

THE EFFECT OF LIFESTYLE ON THE INCIDENCE OF HYPERTENSION IN CAMPUREJO VILLAGE, BOJONEGORO REGENCY BASED ON LAWRENCE W. GREEN'S THEORY

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Abstract

Hypertension is a non-communicable disease that continues to increase and is influenced by various lifestyle factors such as physical activity, diet, smoking, coffee consumption, and stress levels. This study aims to analyze the influence of lifestyle on the incidence of hypertension in the community of Campurejo Village, Bojonegoro Regency based on the theory of Lawrence W. Green. The study used a quantitative analytical design with a cross-sectional approach. The study population was 2,062 residents aged 30–50 years with a sample of 92 respondents selected using a random sampling technique. Data were collected through a lifestyle questionnaire, the DASS instrument for stress levels, and blood pressure measurements using a digital sphygmomanometer. Data analysis was performed using binary logistic regression. The results showed that diet ($p=0.002$), smoking habits ($p=0.007$), and stress levels ($p=0.000$) significantly influenced the incidence of hypertension, while physical activity ($p=0.684$) and coffee consumption ($p=0.318$) did not significantly influence. Unhealthy diet is the most dominant factor that increases the risk of hypertension. The conclusion of this study is that lifestyle has an important role in the incidence of hypertension, especially diet, smoking habits, and stress levels, so that promotive and preventive efforts based on public health behavior are needed.

Keywords: Dietary Pattern, Hypertension, Lifestyle, Physical Activity, Stress

INTRODUCTION

Cardiovascular disease remains a leading cause of global morbidity and mortality, and hypertension is a key determinant of the risk of major cardiovascular events such as stroke and coronary heart disease (Forouzanfar *et al.*, 2022; Mills *et al.*, 2021). Recent epidemiological trends indicate an increasing burden of hypertension with population aging and changing lifestyles in many countries, including an increased prevalence of behavioral risk factors—e.g., high sodium intake, unhealthy diet, smoking, alcohol consumption, and sedentary lifestyles—which collectively increase the burden of noncommunicable diseases (GBD 2021 Collaborators, 2022; NCD Risk Factor Collaboration, 2023).

In the Indonesian context, health surveys indicate a significant increase in the prevalence of hypertension and a distribution of the burden across both productive and elderly age groups, while the nutritional transition and urbanization are modifying the accessibility of processed foods and physical activity patterns (Ministry of Health of the Republic of Indonesia, 2019; SKI, 2023). At the regional level, East Java Province reports an increasing prevalence of hypertension and a patient burden that demands more intensive primary health care services, while data from the Bojonegoro Health Office and reports from local community health centers indicate fluctuations and a significant increase in hypertension cases in several villages, including Campurejo Village (East Java Health Office, 2022; Bojonegoro Health Office, 2023). Field observations in Campurejo Village also indicate changes in consumption practices (the rise of

street food stalls and delivery services), increased coffee consumption and time spent gathering at coffee shops, and reduced physical activity—all factors that have the potential to increase the risk of hypertension in the local population (Rosliana, 2023; Jingga & Indarjo, 2022).

International literature and systematic reviews strengthen the association between lifestyle indicators (a diet high in salt and saturated fat, caffeine/alcohol consumption, smoking, and low physical activity) with increased blood pressure and the incidence of hypertension; structured behavioral interventions have been shown to be effective in lowering blood pressure in populations with lifestyle modifications (Whelton *et al.*, 2021; Appel *et al.*, 2022). At the local level, observational studies in several community health centers (Puskesmas) have shown significant associations between coffee consumption, unhealthy diets, and smoking behavior with the incidence of hypertension in productive age groups. However, most of these studies used cross-sectional designs, thus limiting causality (Jingga & Indarjo, 2022; Nurmandhani, 2020).

Despite strong general evidence, some findings are inconsistent—for example, the effect of caffeine consumption on blood pressure depends on dose and individual tolerance—and many local studies still rely on self-reports and clinical or cross-sectional samples, limiting generalizability to rural communities undergoing lifestyle transitions (Cornelis *et al.*, 2021; Noordzij *et al.*, 2022). Furthermore, the current literature rarely integrates comprehensive behavioral theoretical frameworks such as Laurence W. Green's model to explain how predisposing (knowledge, attitudes), enabling (access to facilities, economic), and reinforcing (family/community support) factors interact to influence lifestyle adoption or change at the community level (Green, 2021; Notoatmodjo, 2013). These limitations limit the ability of local policymakers to design preventive interventions that are adaptive to the local cultural context and infrastructure.

Based on international reviews and local evidence, a clear research gap exists: studies are needed that examine the comprehensive influence of lifestyle on hypertension incidence in the context of rural communities experiencing behavioral shifts due to modernization, using a behavioral theory approach that can explain predisposing, enabling, and reinforcing mechanisms. Therefore, this study was formulated to answer the question: is there an influence of lifestyle (diet, coffee/alcohol consumption, smoking, physical activity, and stress management) on hypertension incidence in Campurejo Village, Bojonegoro Regency, based on Laurence W. Green's theory (Notoatmodjo, 2013; Jingga & Indarjo, 2022).

This study aims to (1) identify lifestyle patterns of the Campurejo Village community, (2) measure the incidence of hypertension in this population, and (3) analyze the influence of lifestyle on the incidence of hypertension using Laurence W. Green's framework to explore predisposing, enabling, and reinforcing factors that mediate or moderate the relationship; the urgency of the study is determined by the increasing prevalence of local hypertension and the need for contextual evidence for planning community health center interventions and district policies (Bojonegoro Health Office, 2023; Ministry of Health of the Republic of Indonesia, 2019). The novelty of the study lies in the integration of epidemiological analysis of health behavior with a comprehensive nursing behavior model, providing theoretical contributions in the form of mapping behavioral determinants in a transitioning rural community and practical contributions in the form of recommendations for community-based interventions that can increase the effectiveness of hypertension prevention at the primary level.

METHOD

This quantitative analytical study uses correlational and cross-sectional designs to examine the influence of lifestyle on the incidence of hypertension in Campurejo Village residents. This design measures the independent and dependent variables at a single point in time and will be analyzed using binary logistic regression (Sugiyono, 2021; Creswell, 2021).

The population was all residents of Campurejo Village aged 30–50 years ($N = 2,062$). The sample size was calculated using G*Power ($\rho H1 = 0.30$, $\alpha = 0.05$, power = 0.90) resulting in $n = 92$, with a recommended nonresponse margin of 10–20% (Faul *et al.*, 2009).

Inclusion criteria include: (1) residents of Campurejo Village aged 30–50 years; (2) able to communicate and understand the research instrument; (3) willing to sign informed consent. Exclusion criteria include: individuals with a diagnosis of severe comorbidities that can affect acute blood pressure such as a history of stroke, chronic kidney failure, or severe heart disease who are undergoing intensive care (Nursalam, 2020).

The independent variable is lifestyle, defined as daily patterns and habits that include diet (salt/fat/processed product consumption), physical activity, coffee consumption (daily frequency), smoking behavior (status and intensity), and stress levels (psychological dimension) (Whelton *et al.*, 2021; Cornelis & ElSohemy, 2021). The dependent variable is the incidence of hypertension, measured as systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg based on measurements during the survey (WHO & Ministry of Health of the Republic of Indonesia cutoffs) (Mills *et al.*, 2021; Ministry of Health of the Republic of Indonesia, 2019). Lifestyle measurements are categorized into binary indicators or scales according to the operational definition table used (e.g., compliant/non-compliant with a healthy diet, at risk/not at risk for coffee consumption).

Lifestyle data were collected using a closed-ended questionnaire developed based on tested instruments and relevant literature. The questionnaire format used the Guttman scale (yes/no) for some indicators and a frequency scale for certain variables (Sugiyono, 2021). Stress levels were measured using the standard, unmodified version of the Depression Anxiety Stress Scales (DASS), with a Likert-based scoring system ranging from 0 to 3 for each item (Lovibond & Lovibond, 1995; Henry & Crawford, 2005). Blood pressure was measured objectively using a calibrated digital sphygmomanometer according to community health center operational standards; measurements were taken twice with a 1–2 minute interval, and the average value was used to classify hypertension (WHO, 2021).

Prior to field data collection, the instrument was tested for validity and reliability on a pilot sample according to procedures (Nursalam, 2020). Item-total validity testing was conducted using Pearson correlation with a threshold of $r > r$ table; initial validity test results showed item coefficients ranging from 0.479–0.807, thus meeting validity criteria. Internal reliability testing was conducted using Cronbach's alpha and yielded an α value of 0.790, indicating adequate internal consistency for this quantitative study (Nunnally & Bernstein, 1994; Tavakol & Dennick, 2011).

The data collection process followed a structured process: requesting permission from the village and community health center, population data collection, random sampling, home visits for recruitment, explanation of the research objectives and informed consent, questionnaire completion by respondents, and blood pressure measurement by trained personnel (Notoatmodjo, 2013). Data were reviewed in the field (edited) before entry, then coded, entered into SPSS version 25.0 software, and cleaned to correct input errors or missing data (Hair *et al.*, 2021).

Descriptive (univariate) analysis was used to describe the characteristics of respondents and the distribution of lifestyle variables and the prevalence of hypertension (frequency and percentage, mean $\pm$ SD where relevant). Initial bivariate analysis used the chi-square test or t-test according to the data type to detect associations between each lifestyle indicator and hypertension status. Multivariate analysis was performed using binary logistic regression to assess the simultaneous influence of lifestyle variables on the incidence of hypertension and obtain Odds Ratio (OR) with a 95% confidence interval at a significance level of $\alpha = 0.05$; assumptions and goodness-of-fit of the model (e.g., Hosmer-Lemeshow) will be evaluated (Hosmer *et al.*, 2013; Field, 2018).

The study adheres to the ethical principles of human research: benefit, respect for subject rights, and fairness. Each respondent was given a complete explanation, guaranteed data confidentiality, and signed an informed consent before participating; the study has obtained ethical approval No. 017/KEPK/LPMM.STIKesR/III/2025 which is valid from March 25, 2025 to March 25, 2026. Treatment actions if respondents are found to have high hypertension are immediately directed to referral or treatment advice according to the local Community Health Center protocol (Beauchamp & Childress, 2019).

RESULTS AND DISCUSSION

General Data

Table 1. Frequency and Percentage of Respondent Characteristics based on data Demographics in Campurejo Village, Bojonegoro Regency

Respondent Characteristics	Frequency	%
1. Age		
a. 30-39 years	34	37.0
b. 40-49 years	40	43.5
c. 50 years	18	19.5
Total	92	100.0
2. Gender		
a. Woman	51	56.5
b. Man	41	43.5
Total	92	100.0
3. Work		
a. civil servant	6	6.5
b. Housewife	30	32.6
c. Trader	14	15.2
d. Self-employed	22	23.9
e. Psychologist	1	1.1
f. Nurse	1	1.1
g. Farmer	16	17.4
h. Doesn't work	2	2.2
Total	92	100.0
4. Education		
a. Did not finish elementary school/primary school	23	25.0
b. JUNIOR HIGH SCHOOL	28	30.4
c. SENIOR HIGH SCHOOL	28	30.4
d. Bachelor's/Master's/Doctoral Diploma	13	14.1
Total	92	100.0

Source: Primary Data, 2025

Based on Table 1, the majority of respondents were aged 40–49 years (40 people) (43.5%), female (52 people) (56.5%), and the majority worked as housewives (30 people) (32.6%). Furthermore, the respondents' educational level was dominated by junior high and high school graduates, with 28 people each (30.4%).

Special Data

1. A description of the lifestyle of the people in Campurejo village, Bojonegoro Regency.

Table 2. Frequency Distribution Based on Lifestyle Variables (*Lifestyle*) Physical Activity, Diet, Smoking, Coffee Consumption, Stress Level in Campurejo Village, Bojonegoro Regency

Variables	Frequency	%
1. Physical activity		
a. Do	82	89.1
b. Do not do	10	10.9
Total	92	100.0
2. Dietary habit		
a. Obedient	41	44.6
b. Not obey	51	55.4

Total	92	100.0
3. Smoke		
a. Do not smoke	51	55.4
b. Smoke	41	44.6
Total	92	100.0
4. Coffee consumption		
a. At risk	42	45.7
b. No risk	50	54.3
Total	92	100.0
5. Stress level		
a. Stress	41	44.6
b. No stress	51	55.4
Total	92	100.0

Source: Primary Data, 2025

Based on Table 2, the majority of respondents engaged in physical activity (89.1%), but more than half did not adhere to a healthy diet (55.4%). Furthermore, the majority of respondents did not smoke (55.4%), did not experience risky coffee consumption (54.3%), and did not experience stress (55.4%).

2. Hypertension Incident in Campurejo Village, Bojonegoro Regency.

Table 3. Distribution of Hypertension Data in Campurejo Village, Bojonegoro Regency

	Variables	Frequency	Percentage (%)
1.	Hypertension	45	48.9
2.	No hypertension	47	51.1
	Total	92	100.0

Source: Primary data, 2025

Based on table 3, it is explained that more than half of the respondents experienced hypertension, 47 people (51.1%).

3. The Influence of Lifestyle on the Incidence of Hypertension in the Community in Campurejo Village, Bojonegoro Regency.

Table 4. Distribution of Data on the Influence of Lifestyle on the Incidence of Hypertension in Campurejo Village, Bojonegoro Regency

Variables	Signification	Exp(B)
Physical activity	0.684	2,090
Dietary habit	0.002	56,142
Smoke	0.007	15,161
Coffee consumption	0.318	2,898
Stress level	0,000	0.007

Source: Primary Data, 2025

Based on Table 4, the results of the logistic regression test show that diet, smoking habits, and stress levels significantly influence the incidence of hypertension, while physical activity and coffee consumption did not show a significant effect. Respondents with unhealthy diets had a 56.1 times greater risk of hypertension, respondents who did not smoke had a 15.1 times lower chance of developing hypertension, and stress levels were also significantly associated with the incidence of hypertension. Meanwhile, physical activity and coffee consumption were not proven to have a statistically significant effect on hypertension in this study.

Discussion

Lifestyle Overview of Hypertension Incidence in the Community in Campurejo Village, Bojonegoro Regency.

Based on the research results in Table 1 conducted in Campurejo Village, it can be seen that of the 92 respondents, more than half (47) had hypertension. Hypertension is influenced by various factors, including lifestyle factors such as physical activity, diet, smoking, coffee consumption, and stress levels.

Based on the research results, the majority of respondents, 82 people (89.1%), engaged in physical activity. The majority of the residents of Campurejo Village, Bojonegoro Regency, engaged in moderate, light, and vigorous physical activity, such as morning jogging, morning cycling, and gymnastics for approximately 30 minutes per day. It can be concluded that daily physical activity can prevent hypertension compared to those who do not engage in physical activity. This is in line with research.(Adriana Br Saragih *et al* ., nd).Physical activity or exercise is an important part of preventing and treating hypertension. People who do not exercise have a higher risk of developing cardiovascular problems. Regular exercise can lower blood pressure, weight, and stress (American Heart Association, 2024). Hypertension can be affected by light physical activity independently. People who engage in light or no activity tend to have a higher heart rate, thus the heart muscle works harder with each contraction. Hypertension increases pressure on the artery walls because the heart muscle has a greater burden to pump blood. The more physical activity, the lower the risk of developing hypertension. People who engage in light physical activity have a 30-50% higher risk of hypertension than those who engage in moderate or vigorous physical activity (Indriani MH, 2023).Regular physical activity improves overall heart efficiency. Due to their increased muscle strength and flexibility, researchers assume that individuals who engage in regular physical activity tend to have lower blood pressure and are less likely to develop high blood pressure. Furthermore, the residents of Campurejo village are housewives and farmers, so they engage in a lot of moderate to vigorous physical activity. This contributes to better muscle and joint function.

Another factor causing hypertension is diet. More than half of the respondents in Campurejo Village, Bojonegoro Regency, reported a non-compliant diet (51 people, 55.4%). Those with poor diets are at greater risk of developing hypertension than those who maintain a healthy diet. Maintaining a healthy diet, such as reducing consumption of instant foods, salty foods, and fatty foods, will tend to have a healthy diet and better nutritional health. This is in line with research.(Nurul *et al* ., 2022)A factor contributing to the rise in hypertension is dietary habits, which refer to the types and amounts of food a person consumes each day. Foods that trigger hypertension include excess sodium intake, excess fat intake, and insufficient intake of foods rich in potassium.The most important behavior that can influence a person's nutritional status is diet. This is because the quality and quantity of food and drink consumed will affect the health of individuals and the community as a whole. People's diets must be improved towards balanced nutritional consumption to maintain health and avoid various chronic diseases or infectious and non-infectious diseases related to nutrition (Ministry of Health, 2014).(Rahmi *et al* ., 2024a). From the initial survey conducted by the researcher assumed that the residents of Campurejo Village, Bojonegoro Regency often eat instant food or junk food, and many order delivery orders because along the streets there are many stalls that provide fast food which is easier and more practical. However, they do not pay attention to the use of salt, saturated fat, and preservatives. It can be concluded that the community has a poor diet, not paying attention to the use of food ingredients in it, which can affect public health, one of which is increased blood pressure.

Smoking is also a dominant factor in the development of hypertension. The study found that less than half of the respondents, 41 people (44.6%), smoked. Smoking significantly impacts a person's health because cigarettes contain harmful substances that can raise blood pressure. This is in line with research conducted(Efriandi *et al* ., 2023)Smoking involves burning tobacco and then inhaling it, either with a cigarette or a pipe. Smoking can increase blood pressure and increase the workload of the heart. Tobacco constricts blood vessels, increasing blood pressure and causing damage to blood vessel walls due to its harmful chemicals. Cigarette smoke produces carbon monoxide, which saturates the blood with oxygen. This is because blood pressure increases because the heart needs to pump more blood to get enough oxygen

and body tissues. The risk of arterial damage increases in people with high blood pressure because smoking increases the heart rate and the heart muscle's need for oxygen. In the field, the people of Campurejo village spend time in stalls and smoke more than 12 cigarettes per day. Daily smoking can cause atherosclerosis and increased blood pressure.

Coffee consumption is also a cause of hypertension. More than half of the respondents (50 people) were not at risk. Those who consume coffee excessively are at greater risk of developing hypertension than those who do not drink coffee. Coffee contains bitter and acidic caffeine which can affect blood pressure. This is in line with research.(Kristanto, 2021a) Because too much coffee can cause acidity in the intestines, which interferes with the absorption of minerals such as B complex, alkaline minerals such as calcium, magnesium, and phosphorus, and electrolytes into the blood. This can also impact blood pressure. Coffee not only increases stomach acid but also strongly stimulates the heart, increasing blood pressure and accelerating. Researchers assume that someone who consumes more than 1 cup per day will experience increased blood pressure, and those who consume ≤ 1 cup per day are less likely to experience increased blood pressure.

Stress levels also affect the incidence of hypertension, less than half of respondents experienced stress as many as 41 people (44.6%), and more than half of respondents were not stressed, namely 51 people (55.4%), someone who experiences stress will tend to have hypertension than those who do not experience stress, in line with research (Cicilia, 2022) someone who experiences stress can cause an increase in blood pressure, impact concentration and alertness and also increase the risk of disease and can damage the immune system. Stress is a barrier to overcome the dangers that face the body, mental or emotional and faith of a person. As a result, this impact can affect a person's physical condition and disrupt the stability of daily routines, stress is known as positive and negative stress(Noviasuci *et al* ., 2025)Researchers assume that stress can affect anyone, regardless of age, gender, or occupation. For example, in society, people inevitably experience stress, whether from internal or external factors. This is especially true in rural areas, where stress can arise from financial factors, negative influences from the home environment, and pressure. This can potentially lead to increased blood pressure.

The Incidence of Hypertension in Campurejo Village, Bojonegoro Regency.

Based on the results of the study in Table 2 conducted in Campurejo Village, Bojoengoro Regency, it was concluded that more than half of the respondents (47 people) had hypertension, and less than half of the respondents (45 people) did not have hypertension. Hypertension can be influenced by several factors, including modifiable factors such as diet, physical activity, coffee consumption, smoking habits, and stress. Non-modifiable factors include age, gender, and family history. This study is also in line with that conducted by(Ismana & Lestari, 2024)Many factors can trigger hypertension, although the cause of most cases (90%) is unknown (essential hypertension). Increased blood pressure is primarily caused by an increased heart rate, but aging also contributes to the development of hypertension. There are two types of triggers: controllable and uncontrollable.

In theory, the body regulates human blood pressure through three different mechanisms. First, pressure receptors in various parts of the body detect changes in the strength and speed of heart contractions, as well as the overall resistance to that pressure. Second, the kidneys regulate blood pressure over the long term through the renin-angiotensin system, which consists of various chemicals. Finally, the adrenal glands secrete the steroid aldosterone as a byproduct.(Lakoro *et al* ., 2022).Based on the researcher's assumption, the occurrence of hypertension is caused by the Campurejo village community not being able to control a healthy lifestyle, such as always eating instant food, junk food and not controlling the use of salt in food, in addition to the habit of smoking with a frequency of > 12 cigarettes per day and not being able to manage stress well.

The Influence of Lifestyle on the Incidence of Hypertension in the Community in Campurejo Village, Bojonegoro Regency.

Based on the research results in Table 3 conducted in Campurejo Village, Bojonegoro Regency, data analysis revealed no significant effect between physical activity and the incidence of hypertension. This research aligns with that conducted by (Sasombo *et al.*, nd) In Manado City in 2024, no correlation was found between physical activity and hypertension, with a value of 0.101. This was due to the fact that respondents who engaged in light physical activity did not experience hypertension, and respondents who did experience hypertension engaged in light physical activity. This research is also in line with that conducted by (Yunaria Tanu *et al.*, 2025) In Nias Regency, there is no significant relationship between physical activity and hypertension. Respondents who do physical activity regularly have a lower risk than those who do not do physical activity regularly. Previous research is also in line with what was done. (Adriana Br Saragih *et al.*, nd) in the working area of Singosari Health Center in 2024, the results showed no significant relationship between physical activity and the occurrence of hypertension as indicated by the results of $P = 0.996$ ($P > \alpha = 0.1$), the higher the physical activity, the smaller the risk of developing hypertension, a person who does not do physical activity has a tendency of around 30-50% to develop hypertension compared to someone who does physical activity. In this study there is no evidence to support the influence of physical activity on the occurrence of hypertension, due to the fact that most people do physical activity 82 people (81.1%) less than some do not do physical activity 10 people (10.9%). The people of Campurejo village do jogging, morning walks, stretching, cycling, gymnastics $\pm$ 30 minutes every day, and do daily activities such as sweeping, washing dishes, mopping floors and cooking. Because less than half of the respondents work as housewives (30 people) (32.6%), self-employed (22 people) (23.9%) and farmers (16 people) (17.4%). From the description above, the researcher believes that having various activities outside the home can increase physical activity and can prevent hypertension, less than half of the respondents work as housewives, which requires taking care of the house and children.

The research results showed that more than half of the respondents, 51 people (55.4%) from Campurejo Village, were not compliant with dietary control, and less than half, 41 people (44.6%) were compliant with dietary control. Most residents are unable to control their diets effectively, therefore, there is an influence of dietary patterns on the incidence of hypertension in Campurejo Village. This is in line with research conducted by (Lestari *et al.*, 2023) In Cibogor sub-district, there was a correlation between hypertension and the incidence of hypertension in the elderly. Respondents with poor diets were more likely to suffer from hypertension, while those with good diets were more likely to not suffer from hypertension. This is also in line with research conducted by (Rahmi *et al.*, 2024) The p-value = 0.004 can be concluded that there is a significant relationship between dietary patterns and the incidence of hypertension in middle-aged 45-59 years in Nagari Silongo, Lubuk Tarok District, where people who experience hypertension apparently have unhealthy dietary habits, such as frequently consuming fast food, fried foods, fatty foods, and foods that contain a lot of salt. In line with research conducted by (Zubaidah *et al.*, 2024) There is a significant relationship between eating habits and the incidence of hypertension at the Juku Eja Village Health Post with a p value ($0.000 < 0.005$), a regular and healthy diet is needed to improve health. Researchers argue that someone who is compliant in consuming healthy food will have a good impact on their body's health, and someone who is not compliant will have a bad impact on their body's health. In addition, the field conditions of people who often consume fast food, instant food, containing saturated fat will be at risk of developing diseases, one of which is hypertension.

The habit of smoking in the community of Campurejo Village, Bojonegoro District, Bojonegoro Regency, is a common lifestyle, smoking can also be addictive. Based on the smoking habits of respondents, it can be concluded that less than half of the respondents, 41 people (44.6%) smoke and more than half of the respondents, 51 people (55.4%) do not smoke, from the analysis conducted by researchers, there is a significant influence between smoking and the incidence of hypertension in Campurejo Village with a significance value of 0.007. This research is also in line with that conducted by (Erman *et al.*, 2021) at the Palembang campus health center, which concluded that there is a link between smoking and hypertension due to unhealthy lifestyle choices, one of which is smoking. The nicotine contained in

cigarettes can cause a feeling of dependence, also known as nicotine dependence. Nicotine can stimulate the sympathetic nervous system, causing the heart to work harder and narrowing of blood vessels. This is also in line with what was done by showing (Petrus Apriandre Nubatonis *et al.*, 2024) There is a relationship between smoking habits and the incidence of hypertension in people visiting the Alak Community Health Center. P value = 0.001. It is concluded that respondents consume cigarettes excessively every day with a frequency of >2 packs. If consumed continuously, it will cause blood vessel damage. This is also in line with research conducted by (Toat *et al.*, 2024) The results obtained P value 0.033 < 0.05 so it can be concluded that there is a relationship with the incidence of hypertension due to increased heart rate and causing narrowing (vasoconstriction) which ultimately increases blood pressure. Employees who smoke are 4 times more likely to experience hypertension than employees who do not smoke. Researchers assume that someone who smokes more than > 12 cigarettes per day will be susceptible to hypertension, because cigarettes contain dangerous substances such as nicotine, someone who inhales cigarette smoke is more at risk of developing hypertension than someone who smokes.

The coffee consumption habits of the Campurejo village community, Bojonegoro District, Bojonegoro Regency, can be described as less than half of the respondents at risk of consuming coffee, as many as 42 people (45.7%) and more than half of the respondents not at risk, as many as 50 people (54.3%). Based on the data analysis obtained, there was no significant effect between coffee consumption and the incidence of hypertension. This research is also in line with that conducted by (Kristanto, 2021) From the Pearson correlation test, it was found that there was no significant relationship between coffee drinking habits and the incidence of hypertension ($P = 0.058$) in Ngringo village. In adulthood, a person's activity is quite high or a productive age that requires a lot of energy for activities or work, so many people choose coffee to improve performance. This research is also in line with what was done (Mauritsius Jala *et al.*, 2024) because from the bivariate analysis p-value ($0.930 > \alpha (0.05)$) it was concluded that there was no relationship between the habit of consuming coffee and the incidence of hypertension in adults because the researcher concluded that some respondents did not have hypertension because most respondents did not have a risk of hypertension, where hypertension often occurs in people who have a risk of hypertension. From the description above, the researcher assumes that the habit of consuming coffee does not affect blood pressure excessively but causes an increase in blood pressure in a short time, people who are addicted to coffee generally have bodies that will be immune to the effects of caffeine contained in the coffee.

The stress level in the Campurejo village community in Bojonegoro Regency, from the research data, is described as less than half of the respondents experiencing stress as many as 41 people (44.6%) and more than half of the respondents who did not experience stress as many as 51 people (55.4%). The stress level experienced by the Campurejo village community is mostly caused by high social pressure, such as being offended by other people's comments, not being able to accept reality, because the respondents from the study were mostly women than men. And the majority work as housewives. From the data analysis, it was concluded that there is a significant influence between stress levels and the incidence of hypertension, in line with research conducted by (Noviasuci *et al.*, 2025) From the results of data analysis using the Spearman rank test, a p value of $0.000 < 0.05$ was found, and the correlation strength ($r = 0.764$) indicated a very strong correlation. It can be concluded that there is a relationship between stress levels and the incidence of hypertension, because a person's psychological condition is different depending on the individual and if it worsens, it can affect blood pressure. This is also in line with what was done by (Amira, nd) In 2021, a study at Guntur Community Health Center in Bogor found a significant relationship between stress levels and the incidence of hypertension. It was concluded that individuals with severe stress are more likely to develop hypertension than those with mild stress. This also aligns with research conducted by (Cicilia Pujiastuti *et al.*, 2022) At Mardi Rahayu Kudus Hospital, the conclusion from the analysis results is that there is a significant relationship between stress levels and the incidence of hypertension because the P value ($0.000 < 0.05$) shows that someone who experiences stress will be at risk of hypertension, where the higher the stress level will cause an increase in the degree of hypertension.

Researchers assumed that the stress experienced by respondents stemmed from physical and social stressors. Physical stressors included noise, which caused poor concentration, and air pollution due to the

large number of vehicles. Social stressors included family problems, economic hardship, and a toxic environment. The higher the stress level, the higher the blood pressure.

CONCLUSION

This study shows that the incidence of hypertension in the community of Campurejo Village, Bojonegoro Regency is influenced by several lifestyle aspects, especially diet, smoking habits, and stress levels. The results of the logistic regression analysis proved that unhealthy diet has the greatest influence on the risk of hypertension, followed by smoking habits and stress levels, which are also significantly associated with increased blood pressure. In contrast, physical activity and coffee consumption did not show a statistically significant effect on the incidence of hypertension in this study. These findings strengthen Lawrence W. Green's theory that health behavior is influenced by predisposing, enabling, and reinforcing factors that are interrelated in shaping people's lifestyles. Practically, the results of this study can be a basis for health workers and village governments in developing community-based promotive and preventive programs, such as education on healthy eating patterns, stress management, and smoking cessation campaigns to reduce hypertension rates in the community.

This study still has several limitations, including the use of a cross-sectional design that is unable to explain causal relationships in depth, the limited sample size in one village area, and the use of self-report data on several lifestyle variables that may have introduced bias in respondents' responses. Furthermore, other factors that may influence hypertension, such as family history, alcohol consumption, sleep quality, and body mass index, have not been comprehensively analyzed. Therefore, future research is recommended to use a longitudinal or cohort design with a larger sample size and include additional variables to ensure more representative results and a more comprehensive explanation of hypertension risk factors. Future research is also expected to develop interventions based on health behavior theory to improve the effectiveness of hypertension prevention in rural communities.

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