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RESEARCH ARTICLE

Coffee consumption and lifestyle factors associated with hypertension risk in working-age residents of Tanjung Gusta, Medan

Ulan Azmi[1], Eva Ellya Sibagariang[2]*, Hartono[1]

ABSTRACT

Background: Hypertension is a non-communicable disease with increasing prevalence, including among productive age adults. Coffee consumption habits and unhealthy lifestyles are suspected to increase the risk of hypertension. This study aimed to determine the relationship between coffee consumption and lifestyle with the incidence of hypertension among productive age adults in Tanjung Gusta Village, Medan City.
Method: This quantitative study used a cross-sectional design. The sample comprised 98 respondents selected using accidental sampling. Data were collected through structured questionnaires and blood pressure measurement using a sphygmomanometer. Data were analyzed using the chi-square test with a significance level of 0.05.
Results: Among 98 respondents, 18 (18.4%) had hypertension. Coffee consumption was significantly associated with hypertension (p=0.033), and lifestyle was also significantly associated with hypertension (p=0.041). Respondents who frequently consumed coffee and had unhealthy lifestyles showed higher proportions of elevated blood pressure.
Conclusion: There are significant relationships between coffee consumption and lifestyle with the incidence of hypertension among productive age adults in Tanjung Gusta Village, Medan City. Limiting coffee intake and adopting a healthy lifestyle are recommended for hypertension prevention.

Keywords: hypertension, coffee consumption, lifestyle, productive age

Introduction

Hypertension is a condition of persistently elevated blood pressure that increases the risk of cardiovascular disease, stroke, and kidney failure.[1,2] Globally, the prevalence of hypertension continues to rise, including in developing countries such as Indonesia.[3,4] Productive age adults (18-64 years) are a vulnerable group due to high levels of activity, unbalanced diets, stress, and excessive caffeine consumption.[5,6]

One common habit in the community is coffee consumption, which has become not only a means to reduce drowsiness but also part of a social lifestyle.[7] Caffeine in coffee can stimulate the sympathetic nervous system, potentially increasing blood pressure.[8] In addition, unhealthy lifestyles such as lack of physical activity, smoking, and poor sleep patterns also increase the risk of hypertension.[9]

Data from the 2023 Indonesian Health Survey (SKI) showed that the prevalence of hypertension in Indonesia remains high, with a significant proportion affecting the productive age population.[10] In urban

Affiliation
[1]Undergraduate Program in Public Health, Universitas Prima Indonesia
[2]Department of Public Health, Universitas Prima Indonesia

Corespondence:
evasibagariang@yahoo.com

areas such as Medan City, lifestyle changes have been rapid, and coffee shops (warkop) have become popular gathering places, particularly among young adults. Tanjung Gusta Village is one area where many coffee shops operate, and visitors often consume coffee in large quantities while engaging in sedentary activities and smoking. Several previous studies have demonstrated associations between coffee consumption and hypertension. Efendi et al.[11] found a significant relationship between coffee consumption frequency and hypertension. Similarly, lifestyle factors such as physical inactivity, high salt intake, and smoking have been consistently linked to elevated blood pressure.[12] Based on this background, this study aimed to analyze the relationship between coffee consumption and lifestyle with the incidence of hypertension among productive age adults in Tanjung Gusta Village, Medan City.

Method

This was a quantitative study using a cross-sectional design, which measures independent and dependent variables simultaneously at a single time point. The study aimed to determine the relationship between coffee consumption and lifestyle with the incidence of hypertension. The study was conducted at coffee shops (warkop) in Tanjung Gusta Village, Medan City, from September to October 2025.

The population comprised productive age adults (18-64 years) visiting coffee shops in Tanjung Gusta Village, Lingkungan II. The sample size was calculated using the Lemeshow formula for unknown population size, yielding 98 respondents. Accidental sampling was used, selecting any visitors who met the inclusion criteria (aged 18-64 years, willing to participate, and present during data collection).

Data were collected using a structured questionnaire to assess coffee consumption and lifestyle, and blood pressure was measured using a calibrated digital/manual sphygmomanometer. Blood pressure was measured twice after the respondent had rested for at least 5 minutes in a seated position; the average value was used to determine hypertension status.

Coffee consumption was categorized as: never (does not consume coffee), often (consumes coffee regularly but not daily), or always (consumes coffee daily). Lifestyle was assessed based on physical activity, smoking habits, salt intake, and sleep patterns, categorized as good (healthy behaviors) or not good (unhealthy behaviors). Hypertension status was classified as: normal (systolic <120 mmHg and diastolic <80 mmHg), prehypertension (systolic 120-139 mmHg or diastolic 80-89 mmHg), or hypertension (systolic ≥140 mmHg or diastolic ≥90 mmHg).

Univariate analysis described the frequency distribution of each variable. Bivariate analysis used the chi-square test with a significance level of 0.05 to examine relationships between coffee consumption and hypertension, and between lifestyle and hypertension. Results were presented in frequency distribution tables and cross-tabulations.

Results

A total of 98 respondents participated. Table 1 presents the combined frequency distributions for age, sex, education, and hypertension status. The majority were aged 18-35 years (57.1%), male (83.7%), had senior high school education (52.0%), and had normal blood pressure (42.9%). Hypertension was found in 18 respondents (18.4%).

Table 1. Distribution of respondent characteristics and hypertension status (N=98)

Variable	Category	Frequency (n)	Percentage (%)
Age	18-35 years	56	57.1
	36-64 years	42	42.9
Sex	Male	82	83.7
	Female	16	16.3
Education	Elementary school	11	11.2
	Junior high school	9	9.2
	Senior high school	51	52.0
	D3/S1/S2	27	27.6
Hypertension status	Normal	42	42.9
	Prehypertension	38	38.8
	Hypertension	18	18.4

Table 2 presents the associations between coffee consumption and hypertension, and between lifestyle and hypertension. Coffee consumption was significantly associated with hypertension (p=0.033). Among

respondents who never consumed coffee, none had hypertension; among those who often consumed coffee, 24.6% had hypertension; among those who always consumed coffee, 12.0% had hypertension.

Lifestyle was also significantly associated with hypertension (p=0.041). Among respondents with unhealthy lifestyle (not good), 20.5% had hypertension; among those with healthy lifestyle (good), 12.0% had hypertension.

Table 2. Bivariate associations between coffee consumption, lifestyle, and hypertension (N=98)

Variable	Category	Normal n (%)	Prehypertension n (%)	Hypertension n (%)	Total	p-value
Coffee consumption	Never	9 (75.0)	3 (25.0)	0 (0.0)	12	0.033
	Often	25 (41.0)	21 (34.4)	15 (24.6)	61	
	Always	8 (32.0)	14 (56.0)	3 (12.0)	25	
Lifestyle	Not good	35 (47.9)	23 (31.5)	15 (20.5)	73	0.041
	Good	7 (28.0)	15 (60.0)	3 (12.0)	25	

Discussion

The study found a significant association between coffee consumption and hypertension (p=0.033). Respondents who frequently consumed coffee tended to have higher blood pressure compared to those who rarely or never consumed coffee. This finding is consistent with Efendi et al.[11], who reported a significant relationship between coffee consumption frequency and hypertension. The study explained that caffeine in coffee increases sympathetic nervous system activity, causing vasoconstriction and elevated blood pressure.[13]

Physiologically, caffeine works by stimulating the central nervous system and increasing adrenaline release, which raises heart rate and causes blood vessel constriction. This effect can lead to sustained blood pressure elevation, particularly among individuals who consume coffee excessively over long periods.[14,15] Therefore, uncontrolled coffee consumption can contribute to hypertension among productive age adults. However, it is worth noting that in the "always" consumption group, the hypertension proportion (12.0%) was lower than in the "often" group (24.6%). This may be due to tolerance development among very regular consumers or other confounding factors such as age, physical activity, or medication use, which were not assessed in this study.

The study also found a significant association between lifestyle and hypertension (p=0.041). Respondents with unhealthy lifestyles had higher proportions of prehypertension and hypertension compared to those with healthy lifestyles.[16] This finding aligns with Halim et al.[17] who showed that physical activity, smoking, excessive salt intake, and alcohol consumption were significantly associated with hypertension. Lifestyle is a modifiable factor influencing blood pressure elevation, particularly among individuals with low physical activity, high salt intake, and smoking habits.[18]

Theoretically, lack of physical activity increases cardiac workload, excessive salt intake expands blood volume, and nicotine causes vasoconstriction.[18,19] These conditions gradually elevate blood pressure and trigger hypertension. The finding that the "good lifestyle" group had a higher proportion of prehypertension (60.0%) compared to the "not good" group (31.5%) is unexpected and warrants attention. This may be due to the relatively small number of respondents in the good lifestyle category (n=25) or the confounding influence of other unmeasured factors such as genetic predisposition or stress levels.[17,19] Alternatively, the definition of "good lifestyle" based on the questionnaire may not have fully captured all protective behaviors.

This study has several strengths, including the use of direct blood pressure measurement and a focus on a specific high-risk setting (coffee shop visitors). However, several limitations must be acknowledged. The cross-sectional design precludes causal inference; associations may be bidirectional. Accidental sampling may introduce selection bias, as only visitors present during data collection were included. Data on coffee consumption and lifestyle relied on self-report, subject to recall and social desirability bias. The study did not assess potential confounders such as family history of hypertension, body mass index, medication use, or detailed dietary sodium intake. The unexpected finding regarding the good lifestyle group suggests the need for more comprehensive lifestyle assessment. Future longitudinal studies with larger, random samples and objective measures (e.g., 24-hour dietary recall, accelerometry for physical activity) are needed.

These findings have several practical implications. Community health education programs should emphasize the risks of excessive coffee consumption and promote healthy lifestyle behaviors, including regular physical activity, smoking cessation, reduced salt intake, and adequate sleep. Coffee shop owners

could be encouraged to provide healthier beverage options and non-smoking areas. At the policy level, local health authorities should integrate hypertension screening and lifestyle counseling into community health services, particularly targeting productive age adults in urban areas. Workplace wellness programs that address coffee consumption and lifestyle habits are also recommended.

Conclusion

This study found significant associations between coffee consumption and hypertension (p=0.033) and between lifestyle and hypertension (p=0.041) among 98 productive age adults in Tanjung Gusta Village, Medan City. Respondents who frequently consumed coffee and had unhealthy lifestyles showed higher proportions of elevated blood pressure. These findings highlight the need for limiting coffee intake and adopting healthy lifestyle behaviors, including regular physical activity, smoking cessation, and reduced salt consumption, as part of hypertension prevention strategies.

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