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# Relationship Between Lifestyle, Stress, and Hypertension Among Productive-Age Adults

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## ABSTRACT

Hypertension is a non-communicable disease whose prevalence continues to increase, including among the productive age group, and poses a risk of reducing productivity and quality of life. Unhealthy lifestyles and high stress levels are important risk factors commonly found in the productive age group. This study aimed to analyze the relationship between lifestyle and stress levels with the incidence of hypertension in the productive age group at Sariasih Ciputat Hospital. A quantitative cross-sectional correlational study was conducted involving 63 respondents using simple random sampling. Data collection was conducted using a questionnaire. The data obtained were statistically analysed using the chi-square test. Most respondents were middle-aged adults (41–60 years; 44.4%), male (66.7%), and had a basic educational background (52.4%). The majority reported an unhealthy lifestyle (60.3%), moderate stress levels (55.6%), and moderate hypertension (58.7%). Statistical analysis revealed a significant relationship between lifestyle and hypertension ($p < 0.001$) as well as between stress levels and hypertension ($p < 0.001$). Lifestyle and stress levels were significantly associated with the incidence of hypertension among productive-age adults. These findings highlight the importance of promoting healthy lifestyle behaviors and stress management interventions to prevent and control hypertension in this population.

Keyword : Hypertension; lifestyle; stress level; productive age



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## INTRODUCTION

Hypertension is a non-communicable disease that is one of the leading causes of premature death worldwide. It is a condition in which a person's systolic blood pressure is greater than or equal to 140 mmHg and/or diastolic blood pressure is greater than or equal to 90 mmHg [1]. According to the World Health Organization (WHO) in 2023, hypertension or high blood pressure is a medical condition that significantly increases the risk of heart, brain, kidney, and other diseases.

According to the World Health Organization (WHO), approximately 1.28 billion adults aged 30–79 years worldwide are living with hypertension, with nearly two-thirds residing in low- and middle-income countries [2]. In Indonesia, hypertension remains a major public health concern. Based on national health statistics, Banten Province is among the provinces with a high prevalence of

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hypertension, while South Tangerang City consistently reports a substantial number of hypertension cases each year [3]. People with hypertension often complain of headaches, dizziness, weakness, fatigue, shortness of breath, anxiety, nausea, vomiting, epistaxis, and decreased consciousness [4]. Risk factors that can cause hypertension include age, gender, obesity, alcohol, genetics, stress, salt intake, smoking, physical activity patterns, kidney disease, and diabetes mellitus [5].

Sariasih Ciputat Hospital is a private hospital of Type C located in the Banten region of South Tangerang City. Sariasih Ciputat Hospital is designated as a private general hospital with a primary classification equivalent to Class C, accepting BPJS referrals and regular patients with various diseases and complications. Hypertension cases dominate the top 10 most common diseases at Sariasih Ciputat Hospital, ranking second after trauma or work-related accidents. Data from medical records in 2023 showed 1,268 patients, while in 2024 there were 1,398 patients. From June to August 2025, there were 225 patients recorded. This indicates an increase in hypertension cases each year.

Non-modifiable factors include age, gender, and genetics, while modifiable factors include lack of physical activity, unhealthy diet, poor sleep quality, smoking, and stress [6]. The presence of these factors can increase the risk of hypertension even in the productive age group. The productive age population, namely individuals between the ages of 15 and 64, is a group that potentially plays an active role in economic and social activities [7]. However, unhealthy lifestyles among the productive age group are a major contributor to the increasing prevalence of hypertension. The habit of consuming fast food, lack of physical activity, smoking, and poor sleep patterns are examples of lifestyles that contribute to increased blood pressure [8]. In addition, stress is also an important factor that can worsen blood pressure. When a person experiences stress, the body undergoes hormonal imbalances, such as increased adrenaline and adrenocortical activity, which trigger the sympathetic nervous system and increase cardiac output and peripheral vascular resistance [9]. Various factors, such as economic, social, family, and work-related problems, can trigger prolonged stress. If not managed properly, chronic stress can cause health problems, including hypertension [9].

Research found that the relationship between stress levels and the incidence of hypertension in productive age groups [10]. A study also found that there is a significant relationship between physical activity, diet, smoking habits, and resting habits with the incidence of hypertension [11]. Another study used a cross-sectional approach to examine the relationship between lifestyle and the incidence of hypertension in salt consumption, using data collection techniques such as questionnaires and blood pressure monitors [12]. The results of the study indicate that there is a relationship between lifestyle and the incidence of hypertension in salt consumption. The second study concluded that there is a relationship between lifestyle and the incidence of hypertension in productive age groups who consume laru and sopi, consume salt, and lack the consumption of vegetables and fruit [13].

Sariasih Ciputat Hospital is a Type C private hospital located in South Tangerang, Banten Province. Hospital records indicate a continuous increase in hypertension cases, from 1,268 patients in

2023 to 1,398 patients in 2024, with 225 cases reported between June and August 2025. Hypertension consistently ranks among the most common diseases treated at the hospital. Preliminary observations further indicated that many productive-age patients with hypertension reported unhealthy lifestyle behaviors and psychological stress related to occupational, economic, and social factors.

Despite the growing burden of hypertension among productive-age adults, no study has specifically examined the relationship between lifestyle, stress levels, and hypertension incidence among patients at Sariasih Ciputat Hospital. Understanding these relationships is essential for developing evidence-based preventive strategies and health promotion programs targeting modifiable risk factors. Therefore, this study aimed to analyze the relationship between lifestyle and stress levels and the incidence of hypertension among productive-age adults at Sariasih Ciputat Hospital.

## METHODS

This study employed a quantitative analytical design with a cross-sectional approach. The research was conducted at the Outpatient Clinic of Sariasih Ciputat Hospital from October to December 2025. The study population consisted of all productive-age patients (15–64 years) diagnosed with hypertension who attended the outpatient clinic during the study period, totaling 75 patients. Given the relatively small population size, total sampling was employed, in which all eligible patients who met the inclusion criteria were invited to participate in the study. Of the 75 eligible patients, 63 agreed to participate and completed the questionnaires, resulting in a final sample of 63 respondents. Lifestyle data were collected using a structured questionnaire consisting of closed-ended questions. Stress levels were measured using the Perceived Stress Scale-10 (PSS-10). Data were analyzed using descriptive statistics, cross-tabulation, and the Chi-square ($\chi^2$) test to determine the relationships between lifestyle, stress levels, and hypertension, with a significance level of $p < 0.05$.

## RESULT

### A. Characteristics of Respondent

Table 1. Characteristics of Respondents among Productive-Age Hypertensive Patients at Sariasih Ciputat Hospital in 2025 (n = 63)

| Variable | Frequency | Percentage (%) |
|---|---|---|
| **Age (years)** | | |
| Early adulthood (18–40) | 11 | 17.5 |
| Middle adulthood (41–60) | 28 | 44.4 |
| Late adulthood (>60) | 24 | 38.1 |
| **Gender** | | |
| Male | 42 | 66.7 |
| Female | 21 | 33.3 |
| **Education Level** | | |
| Basic (Elementary–Junior High School) | 33 | 52.4 |
| Secondary (Senior High School/Vocational School) | 20 | 31.7 |

| Variable | Frequency | Percentage (%) |
|---|---|---|
| Higher Education (Diploma–Master's Degree) | 10 | 15.9 |
| **Lifestyle** | | |
| Good | 25 | 39.7 |
| Poor | 38 | 60.3 |
| **Stress Level** | | |
| Mild | 16 | 25.4 |
| Moderate | 35 | 55.6 |
| Severe | 12 | 19.0 |
| **Hypertension Severity** | | |
| Mild | 14 | 22.2 |
| Moderate | 37 | 58.7 |
| Severe | 12 | 19.0 |

Table 1 showed that most respondents were in the middle adulthood age group (41–60 years) (44.4%), followed by late adulthood (>60 years) (38.1%) and early adulthood (18–40 years) (17.5%). The majority of respondents were male (66.7%), while females accounted for 33.3%. Regarding educational background, more than half of the respondents had a basic education level (52.4%), followed by secondary education (31.7%) and higher education (15.9%). In terms of lifestyle, most respondents reported poor lifestyle behaviors (60.3%), whereas 39.7% reported good lifestyle behaviors. The distribution of stress levels indicated that the majority of respondents experienced moderate stress (55.6%), followed by mild stress (25.4%) and severe stress (19.0%). Similarly, the majority of respondents had moderate hypertension (58.7%), while 22.2% had mild hypertension and 19.0% had severe hypertension.

Table 2. Relationship between lifestyle and hypertension incidence among productive-age individuals at Sariasih Ciputat Hospital in 2025 (n=63)

| Lifestyle | Incidence of Hypertension | | | | | | Total | | P *value* |
|---|---|---|---|---|---|---|---|---|---|
| | Mild | | Moderate | | Severe | | | | |
| | n | % | n | % | n | % | N | % | |
| Good | 14 | 22.2 | 11 | 17.5 | 0 | 0.0 | 25 | 39.7 | 0.000 |
| Not good | 0 | 0 | 26 | 41.3 | 12 | 19 | 38 | 60.3 | |
| Total | 14 | 22.2 | 37 | 58.7 | 12 | 19 | 63 | 100 | |

Based on Table 2. data from 25 respondents with mild hypertension showed that 14 respondents (22.2%) had a good lifestyle, while 26 respondents (41.3%) with moderate hypertension had an unhealthy lifestyle. The statistical test results obtained a *P value* = 0.000 (*p value* < 0.05), so H0 was rejected, concluding that there is a relationship between lifestyle and the incidence of hypertension in the productive age group at Sariasih Ciputat Hospital.

Table 3. Relationship between stress levels and the occurrence of hypertension in productive age at Sariasih Ciputat Hospital in 2025 (n=63)

| Stress level | Incidence of Hypertension | | | | | | Total | | P *value* |
|---|---|---|---|---|---|---|---|---|---|
| | Mild | | Moderate | | Severe | | | | |
| | n | % | n | % | n | % | N | % | |
| Mild | 14 | 22.2 | 2 | 3.2 | 0 | 0.0 | 16 | 25.4 | 0.000 |
| Moderate | 0 | 0.0 | 35 | 55.6 | 0 | 0.0 | 35 | 55.6 | |
| Weight | 0 | 0 | 0 | 0.0 | 12 | 19.0 | 12 | 19.0 | |
| Total | 24 | 22.2 | 37 | 58.7 | 12 | 19.0 | 63 | 100 | |

Based on Table 3. data from 16 respondents with mild hypertension showed a mild stress level, namely 14 respondents (22.2%), of the 35 respondents with moderate hypertension experienced moderate stress levels, namely 35 respondents (55.6%), and of the 12 respondents with severe hypertension experienced severe stress levels, namely 12 respondents (19%). The statistical test results yielded a *P value* of 0.000 (*p value* < 0.05), so H0 was rejected, concluding that there is a relationship between stress levels and the incidence of hypertension in the productive age group at Sariasih Ciputat Hospital.

## DISCUSSION

This study found that there is a relationship between lifestyle and the incidence of hypertension in the productive age at Sariasih Ciputat Hospital. In line with previous research, which revealed a statistically significant relationship between lifestyle (salty food consumption) and the incidence of hypertension in young adults [14]. Physical activity plays an important role in maintaining heart health and blood pressure stability. Regular exercise helps maintain weight, increase heart strength, and improve blood circulation. Physical inactivity can lead to excess weight, which ultimately increases the risk of hypertension [13]. In adolescents and adults, regular physical activity, such as 60 minutes of exercise per day for adolescents or 150 minutes per week for older adults, can increase endurance, muscle strength, and heart function [13]. Physical activity in older adults also serves to maintain flexibility and balance, thereby maintaining physical and mental health.

Diet is an important component of lifestyle that affects the risk of hypertension. A shift in diet towards foods high in calories, fat, sugar, and salt can cause nutritional imbalances that contribute to hypertension, diabetes, and other degenerative diseases [15]. Excessive salt consumption increases blood pressure because sodium binds water in the body. In addition, low potassium and fiber intake can also accelerate the increase in blood pressure [15].

Sleep habits or patterns also affect blood pressure. Sleep is a basic human need that functions to restore the body through REM and NREM phases. NREM sleep helps restore organs, while the REM phase supports nervous system regeneration and macromolecule synthesis [16]. Poor sleep patterns or lack of sleep can increase sympathetic nervous system activity, trigger salt retention, and increase blood pressure, thereby increasing the risk of hypertension [16]. Adults generally need 7–8 hours of sleep per day to maintain stable physiological and psychological functions.

Smoking is a lifestyle habit that is strongly associated with increased blood pressure [17]. Nicotine can enter the brain within ten seconds and stimulate the release of adrenaline, causing the heart to work faster and increasing blood pressure by up to 10 mmHg from just two cigarettes [17]. Active smokers who consume more than one pack per day have a higher risk of hypertension than non-smokers. Toxic substances such as nicotine and carbon monoxide can damage the endothelium of blood vessels, accelerating atherosclerosis and ultimately increasing blood pressure [18].

This study demonstrated a significant association between stress levels and the incidence of hypertension among productive-age adults. Respondents with higher stress levels were more likely to experience hypertension, suggesting that psychological stress may contribute to elevated blood pressure. These findings are consistent with previous studies, which likewise reported a significant relationship between stress levels and hypertension among productive-age adults [19].

These findings are consistent with the theory that hypertension is a multifactorial disease influenced by both non-modifiable factors, such as age, sex, and genetic predisposition, and modifiable factors, including unhealthy diet, physical inactivity, obesity, smoking, inadequate sleep, medication non-adherence, and psychological stress [20]. Among these, stress is considered one of the most important modifiable risk factors because it directly affects cardiovascular function. Physiologically, chronic stress activates the sympathetic nervous system and the renin–angiotensin–aldosterone system (RAAS), resulting in increased secretion of stress hormones, vasoconstriction, sodium and water retention, and elevated cardiac output. These responses increase peripheral vascular resistance and ultimately lead to sustained elevations in blood pressure [21]. Prolonged activation of these mechanisms may also contribute to the development of hypertension-related symptoms, including headache, fatigue, blurred vision, chest discomfort, and shortness of breath [11].

## CONCLUSION

The findings of this study indicate that most productive-age patients with hypertension at Sariasih Ciputat Hospital were middle-aged adults (41–60 years), male, and had a basic level of education. The majority of respondents also exhibited poor lifestyle behaviors, experienced moderate levels of psychological stress, and were classified as having moderate hypertension. Furthermore, this study demonstrated that both lifestyle and stress levels were significantly associated with the incidence of hypertension among productive-age adults. These findings suggest that unhealthy lifestyle behaviors and elevated stress levels are important modifiable risk factors for hypertension. Therefore, health promotion programs focusing on healthy lifestyle modification and effective stress management should be strengthened to reduce the burden of hypertension and improve the health outcomes of productive-age adults.

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