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ANALYSIS OF THE RELATIONSHIP BETWEEN SMOKING, STRESS, ALCOHOL, OBESITY, DYSLIPIDEMIA AND HYPERTENSION IN THE ELDERLY

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Abstract
Hypertension causes the deaths of 8 million people every year, of which 1.5 million deaths occur in Southeast Asia. Overall, the prevalence of hypertension is around 30-45% in adults and the prevalence increases progressively to >60% at ages >60 years. Hypertension is one of the main causes of mortality and morbidity in Indonesia, so it is needed at various levels of health care facilities in an effort to reduce the prevalence and incidence of cardiocerebrovascular disease. The aim of this research is to analyze the relationship between smoking, stress, alcohol, obesity, dysplidemia and hypertension in the elderly at Pustu Desa Deli Tua Dusun IV in 2024. This type of research is analytical quantitative research using a cross sectional approach. The population in this study are elderly people who experience hypertension at Pustu Desa Deli Tua IV in 2024, totaling 95 elderly people. Sampling used total sampling with a total sample of 95 elderly people. The data analysis used in this research is univariate, bivariate and multivariate analysis. The results of the research show that there is a relationship between smoking, stress, obesity and dysplidemia on hypertension in the elderly at the Deli Tua Village Dusun IV Pustu in 2024, but there is no relationship between alcohol and hypertension in the elderly at the Deli Tua Village Dusun IV Pustu in 2024. The variables included The most related to hypertension in the elderly at Pustu Desa Deli Tua Dusun IV in 2024 is the obesity variable (X4). From the results of the research that has been carried out, the suggestions that can be given to elderly hypertensive sufferers are to better maintain their lifestyle by reducing stress, reducing smoking for elderly people who still smoke, maintaining their diet for elderly people who are obese and it is also recommended that they do light exercise with as regular as walking in the morning.
Keywords**:** *Hypertension, Elderly, Smoking, Stress, Alcohol, Obesity, Dyslidemia*

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INTRODUCTION

Hypertension is defined as an increase in systolic blood pressure greater than or equal to 140 mmHg and diastolic blood pressure greater than or equal to 90 mmHg. Hypertensive patients are at risk of stroke and cardiovascular diseases. According to data from WHO (World Health Organization) in 2013, there were 9.4 million deaths per 1 billion people worldwide due to cardiovascular disorders (Indonesia, 2021).

Overall, the prevalence of hypertension is approximately 30-45% among adults and increases progressively to more than 60% in those over 60 years old. The prevalence of hypertension is rising most rapidly in developing countries (80% of the world), where controlling hypertension remains challenging, contributing to the growing epidemic of cardiovascular and cerebrovascular diseases (CVD) (Indonesia, 2021).

Hypertension causes 8 million deaths annually, with 1.5 million deaths occurring in Southeast Asia. In Indonesia, the Basic Health Research (Riskesdas) of 2018 showed an increase in the prevalence of hypertension to 34.1% among a population of approximately 260 million, compared to 25.8% in Riskesdas 2013. It is estimated that only a quarter of hypertension cases in Indonesia are diagnosed, and data indicates that only 0.7% of diagnosed hypertensive patients are on antihypertensive medication (Indonesia, 2021).

The primary effect of hypertension on the heart is related to increased afterload, where the heart must contract more forcefully, which accelerates the formation of atherosclerosis in the coronary arteries (Indonesia, 2021).

Hypertension is a major cause of mortality and morbidity in Indonesia, necessitating efforts at various levels of healthcare facilities to reduce the prevalence and incidence of cardiovascular and cerebrovascular diseases (Indonesia, 2021).

Hypertension can be caused by several risk factors, including sex, obesity, smoking habits, stress, exercise, diet, rest, genetic factors, alcohol consumption, and kidney disease. Individuals with a family history of hypertension have a risk twice as high of developing hypertension compared to those without a family history of hypertension (Bekti et al., 2020).

Some internal and external factors of hypertension are as follows: internal factors include age, sex, and family history, while external factors include obesity, stress, high sodium levels, smoking and alcohol consumption, and lack of exercise (Priyanto, 2020). The highest incidence of hypertension occurs in the elderly, with high rates attributed to aging, as bodily functions decline (Yanti et al., 2017).

Old age is a state that occurs in human life. Aging is a lifelong process that does not start at a specific time but begins at the onset of life. Becoming old is a natural process, meaning an individual will go through three stages in life: childhood, adulthood, and old age (Mawaddah, 2020).

The effects of high blood pressure in the elderly, besides causing complications such as heart attacks and strokes, also include common issues such as physical vulnerability to diseases. The physical condition of the elderly declines due to decreased resistance to external influences, making them susceptible to various diseases affecting different body systems. The elderly also experience a decrease in muscle mass and strength, reduced heart rate, decreased exercise tolerance, and approximately 60% of the elderly experience an increase in blood pressure after the age of 75. Knowledge about hypertension is crucial for patients, and families with members suffering from hypertension must provide attention and care to achieve good health status (Hasanuddin et al., 2022).

Based on the background above, the author is interested in conducting research titled "Analysis of the Relationship Between Smoking, Stress, Alcohol, Obesity, and Dyslipidemia on Hypertension in the Elderly at Pustu Desa Deli Tua Dusun IV in 2024".

METHOD

This study is a quantitative analytical research using a cross-sectional approach. Quantitative analytical research aims to understand why a health issue occurs and then analyze its relationships. The objective of this study is to analyze the relationship between smoking, stress, alcohol, obesity, and dyslipidemia with hypertension in the elderly at Pustu Desa Deli Tua Dusun IV in 2024. The research will commence with the proposal creation in June 2024.

The population for this study consists of elderly individuals experiencing hypertension at Pustu Desa Deli Tua Dusun IV in 2024, totaling 95 elderly individuals. Research instruments can be developed independently or use existing standardized instruments. Standardized instruments can be used directly, but the foundation for instrument development must align with relevant theories. The questionnaire used in this study was developed by the researcher. Supporting instruments for this research include stationery, documentation tools, a laptop, and other supporting equipment.

Sampling in this study will use proportional random sampling. The sample size will be determined using total sampling, which involves sampling the entire population, resulting in a sample size of 95 elderly individuals for this study. This research involves two types of variables: independent variables and a dependent variable.

The independent variables are smoking (X1), stress (X2), alcohol (X3), obesity (X4), and dyslipidemia (X5). The dependent variable in this study is hypertension in the elderly (Y).

The data used in this research will include both primary and secondary data. Primary data will be sourced from responses to questionnaires provided by the respondents. Secondary data will come from journals, books, and articles related to the research topic. Data analysis will include univariate, bivariate, and multivariate analysis, supported by SPSS Version 25 statistical software. Data collection methods will involve questionnaires, documentation, and observation.

Research instruments can be developed independently or use existing standardized instruments. Standardized instruments can be used directly, but the development of these instruments must be based on relevant theories. The questionnaire used in this study was developed by the researcher. Supporting instruments for this research include stationery, documentation tools, a laptop, and other supporting equipment.

RESULT AND DISCUSSION

Results of the Frequency Distribution of Respondent Characteristics

The following are the results of the frequency distribution of respondent characteristics in this study, based on the age and gender of the respondents.

Table 1 Distribution of Respondent Characteristics

Age Range	n	%
45-59 Years	64	67,4
60-74 Years	22	23,2
75-90 Years	9	9,5
Total	**95**	**100**
Gender	**n**	**%**
Male	60	63,2
Female	35	36,8
Total	**95**	**100**

Source: Processed Primary Data 2024

Table 1 explains the research results regarding the frequency distribution of respondent characteristics based on age and gender. The results show that among the respondents, those aged 45-59 years total 64, representing 67.4%, while those aged 60-74 years total 22, representing 23.3%, and those aged 75-90 years total 9, representing 9.5%.

Regarding gender, the study found that there are 60 male respondents, accounting for 63.2%, and 35 female respondents, accounting for 36.8%.

Univariate Analysis Results

Smoking

Below are the results of the univariate analysis on the smoking variable in this study.

Table 2 Smoking

Smoking	n	%
Yes	64	67,4
No	31	32,6
Total	**95**	**100**

Source: Processed Primary Data 2024

The results of the univariate analysis for the smoking variable in Table 2 show that 64 respondents in this study smoke, representing 67.4%, while 31 respondents do not smoke, representing 32.6%.

Stress

Below are the results of the univariate analysis for the stress variable in this study.

Tabel 3 Stress

Stress	n	%
ligth	23	24,2
Moderete	14	14,7
Severe	58	61,1
Total	**95**	**100**

Source: Processed Primary Data 2024

The results of the univariate analysis for the stress variable in Table 3 show that 23 respondents in this study experience light stress, representing 24.2%, 14 respondents experience moderate stress, representing 14.7%, and 58 respondents experience severe stress, representing 61.1%.

Alcohol

Below are the results of the univariate analysis for the alcohol variable in this study.

Table 4 Alcohol

Alcohol	n	%
Positif	9	9,5
Negatif	86	90,5
Total	**95**	**100**

Source: Processed Primary Data 2024

The results of the univariate analysis for alcohol in Table 4 show that 9 respondents in this study consume alcohol, representing 9.5%, while 86 respondents do not consume alcohol, representing 90.5%.

Obesity

Below are the results of the univariate analysis for the obesity variable in this study.

Table 5 Obesity

Obesitas	n	%
Yes	64	67,4
No	31	32,6
Total	**95**	**100**

Source: Processed Primary Data 2024

The results of the univariate analysis for the obesity variable in Table 5 show that 64 respondents in this study have obesity,

representing 67.4%, while 31 respondents do not have obesity, representing 32.6%.

Dyslipidemia

Below are the results of the univariate analysis for the dyslipidemia variable in this study.

Table 6 Dyslipidemia

Displidemia	n	%
Yes	18	18,9
No	77	81,8
Total	**95**	**100**

Source: Processed Primary Data 2024

The results of the univariate analysis for the dyslipidemia variable in Table 6 show that 18 respondents in this study have dyslipidemia, representing 18.9%, while 77 respondents do not have dyslipidemia, representing 81.1%.

Hypertension

Below are the results of the univariate analysis for the hypertension variable in this study.

Table 7 Hypertension

Hypertension	n	%
Ligth	32	33,7
Severe	63	66,3
Total	**95**	**100**

Source: Processed Primary Data 2024

The results of the univariate analysis for the hypertension variable in Table 7 show that 32 respondents in this study have mild hypertension, representing 33.7%, while 63 respondents have severe hypertension, representing 66.3%.

Bivariate Analysis Results

The Relationship Between Smoking and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

Below are the findings on the relationship between smoking and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

Table 8 The Relationship Between Smoking and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

Variabel	*Sig. (2-tailed)*	*Pearson Correltion*
Smoking and Hypertension	0,000	0,882

Source: Processed Primary Data 2024

Table 8 above shows that between smoking and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024, there is a correlation coefficient (r) of 0.882, indicating a very strong relationship. This correlation is significant because $p < 0.05$ ($0.000 < 0.05$). This suggests that there is a relationship between smoking and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

The Relationship Between Stress and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

Below are the findings on the relationship between stress and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

Table 9 The Relationship Between Stress and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

Variabel	*Sig. (2-tailed)*	*Pearson Correltion*
Stress and Hypertension	0,000	0,889

Source: Processed Primary Data 2024

Table 9 above shows that between stress and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024, there is a correlation coefficient (r) of 0.889, indicating a very strong relationship. This correlation is significant because $p < 0.05$ ($0.000 < 0.05$). This suggests that there is a relationship between stress and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

The Relationship Between Alcohol and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

Below are the findings on the relationship between alcohol and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

Table 10 The Relationship Between Alcohol and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

Variabel	*Sig. (2-tailed)*	*Pearson Correltion*
Alcohol and Hypertension	0,135	0,155

Source: Processed Primary Data 2024

Table 10 above shows that between alcohol and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024, there is a correlation coefficient (r) of 0.155, indicating a very weak relationship. This correlation is not significant because $p > 0.05$ ($0.135 > 0.05$). This suggests that there is no relationship between alcohol and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

The Relationship Between Obesity and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

Below are the findings on the relationship between obesity and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

Table 11 The Relationship Between Obesity and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

Variabel	*Sig. (2-tailed)*	*Pearson Correltion*
Obesity and Hypertension	0,000	0,997

Source: Processed Primary Data 2024

Table 11 above shows that between obesity and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024, there is a correlation coefficient (r) of 0.997, indicating a very strong relationship. This correlation is significant because $p < 0.05$ ($0.000 < 0.05$). This suggests that there is a relationship between obesity and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

The Relationship Between Dyslipidemia and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

Below are the findings on the relationship between dyslipidemia and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

Table 12 The Relationship Between Dyslipidemia and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

Variabel	*Sig. (2-tailed)*	*Pearson Correltion*
Dyslipidemia and Hypertension	0,005	0,288

Source: Processed Primary Data 2024

Table 12 above shows that between dyslipidemia and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024, there is a correlation coefficient (r) of 0.288, indicating a weak relationship. This correlation is significant because $p < 0.05$ ($0.000 < 0.05$). This suggests that there is a relationship between dyslipidemia and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

Multivariate Analysis Results

Below are the findings from the variable selection for multivariate analysis, which can be seen in Table 13.

Table 13 Variable Selection for Multivariate Analysis

Variable	P-Value	Candidate
Smoking (X1)	0,000	Yes
Stres (X2)	0,000	Yes
Alcohol (X3)	0,135	No
Obesity (X4)	0,000	Yes
Dyslipidemia (X5)	0,005	Yes

Source: Processed Primary Data 2024

From Table 13, it can be seen that the independent variables in this study with a p-value < 0.05 are smoking, stress, obesity, and dyslipidemia. Based on these results, the independent variables included in the multivariate testing model are smoking, stress, obesity, and dyslipidemia, as shown in Table 14.

Table 14 Multivariate Analysis Results

Variabel	*Sig*
Smoking (X1)	
Stress (X2)	
Obesity (X4)	0,000
Dyslipidemia (X5)	

Source: Processed Primary Data 2024

Table 14 presents the results of the multivariate analysis on the variables of smoking, stress, obesity, and dyslipidemia in relation to hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024. The table shows a significance value of $0.000 < 0.05$, indicating that the independent variables of smoking, stress, obesity, and dyslipidemia together, or simultaneously, have a relationship with the dependent variable, which is hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

Table 15 Most Influential Independent Variables on the Dependent Variable

Variable	*Odss Ratio*
Smoking(X1)	4,103
Stress (X2)	2,089
Obesity (X4)	14,217
Dyslipidemia (X5)	0,205

Source: Processed Primary Data 2024

Table 15 explains the results regarding the independent variable most related to the dependent variable. From the research findings, it can be seen that the highest odds ratio is found for the variable obesity (X4), with a value of 14.217. Based on this result, it can be concluded that the independent variable most related to the dependent variable in this study is the variable obesity (X4).

Discussion

The Relationship Between Smoking and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

The study on the relationship between smoking and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024 shows that 64 respondents (67.4%) smoke, while 31 respondents (32.6%) do not smoke. From the bivariate analysis, the correlation coefficient (r) between smoking and hypertension is 0.882, indicating a very strong relationship. This correlation is significant because $p < 0.05$ ($0.000 < 0.05$). This suggests a relationship between smoking and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

These findings align with the research conducted by Eva (2020) titled "The Relationship Between Smoking Behavior and Hypertension

Incidence Among the Elderly in the Work Area of Puskesmas Ulumahuam, Labuhanbatu Selatan Regency," which found a relationship between smoking and hypertension in the elderly.

Smoking involves burning tobacco wrapped in paper, leaves, or corn husks, which releases cigarette smoke and can lead to lung infections, ear infections, and lung cancer (Santi, 2024).

The smoke produced from smoking can reduce the ability of macrophages to kill bacteria. Cigarette smoke is also known to damage local lung defenses, such as the mucociliary clearance ability (Ermi, 2018).

Smoking can increase the risk of hypertension, heart attacks, and chronic diseases. It not only lowers life expectancy but also affects quality of life. Tobacco in cigarettes is a major cause of hypertension and heart attacks. Smoking significantly raises blood pressure due to nicotine and carbon monoxide inhaled from cigarettes, which enter the bloodstream, damaging the endothelial lining of arteries and leading to atherosclerosis and high blood pressure. Nicotine also stimulates the release of adrenaline, causing an increase in blood pressure. Additionally, nicotine is absorbed by blood vessels in the lungs and distributed throughout the bloodstream, leading to the narrowing of blood vessels. This results in increased cardiac workload to pump blood through narrowed vessels. Cigarettes contain more than 4,000 toxic substances, with nicotine and carbon monoxide playing major roles in causing toxic effects on the heart and blood vessels (Musni, 2019).

The Relationship Between Stress and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

The study on the relationship between stress and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024 shows that 23 respondents (24.2%) experience light stress, 14 respondents (14.7%) experience moderate stress, and 58 respondents (61.1%) experience severe stress. From the bivariate analysis, the correlation coefficient (r) between stress and hypertension is 0.889, indicating a very strong relationship. This correlation is significant because $p < 0.05$ ($0.000 < 0.05$). This suggests that there is a relationship between stress and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

These findings are consistent with the research conducted by Musni (2019) titled "The Relationship Between Smoking and Stress with Hypertension Among the Elderly," which found a relationship between stress and hypertension in the elderly.

Stress is a condition where an individual's (emotional, physical, and spiritual) ability to handle threats to themselves is compromised, which can impact mental health. Stress results from the interaction between individuals and their environment, leading to demands from biological, psychological, and social systems (Adryana et al., 2020). In stressful situations, such as workload, panic, and urgency, gastric secretions can increase beyond normal levels (Sri, 2022).

Stress is closely related to hypertension. Stress is a factor that triggers hypertension, and the relationship between stress and hypertension is believed to involve sympathetic nervous system activity. Increased nerve activity can raise blood pressure intermittently (in an unpredictable manner). Prolonged stress can result in persistently high blood pressure (Musni, 2019).

The Relationship Between Alcohol and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

The study on the relationship between alcohol and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024 shows that 9 respondents (9.5%) are positive for alcohol consumption, while 86 respondents (90.5%) are negative for alcohol consumption.

From the bivariate analysis, the correlation coefficient (r) between alcohol and hypertension is 0.155, indicating a very weak relationship. This correlation is not significant because $p > 0.05$ ($0.135 > 0.05$). This suggests that there is no relationship between alcohol and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

Alcohol is a liquid classified as an addictive substance, commonly found as ethyl alcohol or ethanol (C_2H_5OH), obtained from the fermentation of carbohydrates and yeast. It is volatile and can mix with water, ether, or chloroform (Dwi, 2017).

Alcohol is a product of carbohydrate fermentation by microorganisms in anaerobic conditions. In the medical field, alcohol is usually used as a bactericide, fungicide, and virucide. However, excessive consumption of alcoholic beverages in the general population can lead to health deterioration, affecting several organs, including the liver. Liver dysfunction can impact the performance and function of the heart. This dysfunction can ultimately lead to hypertension. This occurs because alcohol stimulates the release of epinephrine or adrenaline, causing the arteries to constrict and leading to water and sodium retention. Long-term alcohol consumption can increase cortisol levels in the blood, which enhances the activity of the renin-angiotensin-aldosterone system (RAAS)—a hormonal system that regulates blood pressure and fluid balance in the body (I Gusti, 2017).

The Relationship Between Obesity and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

The study on the relationship between obesity and hypertension among the elderly at Pustu Desa

Deli Tua Dusun IV in 2024 shows that 64 respondents (67.4%) experience obesity, while 31 respondents (32.6%) do not experience obesity. From the bivariate analysis, the correlation coefficient (r) between obesity and hypertension is 0.997, indicating a very strong relationship. This correlation is significant because $p < 0.05$ ($0.000 < 0.05$). This suggests that there is a relationship between obesity and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

These findings are consistent with the research conducted by (Prasasti, 2023) titled "The Relationship Between Obesity and Hypertension Among the Elderly," which found a relationship between obesity and hypertension in the elderly. Overweight and obesity result from an imbalance in energy, occurring when the number of calories consumed exceeds the number of calories used by the body, leading to excess weight. Obesity can be caused by various factors such as unhealthy lifestyle, dietary habits, physical activity patterns, socioeconomic conditions, and more (Kure, 2022).

Obesity is a condition characterized by excessive accumulation of fat tissue in the body. Accumulated fat tissue can secrete several pro-inflammatory cytokines, which can cause inflammation in the body. The buildup of fat also increases the levels of free fatty acids in the blood, contributing to inflammation. Chronic inflammation can lead to endothelial dysfunction, which disrupts blood vessel function. Endothelial dysfunction causes arterial stiffness and vasoconstriction, eventually leading to increased blood pressure and potentially causing hypertension (Ruban et al., 2019).

The Relationship Between Dyslipidemia and Hypertension Among the Elderly at Pustu Desa Deli Tua Dusun IV in 2024

The study on the relationship between dyslipidemia and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024 shows that 18 respondents (18.9%) have dyslipidemia, while 77 respondents (81.8%) do not have dyslipidemia. From the bivariate analysis, the correlation coefficient (r) between dyslipidemia and hypertension is 0.288, indicating a weak relationship. This correlation is significant because $p < 0.05$ ($0.000 < 0.05$). This suggests that there is a relationship between dyslipidemia and hypertension among the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

These findings align with the research conducted by (Made, 2021) titled "The Relationship Between Dyslipidemia and Hypertension," which found a relationship between dyslipidemia and hypertension. Hypertension is a complex condition characterized by persistently elevated blood pressure (Ermi, 2019).

Dyslipidemia is one of the risk factors for cerebrovascular and cardiovascular diseases. This condition is caused by atherosclerosis in the blood flow, stemming from endothelial dysfunction, which leads to impaired blood circulation (Hutagalung, 2021).

Dyslipidemia is a major predictor of cardiovascular disease, which can cause endothelial damage and reduced physiological vasomotor effectiveness. This condition can lead to prehypertension, potentially progressing to hypertension over time. Such damage may also manifest as increased systemic blood pressure. Based on this explanation, it can be concluded that the effects of hypertension and dyslipidemia are quite serious (Gede, 2019).

CONCLUSSION

In the study titled "Analysis of the Relationship Between Smoking, Stress, Alcohol, Obesity, and Dyslipidemia with Hypertension in the Elderly at Pustu Desa Deli Tua Dusun IV in 2024," several key conclusions were drawn. The study identified a significant relationship between smoking and hypertension among the elderly in that area, as well as between stress and hypertension. However, no evidence was found indicating a relationship between alcohol consumption and hypertension in the elderly group studied. Additionally, both obesity and dyslipidemia were found to have a significant relationship with hypertension among the elderly in the village. Among all the variables examined, obesity was found to be the most dominant factor affecting hypertension in the elderly at Pustu Desa Deli Tua Dusun IV in 2024.

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