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(RESEARCH ARTICLE)

The relationship between hypertension incidence and quality of life of the elderly in Bagi Village, Madiun District, Madiun Regency, Indonesia

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Abstract

Introduction: The prevalence of hypertension in Bagi Village, Madiun District, East Java, Indonesia, exceeds the national average (48.4%). Hypertension can reduce the quality of life of sufferers, and as many as 40% of the village population has a low quality of life. What is the relationship between the incidence of hypertension and its quality of life? The purpose of this study was to determine the relationship between the incidence of hypertension and its impact on quality of life.

Methods: A total of 37 elderly people aged 60-74 years participated in this cross-sectional study (total sample). They resided in RW 5, Bagi Village. They had their blood pressure measured directly with a digital sphygmomanometer and were interviewed using the EUROQOL-5-Dimensions-5-Levels questionnaire to determine their quality of life. A Fisher's Exact Test was conducted to determine the relationship between the two with a significance level of 0.05.

Results: The majority (68%) of those with hypertension were women, had a low level of education (56%), and were employed (68%). The same situation applies to those with a good quality of life. Descriptively, 50% of those with a high school education have a poor quality of life. Hypertension is not associated with quality of life (p=0.450).

Conclusion: The risk factors for hypertension were age and gender, which were not associated with quality of life. Psychosocial well-being and adaptive resilience played a greater role than education or employment. Maintaining a healthy lifestyle and controlling blood pressure can maintain the quality of life for sufferers.

Keywords: Hypertension; Quality of Life; Elderly; Rural Areas

1. Introduction

The number of elderly people in Indonesia will reach approximately 11.8% of the total population (34 million people) in 2024. This figure has increased from the previous year, in line with the phenomenon of population aging in Indonesia.(1) This indicates that elderly people must be given attention in health services to ensure a comfortable and productive life, and to be able to face the health and economic challenges that may arise with age.

In Indonesia, the most common health problems for the elderly are non-communicable diseases (NCDs) such as hypertension, diabetes, heart disease, and stroke. Hypertension is a global health problem, resulting in increased

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morbidity and mortality rates and increased healthcare costs.[2] Based on the 2023 Indonesian Health Survey (SKI), the prevalence of hypertension in the elderly was 22.9%,[3] lower than the national figure (34.11%). However, only 11.9% of elderly people take their medication regularly, and 11% make repeat visits to healthcare facilities. The prevalence of hypertension in urban areas in Indonesia tends to be higher than in rural areas. According to 2021 data from the Indonesian Ministry of Health, the prevalence in urban areas was 37.25%, while in rural areas it was 27.8%.[4] The incidence of hypertension in Bagi Village, Madiun District, Madiun Regency is 48.4%, exceeding the rates in East Java (36.3%) and Indonesia (34.1%).[4] The elderly age group, 60–74 years old, dominates the incidence of hypertension, as reported by the WHO and the Ministry of Health (2021), with a proportion of 60%. They also found that 40% of hypertension sufferers have a quality of life that is classified as poor based on psychological aspects, interpersonal relationships, and independence.

The high prevalence of hypertension indicates a health burden, as people are susceptible to complications and health problems that reduce their quality of life. Therefore, quality of life is an important indicator in assessing the success of disease management. WHO defines quality of life as a person's perception of their position in life, based on their culture and value system, related to their goals, hopes, and concerns.[5] According to the Euro Quality of Life (EuroQoL), there are five main dimensions of quality of life, including walking ability, self-care, usual activities, pain, and depression or anxiety. One instrument that can be used to assess quality of life based on these five dimensions is the EQ-5D questionnaire.[6]

The same condition was found in the study by Lee et al., 2020,[7] but different from the results of other studies, where psychological problems such as stress, depression, and anxiety do not always occur in general in all individuals with hypertension, with some studies showing contradictory findings, including factors of education and family income. The high rate of hypertension in the elderly in rural Bagi, and it's still found differences between the relationship of hypertension and their quality of life, so this study needs to be done. How is the relationship between the incidence of hypertension and its quality of life in Bagi Village, Madiun District, Madiun Regency? This study aims to determine the relationship between the incidence of hypertension and its impact on quality of life.

2. Methods

This cross-sectional study was conducted in Bagi Village, Madiun District, Madiun Regency, East Java, Indonesia. The study variables were hypertension as the independent variable and quality of life as the dependent variable. A total of 37 elderly individuals aged 60-74 years and their spouses (the total sample) were informed about the study and asked for their consent to participate. They then had their blood pressure measured using a digital sphygmomanometer and were interviewed to determine their quality of life, which was assessed using the EUROQOL 5 Dimensions 5 Levels (EQ-5D-5L) questionnaire.[6] The elderly participants did not have difficulty understanding conversation, suffer from degenerative diseases affecting cognitive function, such as dementia, aphasia, or other conditions that could affect comprehension and completion of the questionnaire.

The EQ-5D-5L instrument consists of five dimensions: mobility, self-care, daily activities, pain or discomfort, and anxiety or depression. Each dimension has five levels of severity, ranging from no problem (level 1) to very severe problems (level 5). The combination of these five dimensions produces a five-digit health profile.

The five-digit profile from the EQ-5D-5L quality of life instrument was converted into an index score using the Indonesian EuroQoL value series. The index score ranges from 1 to -0.865. This score was then categorized based on interpretation into good quality of life (index score greater than 0.5) and poor quality of life (index score less than 0.5). Data were collected, processed, and analyzed using Fisher's exact test with SPSS PC+.

3. Results

59.5% of respondents were female, and the highest educational level (59.5%) was uneducated/did not complete elementary school. They were aged 60-74, with 64.9% still working as farmers. Table 1 shows that, based on gender, the majority of those with hypertension were female (68%). Those with hypertension were most likely to have no education or not have completed elementary school (56%), and most worked as farmers (60%). Thirty-six percent of those with hypertension had a family history of hypertension, and 20% were active smokers. The same situation was true for respondents with a good quality of life.

Table 2 shows that all those with hypertension had a poor quality of life, while all those without hypertension did not. However, a Fisher's exact test showed no significant correlation between the two (p=0.45). This may be due to the lack of variation in the poor quality of life data.

Table 1 Distribution of Frequency of Hypertension Incidents and Quality of Life Based on Respondent Characteristics in Percentage

Hypertension No			**Hypertension Yes**		**Good Quality of Life**		**Poor Quality of Life**	
Characteristic	n (people)	Persentage (%)	n (people)	Persentage (%)	n (people)	Persentage (%)	n (people)	Persentage (%)
Sex								
Male	7	58.3	8	32	14	40	1	50
Female	5	41.7	17	68	21	60	1	50
Education Level								
No schooling/Did not complete elementary school	8	66.7	14	56	21	60	1	50
Elementary school/equivalent	2	16.7	7	28	9	25.7	0	0
Junior high school/equivalent	1	8.3	3	12	4	11.4	0	0
High school/equivalent	1	8.3	1	4	1	2.9	1	50
Occupation								
Housewife	2	16.7	8	32	9	25.7	1	50
Farmer	9	75	15	60	23	65.7	1	50
Self-employed	0	0	2	8	2	5.7	0	0
Unemployed	1	8.3	0	0	1	2.9	0	0

Table 2 Frequency Distribution of Hypertension and Quality of Life of Respondents in Percentage and Strength of Relationship Between the Two

Good Quality of Life			**Poor Quality of Life**		
Hypertension	n (people)	Persentage (%)	n (people)	Persentage (%)	*p-value*
No	12	34.3	0	0	0,45
Yes	23	65.7	2	100	

4. Discussion

67.6% of elderly respondents suffer from hypertension. This situation indicates a high burden of disease in rural areas. In Madiun District, only 27.1% of the population has received hypertension-related health services.[8] Consequently, nearly three-quarters of hypertension sufferers in this area do not have access to the health care system, which can lead to undiagnosed and uncontrolled cases and the risk of serious complications.

Risk factors for hypertension are generally divided into two categories, namely non-modifiable factors such as age, gender, and genetics, and modifiable factors such as obesity, smoking habits, alcohol consumption, excessive salt intake, stress, and hormonal imbalance.

Community characteristics and geographic conditions influence the diversity of these risk factors. In Indonesia, the prevalence of hypertension is recorded as higher in elderly people living in urban areas compared to those living in rural areas, which is likely due to differences in lifestyle and physical activity levels.[9] Research results show that in rural communities, hypertension tends to be more influenced by non-modifiable factors, whereas in urban communities, unhealthy lifestyle risk factors are more dominant as the main cause.[9] In addition to geographic factors, socioeconomic status also plays an important role in the occurrence of hypertension. Low levels of education and income are associated with low awareness of living a healthy lifestyle and limited access to health services. Meanwhile, employment status does not show a significant relationship with hypertension, possibly due to differences in job characteristics between urban and rural areas, where work in cities tends to be sedentary compared to work in villages that involves more physical activity. [10,11] The findings of this study align with the 2023 Indonesian Health Survey (SKI) data, which reported that the prevalence of hypertension in the 55–64 and 65–74 age groups nationwide, based on both doctor's diagnosis and blood pressure measurement results, was 18.7% and 23.8% (doctor's diagnosis), and 49.5% and 57.8% (measurement results), respectively.[3] These data indicate that hypertension is a significant health issue among the elderly, with its prevalence increasing with age; more than 60% of cases occur in individuals over 60 years old.[12] The role of age in this context aligns with the theory that, from a pathophysiological perspective, hypertension in the elderly is driven by mechanisms such as hemodynamic changes, central arterial stiffness, autonomic and neurohormonal system dysregulation, and declining kidney function due to aging.[13] Arterial stiffness reduces elasticity and the vessels' ability to adjust blood volume during the cardiac cycle, contributing to increased systolic (SBP) and diastolic (DBP) blood pressure with age. Beyond age 60, central arterial stiffness becomes the primary factor, causing SBP to continue rising while DBP begins to decline, ultimately resulting in isolated systolic hypertension and higher pulse pressure.[13]

Based on gender, this study found that the majority of hypertension sufferers were women (77.3%). The increased incidence of hypertension in elderly women is thought to be related to the menopause phase, which is characterized by hormonal changes, particularly decreased estrogen production. Estrogen is known to have a protective effect on the cardiovascular system, including by increasing high-density lipoprotein (HDL) levels. The decline in estrogen levels post-menopause leads to reduced protection against atherosclerosis, thus increasing the risk of hypertension in women.[14]

Based on the results of this study, 64% of respondents with hypertension had no family history of hypertension. This finding is inconsistent with the results of research by Tarja and Seppo (2023), which showed that the prevalence of hypertension was significantly higher in individuals with a family history of hypertension.[15] This difference in results is likely due to limited information from elderly respondents regarding the health status of their family members, especially their parents. This may occur because, in the past, public awareness of early hypertension detection and health promotion was still limited, along with limited knowledge and medical facilities at that time. Therefore, it is possible that minimal reporting or ignorance of family history is one of the factors influencing the results of this study.

In addition to non-modifiable factors, modifiable factors such as lifestyle also play a role in the high rate of hypertension. Smoking is a form of unhealthy lifestyle and a modifiable risk factor for hypertension. In this study, 80% of people with hypertension were not active smokers. This differs from research conducted by Lusno et al. (2020), which showed a significant association between smoking and hypertension.[16] Physiologically, smoking can increase blood pressure through stimulation of the sympathetic nervous system. Active substances such as interleukin-6 in cigarettes trigger oxidative stress, which then disrupts endothelial function and triggers insulin resistance. Decreased endothelial function will reduce the bioavailability of protective substances against atherosclerosis, thereby increasing the risk of hypertension and atherosclerosis.

Thus, the results of this study reveal that the incidence of hypertension in the elderly in Bagi Village is strengthened by non-modifiable risk factors, including advanced age and female gender. Several modifiable factors, such as nutritional status, stress, and lifestyle, also need to be considered in efforts to prevent and control hypertension in the elderly group. Those with hypertension present a health burden, are susceptible to complications and health disorders that reduce their quality of life.Sebanyak 94,6% lansia tergolong memiliki kualitas hidup baik. Mereka terdiri dari perempuan (59,5%) dan petani (64,9%), dengan mayoritas tidak tamat sekolah dasar (59,5%). Meskipun memiliki keterbatasan sosial ekonomi, sebagian besar peserta melaporkan kesulitan minimal di seluruh domain EQ-5D-5L.

The self-reported good quality of life in this rural elderly population suggests that psychosocial well-being and adaptive resilience may play a more significant role than education or employment. This finding aligns with adaptive resilience theory, which highlights an individual's ability to maintain or regain psychological and functional well-being despite adversity.[17]

The results of this study support this. In the mobility domain, 61.5% reported no problems, with only 5.1% experiencing severe or extreme limitations. In the self-care domain, 89.7% of respondents reported no difficulties, indicating a high level of independence. In the usual activities' domain, 74.3% of respondents reported no problems, with the remainder reporting moderate to severe limitations. In the pain/discomfort dimension, only 23% of respondents reported being completely pain-free, with the remaining 28.2% reporting moderate to severe discomfort. This reflects the physical challenges of aging, which do not significantly interfere with daily life. In the anxiety/depression domain, 61.5% did not experience emotional distress. Overall, respondents' quality of life assessments indicated a relatively high baseline level of physical function and emotional coping, consistent with their good quality of life classification.

The results of this study are supported by research in Indonesia and internationally using the EQ-5D-5L instrument. Purba et al. (2018) conducted a large-scale national study in Indonesia involving 1,056 adults and found that 44.1% of the general population reported no problems in all five domains of the EQ-5D-5L, with an average index of 0.911. Specifically, the most frequently reported problems were in the dimensions of pain/discomfort at 39.7% and anxiety/depression at 34.3%, with only 1.9% reporting self-care problems.[18]

Research by Ferreira et al. (2023) supports these findings. A study of 1,006 elderly people in Portugal found that 82.3% reported a good quality of life, particularly in the domains of self-care and mobility.[19] This quality of life was associated with the presence of support from a partner or family in 60% of elderly people with a good quality of life. Similarly, 61.5% of these studies reported no mobility difficulties. In rural China, Feng et al. (2022) studied 1,503 elderly people and reported that 88% had a moderate to good quality of life, with high social cohesion and accessibility to primary healthcare facilities emerging as protective factors ($p < 0.01$).[20] Communal integration and easy access to healthcare facilities are likely to have a positive impact on the quality of life of elderly people.

In contrast, Zhang et al. (2020) conducted a large study of 28,000 elderly people in urban and rural China and found significantly higher EQ-5D-5L scores among urban residents (mean = 0.89) compared to rural residents (mean = 0.77). This disparity was linked to education and occupational levels. As many as 57.3% of respondents in rural settings had a college education, categorized as a poor quality of life.[21] This can be correlated with the mismatch of available jobs in rural areas, which can lead to psychological disorders. Similarly, Purba et al. (2018) noted that rural Indonesians reported lower EQ-VAS scores than urban residents, and elderly respondents scored lower in most domains, indicating structural limitations in rural environments.[18]

This study reinforces the importance of non-economic determinants of well-being, reflected in five dimensions of quality of life, particularly for the elderly population in rural areas. In rural areas, subjective quality of life is maintained through adaptive strategies, even in the presence of pain or limitations. Theoretically, this supports successful aging, encompassing physical function, cognitive capacity, and active social engagement. These two facts suggest that quality of life is a psychosocial adaptive capacity, not simply the absence of disease.[22,23]

The results of this study indicate no significant relationship between hypertension and quality of life, although descriptively, those with hypertension have a poor quality of life. This can be explained by the perception of health in the elderly, as described above. It can also be explained by the fact that clinically, the hypertension suffered by respondents in this study was mostly asymptomatic or subclinical and did not manifest as fatal complications. These results align with the study by Santhalingam et al. (2021), which found no relationship between the two because the quality of life of both hypertensive and non-hypertensive patients did not differ significantly. Furthermore, most elderly hypertensive patients in the study regularly underwent routine medical check-ups and check-ups, which improved their quality of life.[24]

Similarly, a study in Tanzania by Muki et al. (2025) found no association due to underreporting of systemic diseases experienced by patients. Self-awareness of several systemic diseases, including hypertension, among the study respondents was low.[25] A study in Surabaya, Indonesia, showed similar results, as patients with hypertension in that study tended to have well-controlled blood pressure.[26] Similarly, a study conducted by Sawitri (2024) in Aceh, Indonesia,[27] and a study by Wijesiri et al. (2023) in Sri Lanka showed similar results, although hypertension was the most prevalent comorbidity in that study.[28]

In COVID-19 patients who had been discharged from the hospital, there was no significant association between hypertension and quality of life as assessed by the EQ-5D-5L questionnaire (6). Several studies assessing the relationship between hypertension status and quality of life have shown no significant association between hypertension and quality of life; thus, these results are consistent with previous studies.

5. Conclusions and suggestions

The prevalence of hypertension among the elderly in Bagi Village is exacerbated by non-modifiable risk factors, including advanced age and female gender. The prevalence of hypertension exceeds the national average (67.7%), with the highest prevalence among female respondents, those who have not completed elementary school, and those who are employed.

Those with hypertension present a significant health burden, prone to complications and health problems that reduce their quality of life. However, the study results did not indicate a relationship between hypertension and quality of life. 94.6% of rural residents reported a good quality of life, particularly among female respondents and those employed. Despite socioeconomic limitations, most participants reported minimal difficulties across all domains of the EQ-5D-5L. Psychosocial well-being and adaptive resilience may play a more significant role than education or employment. Quality of life is not simply about the absence of disease.

To maintain a better quality of life, seniors are advised to maintain a healthy lifestyle, maintain blood pressure control, and engage in adequate exercise. These findings can be used as a reference for health services to pay more attention to early detection of hypertension, monitoring risk factors, and increasing efforts to prevent hypertension, as well as maintaining a more optimal quality of life, especially in aspects of mobility, daily activities, the presence/absence of pain/discomfort, and the presence/absence of anxiety/depression, so that healthy and productive elderly people can be created.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of ethical approval

This study had received ethical clearance from the Ethics Committee for Health Research, Universitas Airlangga, Surabaya, Indonesia (No. 49/EC/KEPK/FKUA/2025), and the Madiun Regency Health Office under research and extension practice permit number 400.14.5.4/4735/402.102/2025.

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