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Analysis of Demographic Characteristics of Elderly Hypertension Patients at Sananwetan Primary Health Center

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ABSTRACT

Aging leads to physiological changes such as decreased vascular elasticity and impaired blood pressure regulation, increasing the risk of hypertension. Demographic factors such as age, sex, education level, and socioeconomic status also contribute. This study aimed to analyze the relationship between demographic characteristics and the prevalence of hypertension among older adults at Sananwetan Primary Health Center. A quantitative descriptive design was employed, with purposive sampling of 100 elderly individuals diagnosed with hypertension. Primary data were collected through interviews using a modified WHO STEPS questionnaire, and secondary data were obtained from health records. Data were analyzed using descriptive and inferential statistics (Chi-Square test). Most respondents were aged 60–74 years (77%), female (68%), had a high school education (50%), and belonged to the middle socioeconomic group (85%). The Chi-Square test showed significant associations between age ($p = 0.019$), sex ($p = 0.007$), education level ($p = 0.034$), and socioeconomic status ($p = 0.016$) with the prevalence of hypertension. In conclusion, demographic factors influence the risk of hypertension in older adults. Health education-based interventions, improved access to services, and promotion of healthy lifestyles are essential strategies to reduce hypertension prevalence in high-risk elderly populations.

Keywords: hypertension, elderly, demographic characteristics

Background

Elderly in the context of public health, is defined as individuals aged 60 years and above. This definition is in accordance with the provisions stipulated in the Republic of Indonesia Law Number 13 of 1998 concerning Elderly Welfare, which emphasizes the importance of recognizing and protecting the rights of the elderly as part of society (1) .

In fact, the prevalence of hypertension among the elderly in Indonesia is very high. The 2018 Basic Health Research (RISKESDAS) noted that the prevalence of hypertension in those aged ≥ 18 years reached 34.1% with East Java Province showing a figure of 36.3% (2). The latest data from the 2023 Indonesian Health Survey (SKI) shows that the prevalence of hypertension in Indonesia is 29.2% and in East Java Province it reaches 32.8% (3). This phenomenon indicates that hypertension is still a serious health problem, especially among the elderly. Definition of Hypertension in the Elderly is a chronic condition characterized by increased blood pressure above the normal threshold, namely systolic ≥140 mmHg or diastolic ≥90 mmHg, according to the guidelines of the Joint National Committee (JNC 8) and the European Society of Hypertension (ESH).

In the elderly, the prevalence of hypertension is higher than in other age groups due to the aging process which causes physiological changes, including: decreased blood vessel

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elasticity, namely the arterial walls become stiff due to arteriosclerosis, increasing peripheral vascular resistance, decreased heart function, namely decreased efficiency of heart contractions resulting in increased blood pressure, disorders of the regulatory system, namely decreased baroreceptor sensitivity and disorders of the renin-angiotensin-aldosterone system (RAAS) affect the body's ability to regulate blood pressure optimally (4).

Factors that influence the occurrence of hypertension in the elderly can be divided into two categories. Unchangeable factors include age, gender, and family history, while changeable factors include diet, lack of physical activity, stress, and unhealthy lifestyle habits (5). In addition, education and economic status play an important role in determining the elderly's understanding of health and their ability to access health services (6).

Hypertension is a medical condition characterized by systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg. This condition is known as the “silent killer” because it often does not show symptoms, but can cause serious complications if not managed properly (7).

Unmanaged hypertension can cause serious health impacts, including a high risk of heart disease, stroke, and premature death. These impacts are not only physical, but can also reduce the quality of life of the elderly, limit the elderly's daily activities, and increase the economic burden on individuals and the health system (8). The psychosocial burden of this disease can also reduce the mental well-being of the elderly.

Prevention of hypertension in the elderly requires a sustainable educational and community approach. This strategy aims to increase awareness, encourage healthy behaviors, and reduce the risk of complications (9).

Methods

Research have shown a significant association between demographic characteristics, such as gender, education level, and economic status, with the risk of hypertension (10). Individuals with certain demographic characteristics have a higher tendency to experience hypertension, indicating the importance of considering these factors in hypertension prevention and management strategies (11). This study uses a quantitative descriptive method (12). This approach was chosen because it aims to analyze and describe the demographic characteristics of hypertension sufferers among the elderly, which include variables such as gender, education level, and economic status. Through systematic data collection and statistical analysis, it is expected that this study can provide valid and reliable information regarding the prevalence of hypertension in this age group. The data obtained will be analyzed using descriptive statistical techniques to describe the profile of respondents, as well as inferential analysis to explore the relationship between demographic characteristics and the prevalence of hypertension.

The population in this study were all elderly people registered as hypertension sufferers at the Sananwetan Health Center. This population includes individuals aged 60 years and over and receiving health services at the Health Center, so that the data obtained can represent the real condition of hypertension among the elderly in the area. The sample of this study will be taken using purposive sampling technique. This technique is chosen because it allows researchers to select respondents who meet certain criteria that are relevant to the research objectives. The sample size is determined as many as 100 respondents, which is expected to be sufficient to provide significant and representative results regarding the demographic characteristics of hypertension sufferers.

Primary data will be collected through direct interviews with respondents using a pre-designed questionnaire. This questionnaire is designed to collect comprehensive information on the demographic characteristics and health history of respondents. Interviews will be conducted by researchers to ensure that the data obtained are accurate and consistent. The data collection process will be carried out in a manner that respects the privacy and confidentiality of

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respondents. Secondary data will be taken from health records at the Sananwetan Health Center and relevant village population data. This data will be used to support the analysis, provide additional context regarding the elderly population in the area, and assist in validating the information obtained from the interviews. The health records that will be taken include information on the health history of hypertension sufferers, including records of previous treatment and health visits.

Data collection in this study will be carried out using an instrument in the form of a questionnaire sheet, using a modification of WHO STEPS which is sourced from a journal article entitled "Prevalence and Associated Factors of Hypertension Among Outpatients". Questions in the questionnaire will cover Demographic Characteristics including Gender, Education level, Economic status and Health history, Blood pressure, Current medication (for example, type of antihypertensive drug used) This questionnaire is used to ensure that the information obtained is accurate and relevant to the research objectives. The data obtained from the questionnaire will be recorded systematically into a database using statistical software, namely: SPSS, R, or Excel. Checking the data to ensure that no data is missing or invalid. Incomplete data will be reviewed and corrected if possible. The results of the data analysis will be presented in a research report, which includes a discussion of the implications of the findings and recommendations for better health interventions.

Results

Table 1 Frequency Distribution of Sufferers Based on Age

Age	Frequency (f)	Percent (%)
1. 60-74	77	77,0
2. 75-90	23	23,0
3. > 90	0	0,0
Total	**100**	**100,0**

Based on Table 1, it can be seen that the age range of more than half, 77% (77 people), is in the young elderly age (60-74).

Table 2 Frequency Distribution of Hypertension Sufferers Based on Gender

Gender	Frequency (f)	Percent (%)
1. Male	32	32,0
2. Female	68	68,0
Total	**100**	**100,0**

Based on Table 2, it can be seen that the gender of the respondents, 68% (68 people), was mostly female.

Tabel 3 Frequency Distribution of Hypertension Sufferers Based on Last Level of Education

Education	Frequency (f)	Percent (%)
1. Elementary School	5	5,0
2. Middle School	23	23,0
3. High School	50	50,0
4. College	22	22,0

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Total	**100**	**100,0**

Based on Table 3, It can be seen that the last level of education of half of the respondents (50%) was high school/equivalent.

Table 4. Distribution of Hypertension Sufferers Based on Economic Status

Economic Status	Frequent (f)	Percent (%)
1. Low	11	11,0
2. Middle	85	85,0
3. High	4	4,0
Total	**100**	**100,0**

Based on Table 4, it can be seen that more than half of the respondents' economic status, 85% (85 people), has a middle economic status.

Table 5. Relationship of Age Category to Prevalence of Hypertension

Age Category	Prevalence of Hypertension		Total	P
	Degree 1	Degree 2		
Young Elderly	47 (61,0%)	30 (39,0%)	77 (100%)	0,019
Old Elderly	7 (30,4%)	16 (69,6%)	23 (100%)	

Table 5 The results of the study after the Chi-Square Test obtained a p-value of 0.19 so that the p-value <0.05. Based on the statistical test, it can be found that there is a significant relationship between the elderly age category and the prevalence of hypertension.

Table 6. Relationship of Gender to Prevalence of Hypertension

Age Category	Prevalence of Hypertension		Total	P
	Degree 1	Degree 1		
Male	24 (75,0%)	8 (25,0%)	32 (100%)	0,007
Female	30 (44,1%)	38 (55,9%)	68 (100%)	

Based on Table 6, The results of the study after the Chi-Square Test obtained a p-value of 0.007 so that the p-value <0.05. Based on the statistical test, it can be found that there is a significant relationship between gender and the prevalence of hypertension.

Tabel 7 Relationship between Education Level and Hypertension Prevalence

Age Category	Prevalence of Hypertension		Total	P
	Degree 1	Degree 2		
Elementary School	2 (40,0%)	3 (60,0%)	5 (100%)	
Middle Schol	18 (78,3%)	5 (21,7%)	23 (100%)	0,034
High School	26 (52,0%)	24 (48,0%)	50 (100%)	

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College	8 (36,4%)	14 (63,6%)	22 (100%)

Based on Table 7, The results of the study after the Chi-Square Test obtained a p-value of 0.034 so that the p-value <0.05. Based on the statistical test, it can be found that there is a significant relationship between education level and hypertension prevalence.

Table 8: Relationship Based on Economic Status with Prevalence of Hypertension

Age Category	Prevalence of Hypertension		Total	P
	Degree 1	Degree 2		
Low	2 (18,2%)	9 (81,8%)	11 (100%)	0,016
Middle	51 (60,0%)	34 (40,0%)	85 (100%)	
High	1 (25,0%)	3 (75,0%)	4 (100%)	

Based on Table 8 The results of the study after conducting the Chi-Square Test obtained a p-value of 0.016 so that the p-value <0.05. Based on the statistical test, it can be found that there is a significant relationship between economic status and the prevalence of hypertension.

Discussion

Relationship Based on Age Category with Hypertension Prevalence

In a study conducted on participants at the Sananwetan Health Center in Blitar City, most respondents (77%) were included in the young elderly category (60-74 years). These results indicate that the prevalence of hypertension (p = 0.019) in this age group is very significant. Hypertension or high blood pressure is a medical condition that is often found in the elderly and its prevalence increases with age. The data obtained showed that about three-quarters of the study sample were individuals who were in the age range susceptible to the condition. This indicates the need for special treatment for the young elderly age group who are more likely to suffer from hypertension, as well as the importance of regular health monitoring.

Aging of the body causes various structural and functional changes that affect the cardiovascular system (13). One significant change is a decrease in blood vessel elasticity that leads to increased resistance to blood flow. Decreased blood vessel elasticity makes blood vessels stiffer so that the heart has to work harder to pump blood throughout the body. Increased peripheral resistance, which is increased resistance in small blood vessels in the peripheral parts of the body, also contributes to increased blood pressure. These factors make the elderly more susceptible to hypertension, especially when this aging process is accompanied by other risk factors such as poor diet, lack of physical activity, or other medical conditions that worsen blood pressure (14)

As we age, the body experiences decreased function and an increased risk of chronic diseases, one of which is hypertension. It is important to pay extra attention to the health of young elderly (60-74 years), especially in efforts to prevent and manage hypertension. Regular health monitoring, including regular blood pressure checks, is essential to detect hypertension early and avoid serious complications that may arise. Preventive interventions involving a

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healthy lifestyle such as a balanced diet, regular exercise, and stress management can help reduce the risk of hypertension in the elderly. Given the facts and theories above, providing appropriate health education and counseling on a healthy lifestyle is essential to reduce the prevalence of hypertension in young elderly, so that their quality of life can be improved.

Relationship Based on Gender with Hypertension Prevalence

In this study, female respondents were the majority (68%) of the total sample, and a significant relationship was found between gender and the prevalence of hypertension (p = 0.007) based on the Chi-Square Test. This indicates that the prevalence of hypertension in women is higher than in men in the elderly age group studied. These results support the findings found in many other studies, that hypertension is more common in women, especially in elderly women, which can be caused by various biological, social, and psychological factors. It is important to pay attention to the factors that influence the prevalence of hypertension in women, especially after entering menopause.

The decline in estrogen levels after menopause is a major factor that makes women more susceptible to hypertension. Estrogen has a protective effect on blood vessels, and when estrogen levels decrease, blood vessels tend to harden, which can increase the risk of hypertension (15). Psychosocial factors such as higher stress, especially those associated with women's dual roles as mothers and workers, also contribute to increased blood pressure. Prolonged stress can trigger physiological responses that increase blood pressure, such as increased levels of the hormone cortisol which can worsen hypertension. Excessive physical activity can also worsen hypertension in women, if not balanced with adequate rest and good stress management (16).

Special attention should be paid to stress management and healthy lifestyle management for the prevention of hypertension in elderly women. Since hypertension in elderly women is often influenced by decreased estrogen levels, it is important to educate the elderly about the importance of maintaining hormonal balance through a healthy diet, regular exercise, and adequate sleep. Stress management is key to preventing hypertension, such as through relaxation techniques, meditation, or psychological counseling to reduce the negative impact of stress. Involving elderly women in health programs that cover all these aspects is essential to reduce the prevalence of hypertension among elderly women, which in turn can improve their quality of life.

Relationship Based on Education Level with Hypertension Prevalence

In this study, most respondents (50%) had a high school education. The results of the Chi-Square Test showed a significant relationship between education level and hypertension prevalence (p = 0.034). This means that education level affects the prevalence of hypertension among the elderly. Although individuals with higher education have better awareness of health, in reality, the group with high school education still shows a high prevalence of hypertension. This indicates that other factors besides education level, such as lifestyle or genetic factors, also play a role in the prevalence of hypertension.

Individuals with higher levels of education tend to have a better understanding of the importance of a healthy lifestyle, stress management, and adherence to medication and health

monitoring. Education provides knowledge about ways to prevent disease and manage chronic diseases such as hypertension (17). Individuals with higher education are not completely free from hypertension, this condition is also susceptible to other factors such as work stress, unhealthy diet, or sedentary habits that can worsen health conditions. Although education plays an important role in the prevention and management of hypertension, environmental and lifestyle factors still need to be considered (18).

Education is indeed a very influential factor in increasing a person's knowledge and ability to manage hypertension. This does not guarantee that individuals with higher education are completely free from hypertension. The knowledge gained through education needs to be balanced with the awareness to apply it in everyday life. Individuals with higher education, a tendency to adhere to a healthy lifestyle and medication, must still be given support and information about stress management and the implementation of a more consistent healthy lifestyle to prevent hypertension. These efforts include health promotion that can help individuals cope with stress arising from work or personal life, as well as assist in making healthier decisions in lifestyle.

Relationship Based on Economic Status with Hypertension Prevalence

The majority of respondents (85%) in this study had middle economic status. The results of the Chi-Square Test showed a significant relationship between economic status and the prevalence of hypertension ($p = 0.016$). This finding suggests that economic status plays an important role in the prevalence of hypertension, with the middle economic group being more susceptible to this condition. Individuals with lower economic status usually have more limited access to health facilities, treatment, and routine health checks, which contributes to the increased prevalence of hypertension. Elderly people in the middle economic group also face a significant risk of hypertension, which requires special attention in efforts to prevent and manage this disease.

Economic status affects many aspects of life that can affect health, including access to health facilities, food quality, and ability to manage disease. Older adults with low economic status tend to have limited access to appropriate treatment or routine control of hypertension (19). Lack of economic resources can hinder the ability to purchase necessary medications, follow recommended health care, or even obtain nutritious foods that can help manage hypertension. Individuals with low economic status may experience more stress due to financial uncertainty, which can also worsen their health conditions, including hypertension (20).

Efforts to improve access and quality of health care for elderly with low economic status are essential in reducing the prevalence of hypertension in these communities. Intervention programs that support accessibility of health services for individuals with limited economic status should be a priority, such as through the provision of more accessible community-based health services or subsidies for medicines. Educational programs on healthy lifestyles that focus on more affordable diets and stress management need to be introduced to reduce the negative impact of economic factors on health. Paying more attention to the health needs of elderly with low economic status can help reduce the prevalence of hypertension among the elderly and improve their quality of life.

Conclusion

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Most respondents are young elderly and there is a significant relationship between age and the prevalence of hypertension. This shows that the aging process contributes to an increased risk of hypertension. The majority of respondents are female and a significant relationship was found between gender and the prevalence of hypertension. Female elderly experience hypertension more than male. The last level of education of most respondents is high school/equivalent and there is a significant relationship between education level and the prevalence of hypertension. Lower education tends to contribute to less than optimal health understanding and behavior. The economic status of respondents is mostly in the middle category and a significant relationship was found between economic status and the prevalence of hypertension. Economic status affects access to health services and the lifestyle of the elderly. Overall, the demographic characteristics of the elderly (age, gender, education level, and economic status) have been shown to be associated with the prevalence of hypertension.

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