banyuates Village Health Center, Sampang Madura, and visited every house where there were older people. The minimum sample required in this study is 30 samples/respondent. The sampling technique is purposive sampling.

The inclusion criteria in this study were older people who had reached the age of 60-70 years, were able to communicate well, suffered from hypertension, were educated at the junior high school and senior high school, were still productive in terms of work, social activities, doing activities in their spare time and being the subject and cooperative in answering the questionnaire. The exclusion criteria in this study were elderly hypertensive patients without education or primary school level education, elderly hypertensive patients with undergraduate, elderly hypertensive patients who were helpless and needed help from other people or nurses, and hypertensive patients with complications and comorbidities.

The procedure was taken with permission and consent, then measured blood pressure with the researcher's aneroid sphygmomanometer, then filled out the MoCA-Ina questionnaire, which the researcher guided. The data analysis technique used is Spearman's test (rho) between ordinal data (data on the degree of hypertension) and numerical (data on cognitive function) to analyze the relationship between variables using the Statistical Product and Service Solutions (SPSS) 28.0 program. The p-value is considered significant if $P < 0.05$.

RESULTS

This research should be carried out at the Banyuates Public Health Center, Sampang Madura, at Jalan Raya Banyuates Sampang. Since there were no visits by the elderly to the Banyuates Health Center in Sampang Madura due to the Covid-19 pandemic, the researchers took data from house to house. This research was conducted from July 28, 2021, to August 4, 2021.

Table 1 Characteristics of Respondents

Characteristics	n=30
Age n (%)	
Elderly (60-74 years) Old age (74-90 years) Very old age (>90 years)	30(100) 0(0) 0(0)
Gender n (%)	
Male	11(36,7)
Female	19(63,3)
Education n (%)	
Junior high school	20(66,7)
Senior high school	10(33,3)
Occupation n (%)	
Housewife	13(43,3)
Farm laborer	5(16,7)
Fisherman	2(6,7)
Rice seller	3(10)
Shop keeper	1(3,3)
Truck driver	2(6,7)
Private sector	2(6,7)
Self-employed	1(3,3)
Construction worker	1(3)

Table 1 shows that all respondents included the elderly (60-74 years). Most are female, have a junior high school, and work as housewives.

Table 2 Distribution of Respondents by Degree of Hypertension

Degree of hypertension	Frequency (n)	Percentage (%)
Hypertension grade 1,	17	56,7
Hypertension grade 2,	8	26,7
Hypertension grade 3	5	16,7
Total	30	100

Table 2 shows more respondents with grade 1 hypertension than those with grade 2 and 3 hypertension.

Table 3 Distribution of Respondents Based on Cognitive Function

Cognitive function	Frequency (n)	Percentage (%)
Normal	11	36,7
Abnormal	19	63,3
Total	62	100

Table 3 shows that more respondents with abnormal cognitive function than those with normal cognitive function (63.3% vs. 36.7%).

Table 4 Correlation analysis of hypertension degree with cognitive function

	Cognitive function
Degree of hypertension	r = -0,732 p = 0,000 (<0,05) n = 30
Spearman's test (rho)	

Table 4 shows the results of the correlation analysis between the degree of hypertension and cognitive function is r = -0.732 (p = 0.000). This means that there is a significant negative relationship with strong strength between the degree of hypertension and cognitive function. These results indicate that the higher the degree of

hypertension, the lower the cognitive function. Conversely, the lower the degree of hypertension, the higher the cognitive function.

DISCUSSION

Table 1 shows the age of all respondents are older people aged 60-70 years who suffer from hypertension. This is because the walls of blood vessels are thickened to become narrowed and stiff. With increasing age, degenerative processes occur, including in all organs, one of which is in the circulatory system, namely the heart and blood vessels. [6]

Women aged >45 years will experience menopause. Menopause causes a decrease in the hormone estrogen production, which increases high-density lipoprotein (HDL) cholesterol levels. Low HDL cholesterol levels and high LDL (Low-density lipoprotein) cholesterol trigger the process of atherosclerosis and cause hypertension. [7]

Table 1 shows that respondents are mostly at the Junior High School (SMP) level. The level of education can cause hypertension because the level of education affects the individual's lifestyle, such as smoking habits, consuming alcohol, food intake, and physical activity.[8]

Homemakers are very susceptible to stress, factors that trigger stress in homemakers, such as financial problems and household needs.[9] The possibility of lack of information related to maintaining stable blood pressure is a factor for homemakers to suffer from hypertension.

Table 2 shows that the respondents in this study suffered more from grade 1 hypertension. Possibly due to the lack of medical personnel who supervise or provide education/counseling by the local government and public awareness about the importance of keeping blood pressure stable, people continue to have unhealthy lifestyles such as lack of exercise. Physical activity, unhealthy eating patterns, and stressful conditions. In addition, the local people's diet, which is high in salt and genetic factors, may also cause the local community to suffer from hypertension.

Table 3 shows that there are more respondents with abnormal cognitive function than respondents with normal cognitive function. Complications of hypertension related to the brain are vascular remodeling which results in cerebral autoregulation problems, white matter lesions, lacunar infarcts, and brain remodeling that resemble Alzheimer's dementia patients, such as amyloid accumulation and cerebral atrophy, which then causes a decrease in cognitive function.[10]

Table 4 shows the results of the correlation analysis between the degree of hypertension and cognitive function in the elderly in Banyuates Village, Sampang Madura, which has a value of $r = -0.732$, $p = 0.000$ ($p<0.05$). This means a significant negative correlation between the degree of hypertension and cognitive function.

This result follows previous research conducted by Rose Vita Sari and her colleagues, which showed a significant correlation between hypertension and the occurrence of cognitive impairment in the elderly with a correlation value of 0.001 (<0.05).[11]

CONCLUSION

The results of this study indicate that most of the elderly who must be examined suffer from grade 1 hypertension and abnormal cognitive function. There is a significant negative relationship between the degree of hypertension and cognitive function. This research discourse can be socialized in health promotion/education for the elderly to control their blood pressure, which tends to be high, reasoning power, and good quality of life.

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