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THE RELATIONSHIP BETWEEN DIETARY PATTERNS AND THE INCIDENCE OF HYPERTENSION AMONG THE ELDERLY IN THE WORKING AREA OF JEULINGKE COMMUNITY HEALTH CENTER (PUSKESMAS)

HUBUNGAN POLA MAKAN DENGAN TINGKAT KEJADIAN HIPERTENSI PADA LANSIA DI WILAYAH KERJA PUSKESMAS JEULINGKE

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Abstract

Background: Hypertension is a non-communicable disease that frequently affects the elderly population and represents a significant health concern. Dietary patterns are among the factors that contribute to the development of hypertension. Objective: This study aimed to analyze the relationship between dietary patterns and the incidence of hypertension among the elderly in the working area of the Jeulingke Community Health Center (Puskesmas), Banda Aceh City. Methods: This study employed a quantitative approach with a cross-sectional design and a descriptive-correlational method. The study population consisted of 993 elderly individuals, from which a sample of 100 respondents was selected using the Slovin formula. Data were collected using a Food Frequency Questionnaire (FFQ) to assess dietary patterns, alongside blood pressure measurements. Data analysis was conducted through univariate and bivariate methods, utilizing the Chi-Square test. Results: The findings indicate that the majority of respondents had poor dietary patterns (63%), and a large proportion of respondents had hypertension (69%). Bivariate analysis revealed a significant relationship between dietary patterns and the incidence of hypertension among the elderly ($p = 0.004$; $p < 0.05$). Conclusion: It can be concluded that there is a significant association between dietary patterns and the occurrence of hypertension among the elderly in the working area of the Jeulingke Community Health Center. Therefore, efforts to improve dietary habits are necessary as a measure for the prevention and control of hypertension in the elderly population.

Keywords : Dietary Patterns, Hypertension, Elderly.

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Abstrak

Latar Belakang: Hipertensi merupakan salah satu penyakit tidak menular yang banyak terjadi pada kelompok lansia dan menjadi permasalahan kesehatan yang cukup serius. Salah satu faktor yang berperan dalam terjadinya hipertensi adalah pola makan. Tujuan: Penelitian ini bertujuan untuk menganalisis hubungan antara pola makan dengan tingkat kejadian hipertensi pada lansia di wilayah kerja Puskesmas Jeulingke, Kota Banda Aceh. Metode: Penelitian ini menggunakan pendekatan kuantitatif dengan desain cross-sectional serta metode deskriptif korelasional. Populasi penelitian berjumlah 993 lansia, dengan sampel sebanyak 100 responden yang ditentukan menggunakan rumus Slovin. Pengumpulan data dilakukan melalui kuesioner Food Frequency Questionnaire (FFQ) untuk mengukur pola makan, serta pemeriksaan tekanan darah. Analisis data dilakukan secara univariat dan bivariat menggunakan uji Chi-Square. Hasil : Hasil penelitian menunjukkan bahwa sebagian besar responden memiliki pola makan yang kurang baik (63%) dan mayoritas responden mengalami hipertensi (69%). Hasil analisis bivariat menunjukkan adanya hubungan yang signifikan antara pola makan dengan kejadian hipertensi pada lansia dengan nilai p = 0,004 (p < 0,05). Kesimpulan: Dapat disimpulkan bahwa terdapat hubungan yang bermakna antara pola makan dengan kejadian hipertensi pada lansia di wilayah kerja Puskesmas Jeulingke. Oleh karena itu, diperlukan upaya perbaikan pola makan sebagai langkah pencegahan dan pengendalian hipertensi pada lansia.

Kata Kunci : Pola Makan, Hipertensi, Lansia.

1. INTRODUCTION

Older adults (the elderly) are individuals who have entered the aging process and typically experience various physical and psychosocial changes. According to the World Health Organization (WHO), anyone over the age of 60 is classified as an older adult. The aging process can increase the risk of various degenerative and non-communicable diseases, such as hypertension, rheumatism, stroke, cardiovascular disease, and diabetes mellitus (Gunawan et al., 2025). One health issue frequently encountered by older adults is hypertension a condition characterized by a systolic blood pressure exceeding 140 mmHg and/or a diastolic blood pressure of ≥90 mmHg. This condition is known as a "silent killer" because it often presents no clear symptoms, yet it can lead to serious complications if left uncontrolled (Akbar et al., 2025).

The prevalence of hypertension remains a persistent health concern globally. Based on WHO data (2018), as cited in *Nursing & Journal* (2020), approximately 972 million people worldwide—or 26.4% of the global population suffer from hypertension; this figure was projected to rise to 29.2% by 2021. In Indonesia, hypertension is highly prevalent among the elderly, with rates of 45.9% for those aged 55–64, 57.6% for those aged 65–74, and 63.8% for those aged 75 and older (Ners et al., 2018). In Aceh Province, the number of individuals with hypertension reached 1,131,562 in 2020, with 426,684 people approximately 38% receiving care through public health facilities (Widianto et al., n.d.). Meanwhile, data from the Banda Aceh City Health Office records 11,836 individuals living with hypertension. The Jeulingke Community Health Center (Puskesmas) reported 1,301 cases of hypertension in 2025, 993 of which involved elderly individuals. This situation indicates that hypertension remains a health issue requiring special attention.

The occurrence of hypertension is influenced by both controllable and uncontrollable risk factors. Uncontrollable (non-modifiable) factors include age, gender, and family history, while controllable (modifiable) factors include nutritional status, obesity, lack of physical activity, smoking habits, stress, and an unhealthy diet (Jaya et al., 2025). One particularly significant factor is diet—an individual's habits regarding the type, quantity, and frequency of food consumed daily to meet the body's needs and maintain health. Habits such as consuming foods high in salt, sodium, saturated fats, or processed ingredients, as well as the excessive use of flavor enhancers, can increase the risk of hypertension. Excessive sodium intake causes the body to retain fluid, which increases blood volume

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and forces the heart to work harder to pump blood. Furthermore, high consumption of saturated fats can raise cholesterol levels, leading to the formation of plaque on blood vessel walls; this obstructs blood flow and elevates blood pressure (Julyana et al., 2022). Conversely, potassium intake can help lower blood pressure through mechanisms such as vasodilation and a reduction in peripheral resistance (Julyana et al., 2022).

Among the elderly, an unhealthy diet often includes the frequent consumption of fatty, salty, or sugary foods including those prepared with coconut milk along with an insufficient intake of fruits and vegetables. Such dietary patterns can increase cholesterol levels and negatively affect vascular health, potentially leading to higher blood pressure (Nani et al., 2021). Therefore, adopting a healthy and balanced diet is a crucial step in the prevention and management of hypertension in the elderly population. The high prevalence of hypertension within the working area of the Jeulingke Community Health Center (Puskesmas Jeulingke), particularly among the elderly, serves as the basis for this study. The research aims to analyze the relationship between dietary patterns and the incidence of hypertension among the elderly in the area served by the Jeulingke Community Health Center in Banda Aceh City. The findings are intended to provide a resource for healthcare professionals to develop promotional and preventive initiatives such as health education and dietary guidance—aimed at managing hypertension in the elderly.

2. RESEARCH METHOD

This study employs a quantitative approach with a cross-sectional design and a descriptive-correlational method. The cross-sectional design is used to observe and measure the independent variable dietary patterns and the dependent variable the occurrence of hypertension at the same point in time. A quantitative approach is utilized because the study relies on numerical data to analyze the relationships between variables (Waruwu et al., 2025; Tarigan, 2025). The research was conducted within the working area of the Jeulingke Community Health Center (Puskesmas Jeulingke) in Banda Aceh City, with data collection taking place in April 2026. The study population consisted of all elderly individuals who visited the Jeulingke Community Health Center between January and December 2025, totaling 993 people. A sample of 100 respondents was selected using the Slovin formula.

The research instrument used was a Food Frequency Questionnaire (FFQ) consisting of 25 questions designed to identify the respondents' dietary habits and the frequency of their food consumption. The questionnaire utilizes a rating scale based on the frequency of food intake. This instrument has a validity coefficient of 0.421 and a Cronbach’s Alpha reliability coefficient of 0.952 (Meghan, 2023). In addition to the dietary questionnaire, the study also involved direct blood pressure measurements to assess the respondents' blood pressure status. Data were collected as primary data, obtained directly from the respondents through structured interviews, the completion of the FFQ, and blood pressure examinations. Subsequently, the data underwent several processing stages: editing (checking for the completeness of responses), coding (assigning codes to the data), data entry (inputting data into a computer system), cleaning (checking for potential data errors), and processing (analyzing and presenting the research findings) (Soesana et al., 2023).

Data analysis was performed using both univariate and bivariate methods. Univariate analysis is used to describe the frequency distribution and percentages of respondent characteristics, dietary patterns, and the occurrence of hypertension (Widodo et al., 2023). Meanwhile, bivariate analysis is employed to examine the relationship between dietary patterns and the occurrence of hypertension. The association between these two variables is tested using the Chi-Square statistical test at a significance level of 0.05.

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3. RESULTS AND DISCUSSION

Characteristics of Respondents

The study, conducted within the working area of the Jeulingke Community Health Center (Puskesmas) in April 2026, involved 100 elderly respondents. The characteristics of the respondents included age, gender, blood pressure, education level, and occupation. The results indicate that the majority of respondents (91 individuals, or 91%) fall into the "elderly" age group, while 9 individuals (9%) belong to the "old" age group. Regarding gender, the majority of respondents are female (68 individuals, or 68%), while 32 individuals (32%) are male.

In terms of blood pressure, 69 respondents (69%) have hypertension, while 31 respondents (31%) do not. Regarding education level, the largest group consists of those whose highest level of education is primary school (SD)—34 individuals (34%)—followed by those with a high school (SMA) education (33 individuals, or 33%), junior high school (SMP) (29 individuals, or 29%), and higher education (diploma/bachelor's degree) (4 individuals, or 4%). As for occupation, 53 respondents (53%) are currently unemployed, while 47 respondents (47%) are employed.

Table 1. Frequency Distribution of Respondent Characteristics by Age, Gender, Blood Pressure, Education Level, and Occupation

Characteristics	Respondent Frequency (n)	Presentase
Age (Years)		
Elderly	91	91.0
Old	9	9.0
Gender		
Man	32	32.0
Woman	68	68.0
Blood pressure		
Hypertension	69	69.0
No Hypertension	31	31.0
Level of education		
SD	34	34.0
SMP	29	29.0
SMA	33	33.0
S1/D3	4	4.0
Work		
Work	47	47.0
Doesn't work	53	53.0
Total	100	100

The study results show that the elderly group of respondents is predominantly female and falls within the 60–74 age range. Advancing age is a factor associated with an increase in blood pressure, as the aging process leads to changes in the structure and function of blood vessels. Blood vessel walls thicken, elasticity decreases, and vascular resistance increases, causing blood pressure to rise (Afriyanti et al., 2020; Riyada et al., 2023). Consequently, the elderly population is more susceptible to hypertension.

The predominance of female respondents also warrants attention, as hormonal changes following menopause can influence the risk of hypertension. A decline in estrogen levels can lead to a reduction in HDL (high-density lipoprotein) cholesterol, which plays a role in maintaining the health of blood vessels. This condition may increase the risk of atherosclerosis and vascular disorders, particularly when accompanied by an unhealthy lifestyle (Falah, 2019).

Overview of Dietary Patterns Among the Elderly

The study results indicate that the majority of respondents have poor dietary patterns. Out of 100 respondents, 63 (63%) fall into the category of having poor dietary patterns, while 37 (37%) have

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good dietary patterns. These findings suggest that the dietary habits of most elderly individuals in the working area of the Jeulingke Community Health Center (Puskesmas) still require attention.

Table 2. Frequency Distribution of Dietary Patterns Among the Elderly in the Working Area of the Jeulingke Community Health Center, 2026.

Dietary habit	Respondent Frequency (n)	Presentase
Good	37	37.0
Not good	63	63.0
Total	100	100

Dietary patterns are a key factor in maintaining health and can influence the occurrence of hypertension. These findings align with the work of Rihiantoro and Widodo (2025), who explain that nutritional intake plays a significant role in the development of various diseases, including hypertension. Habits such as consuming fast food, processed foods, and items high in fat and salt can increase the risk of elevated blood pressure. Consuming high-fat foods can raise blood cholesterol levels. Excess cholesterol may accumulate on the walls of blood vessels, causing them to narrow and disrupting blood flow. This condition can increase both blood pressure and blood volume, thereby heightening the risk of developing hypertension (Maqfirah et al., 2024). For elderly individuals at risk of hypertension, a healthy diet should involve limiting the intake of sodium and high-fat foods—such as organ meats—while increasing the consumption of fruits and vegetables, which are rich in fiber. Furthermore, foods containing potassium, magnesium, calcium, and isoflavones can be part of a recommended diet to help maintain overall health (Maqfirah et al., 2024). Thus, improving dietary habits serves as an essential step in supporting blood pressure control among the elderly.

The Relationship Between Dietary Patterns and the Incidence of Hypertension

Bivariate analysis indicates a relationship between dietary patterns and the incidence of hypertension among the elderly in the working area of the Jeulingke Community Health Center (Puskesmas). Based on cross-tabulation results, among 37 respondents with good dietary patterns, 32 individuals (86.5%) had hypertension, while 5 (13.5%) did not. Meanwhile, among 63 respondents with poor dietary patterns, 37 individuals (58.7%) had hypertension, and 26 (41.3%) did not.

Table 3. The Relationship Between Dietary Patterns and the Incidence of Hypertension Among the Elderly in the Working Area of the Jeulingke Community Health Center.

Dietary habit	Blood pressure				Total	P-Value
	Hypertension (n)	Hypertension (%)	No Hypertension (n)	No Hypertension (%)		
Good	32	86,5	5	13,5	37	0,004
Not good	37	58,7	26	41,3	63	
Total	69	69,0	31	31,0	100	

Statistical testing reveals a significant relationship between dietary patterns and the incidence of hypertension. These findings suggest that diet is one of the factors associated with blood pressure status in the elderly. Nevertheless, the distribution of respondents shows that hypertension also occurs in the group with good dietary patterns. This indicates that the incidence of hypertension is not solely linked to diet but may also be influenced by other factors, such as age, gender, and heredity. Based on the results of the Food Frequency Questionnaire (FFQ), respondents continue to consume foods high in sodium, MSG, and flavor enhancers. Frequently consumed items include anchovies, sardines, and instant noodles. Excessive consumption of such foods can lead to increased sodium intake, which causes fluid retention in the body. The resulting rise in fluid and blood volume increases the workload on the heart, potentially leading to elevated blood pressure.

These findings align with research by Rikayoni et al. (2024), which indicates that a diet high in fat, salt, fried foods, and coconut milk can increase the risk of hypertension. Saturated fats can raise levels of LDL or "bad" cholesterol which may cause the obstruction of blood vessels. Meanwhile, excessive salt intake causes the body to retain more fluid, thereby increasing blood pressure. Persistent

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unhealthy eating habits can negatively impact vascular health and heighten the risk of hypertension. Consequently, it is essential for the elderly to adopt a balanced diet by limiting the intake of foods high in salt, sodium, fat, and sugar, while increasing the consumption of nutritious foods particularly fruits and vegetables. Such efforts should be supported by health education and regular blood pressure monitoring to help manage the incidence of hypertension among the elderly.

4. CONCLUSION

Based on the findings of a study conducted in 2026 involving 100 respondents, the following conclusions can be drawn regarding the relationship between the incidence of hypertension and the dietary habits of the elderly in the working area of the Jeulingke Community Health Center (Puskesmas) in Banda Aceh City:

1. The majority of the elderly in the working area of the Jeulingke Community Health Center have poor dietary habits, accounting for 63 respondents (63.0%).
2. A large proportion of the elderly in the working area of the Jeulingke Community Health Center suffer from hypertension, with 69 respondents (69.0%) affected.
3. There is a significant relationship between the dietary habits of the elderly and the incidence of hypertension in the working area of the Jeulingke Community Health Center, as indicated by a statistical test result with a p-value of 0.002.

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