

Prevalence of Caffeine Consumption among College Students of Selected Colleges in Aizawl, Mizoram: A cross-sectional study

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Abstract: Caffeine is one of the most widely consumed psychoactive substances among college students, primarily through beverages such as tea, coffee, soft drinks, and energy drinks. The present study was conducted to assess point prevalence of caffeine consumption among college students and to determine its association with selected socio-demographic variables.

A descriptive research design was adopted among 350 college students selected from Govt. J. Thankima College and Govt. Aizawl College. Data were collected using a self-structured questionnaire covering socio-demographic variables, prevalence and pattern of caffeine consumption regarding caffeine intake. Data were analyzed using descriptive and inferential statistics.

The study findings revealed that (344; 98.3%) participants consumed caffeine. Tea was the most commonly consumed beverage (152; 44.19%), followed by coffee (78; 22.67%). The majority of participants had low caffeine intake, with (213; 61.92%) consuming 1 cup/day. The mean caffeine intake was 103.20 mg/day. The study concludes that caffeine consumption is highly prevalent among college students highlighting the need for targeted health education and awareness programmes to promote safe caffeine consumption.

IndexTerms - Caffeine consumption, college students, point prevalence, socio-demographic variables.

I. INTRODUCTION

Caffeine is a natural chemical with stimulant effects which increases activity in our brains. It is found in coffee, tea, cola, cocoa, guarana, yerba mate and over 60 others product ^[1].

Caffeine is a widely consumed stimulant globally, particularly among college students seeking to enhance academic performance, manage stress, and boost energy levels. Students who use caffeine specifically to feel awake, enjoy the taste, the social aspects of consumption, improve concentration, increase physical energy, improve mood, and alleviate stress ^[2]. However, excessive caffeine consumption can lead to negative health consequences, such as sleep disturbances, anxiety, and cardiovascular problems ^[3]. Understanding the prevalence and its pattern on caffeine consumption among college students and finding the association between prevalence of caffeine consumption and selected socio-demographic variables is crucial for promoting healthy habits and mitigating potential harm.

II. NEED OF THE STUDY.

Caffeine overuse can result in a number of negative consequences, including nausea, elevated heart rate, anxiety, restlessness, and insomnia. Higher dosages may result in anxiety, headaches, and chest pain. As a stimulant that affects the central nervous system, caffeine can restrict blood vessels, which raises blood pressure and heart rate. Overindulgence in coffee may raise the risk of arrhythmias, or irregular heartbeats, which in extreme circumstances may lead to major consequences including stroke. In addition, excessive caffeine intake can cause restlessness, anxiety, insomnia, agitation, and, in rare cases, hallucinations, disorientation, and memory problems. Caffeine also stimulates the digestive system, which can cause gastrointestinal issues including loose stools and heartburn. Addiction and dependence may also result from prolonged and excessive caffeine usage ^[4](McLaughlin, M. 2025).

^[5](Bertasi, R. A. O., et al. 2021) suggest that there is a correlation between high caffeine intake and symptoms of anxiety and depression in college students and effect of caffeine on sleep is negative and adversely affects college students throughout the night and following days.

College students, in particular tend to drink a lot of caffeine. They often turn to caffeinated drinks to help them stay awake during exams, study sessions and other college works. Since these products are easy to find on campus and students feel pressure to do well academically, it's very popular among them. Various studies have been conducted at both national and international levels on caffeine consumption, its prevalence, practices and health effects.

Even though there are some risks linked to drinking caffeine, we don't have enough information about how common it is, how students use it, or how it affects their health. In Mizoram no such study has been carried out among college students particularly in Aizawl. This study aims to fill the gap by looking at how college students consume caffeine, what they feel about it. We want to find out what influences their caffeine habits and see how drinking caffeine relates to their health. Lifestyle patterns, dietary habits, cultural practices, and academic stress may vary across regions and can influence caffeine consumption behaviours among students. Therefore, there is a need to assess caffeine consumption practices among college students in Mizoram to obtain region-specific data and create appropriate awareness programmes regarding safe caffeine consumption. The study also aims to provide primary data that may serve as baseline information for future research related to caffeine consumption among college students in Mizoram.

OBJECTIVES

1. To assess the point prevalence of caffeine consumption among college students of selected colleges in Aizawl, Mizoram.
2. To find the association between point prevalence of caffeine consumption and selected socio-demographic variables.

HYPOTHESIS

- H₁:** There is a significant association between point prevalence of caffeine consumption and selected socio-demographic variables.
H₂: There is a significant association between practices on caffeine consumption and selected socio-demographic variables.

ASSUMPTION

There will be high point prevalence of caffeine consumption among college students.

METHODOLOGY

Research Approach: A quantitative non-experimental research approach

Research Design: A descriptive cross-sectional research design

Setting: This study was conducted in Govt. J. Thankima College, Bawngkawn and Govt. Aizawl College, Sikulpuikawn, Aizawl, Mizoram.

Population and sample: The population consisted of 350 college students of Govt. J. Thankima College, Bawngkawn and Govt. Aizawl College, Sikulpuikawn, Aizawl, Mizoram. The sample were undergraduate college students between 18-23 years of age in Govt. J. Thankima College, Bawngkawn and Govt. Aizawl College, Sikulpuikawn, Aizawl, Mizoram, Yamane's, 1967 formula was used to determine sample size and was selected using non-probability purposive sampling.

Tools for data collection

1. Structured socio-demographic questionnaire
2. Self-administered prevalence and pattern questionnaire

Data collection procedure

Ethical clearance was obtained from Institutional Ethics Committee (IEC), RIPANS, Mizoram and institutional permission was obtained prior to data collection. Written informed consent was obtained from all the participants. Data was collected using self-administered questionnaires.

Data Analysis

Data was analyzed using IBM SPSS Statistics 22. Descriptive analysis was used to determine the prevalence. Chi-square test was applied to assess associations between categorical variables. However, in cases where expected cell counts were less than 5, Fisher's Exact test was used as an alternative. A p-value < 0.05 was considered statistically significant.

The caffeine content of tea, coffee, soft drinks, and energy drinks was determined using values obtained from existing literatures [6], [7], [8], [9], [10], [11] and beverage manufacturers' nutritional information. These reference values shown in table 1 was used to estimate the daily caffeine consumption of the participants in milligrams per day (mg/day). The total daily caffeine consumption (mg/day) was calculated by multiplying the number of cups consumed by the standard caffeine content of the respective beverage. The mean daily caffeine intake of the participants was calculated using the Statistical Package for the Social Sciences (SPSS) software.

Table 1: Caffeine concentration on each caffeine containing beverage

Beverages	Caffeine contain per cup
Coffee	120 mg
Tea	40 mg
Soft drinks	36 mg
Energy drink	133 mg

The level of caffeine consumption were classified into three classes: (1)Low intake: Utilization up to 199 mg per day i.e. 1 cup of any caffeinated beverage per day, (2)Moderate intake: Utilization of around 200-399 mg per day i.e. of 2-4 cups of any caffeinated beverage per day, and (3)High intake: Utilization more than 400 mg per day i.e. 5 or more cups of any caffeinated beverage per day as per U.S. Food and Drug Administration and the American Medical Association [12].

RESULTS

Figure 1: Frequency and percentage distribution of college students from two colleges

n=350

Frequency and percentage distribution of college students from two colleges

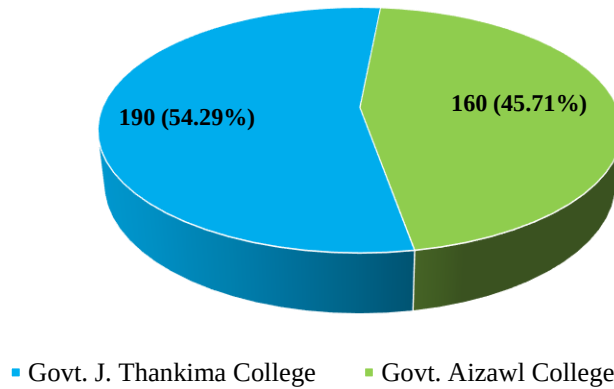


Figure 1 shows a total of 350 students from two colleges, the distribution shows that most of the students were from Govt. J. Thankima College (190, 54.29%), indicating that more than half of the total participants. Meanwhile, Govt. Aizawl College (160, 45.71%), representing slightly less than half of the total respondents.

Table 2: Frequency and percentage distribution of the socio-demographic variables of college students

n=350			
Variable	Category	Frequency (f)	Percentage (%)
Age in years	18-19 years	74	21.1
	20-21 years	183	52.3
	22-23 years	93	26.6
Gender	Male	167	47.7
	Female	183	52.3
Religion	Christian	343	98.0
	Hindu	6	1.7
	Muslim	1	3
Educational Level	2 nd Semester	128	36.6
	4 th Semester	108	30.9
	6 th Semester	114	32.6
Socio-economic status	Upper (I)	21	6.0
	Upper middle (II)	135	38.6
	Lower middle (III)	86	24.6
	Upper lower (IV)	108	30.9
	Lower (V)	0	0
Current living arrangement	Day scholar	248	70.9
	Hosteller	47	13.4
	Rental Accomodation	55	15.7

Table 2 illustrates the frequency and percentage distribution of the socio-demographic characteristics of the 350 study participants like age, gender, religion, educational level, socio-economic status and current living arrangement. The majority of the participants were in the age group of 20–21 years (183; 52.3%). Female participants (183; 52.3%) slightly outnumbered male participants (167; 47.7%). Most of the participants were Christians (343; 98.0%). In terms of educational level, the majority were studying in the 2nd semester (128; 36.6%). Most participants belonged to the Upper Middle (II) socio-economic class (135; 38.6%) and were day scholars (248; 70.9%).

Table 3: Frequency and percentage distribution of the point prevalence of caffeine consumption among college students

n=350			
VARIABLES	CATEGORY	Frequency (f)	Percentage (%)
Caffeine Consumption	Yes	344	98.3
	No	6	1.7

Table 3 indicate that caffeine consumption was highly prevalent among the study participants. Out of the total 350 respondents, 344 participants (344; 98.3%) reported consuming caffeine, whereas only 6 participants (6; 1.7%) stated that they did not consume caffeine.

Table 4: Frequency and percentage distribution of pattern of caffeine consumption

n=344

Variable	Category	Frequency (f)	Percentage (%)
Type of beverage	Coffee	78	22.67
	Tea	152	44.19
	Soft drinks	73	21.22
	Energy drinks	41	11.92
Daily consumption	Yes	128	37.21
	No	216	62.79
Consumed in last 7 days	Yes	269	78.20
	No	75	21.80
Cups per day (cup=250ml)	1	213	61.92
	2	91	26.45
	3	30	8.72
	4	6	1.74
	≥5	4	1.16
Frequency of consumption	1 time per week	58	16.86
	2-3 times per week	129	37.50
	4-6 times per week	90	26.16
	Once a month	67	19.48
Duration of consumption	Less than 6 months	79	22.97
	6 months to 1 year	49	14.24
	1 to 3 years	47	13.66
	More than 3 years	169	49.13
Reason for consumption	Energy or alertness	89	25.87
	Socializing with friends	64	18.60
	Out of habit	63	18.31
	Taste preference	128	37.21
Time of consumption	Morning	45	13.08
	Afternoon	47	13.66
	Evening	46	13.37
	Night	42	12.21
	Random	164	47.67
Place of consumption	At home	129	37.50
	College campus	46	13.37
	Cafes/restaurants	26	7.56
	Anywhere	143	41.57
Place of purchase	College Cafeteria	41	11.92
	Grocery or convenience store	224	65.12
	Online delivery	6	1.74
	Friends and social events	73	21.22
Symptoms	Stomach upset	71	20.64
	Headache	22	6.40
	Increased heart rate	25	7.27
	Insomnia or trouble sleeping	30	8.72
	Increased urination	33	9.59
	No symptom	163	47.38

Table 4 shows the pattern of caffeine consumption out of 344 who were consuming caffeine. The majority of the students consumed tea (152; 44.19%), followed by coffee (78; 22.67%), soft drinks (73; 21.22%), and soft drinks (41; 11.92%). Most of the students reported not consuming caffeine on a daily basis (216; 62.79%). A large proportion of students had consumed caffeine in the past 7 days (269; 78.20). The majority of the students, (213; 61.92%) consumed 1 cup per day. Regarding frequency, it was mostly consumed 2-3 times per week (129; 37.50). Almost half of the students had been consuming caffeine for more than 3 years (169; 49.13%). The most common reason for caffeine consumption was taste preference (128; 47.67%). Most students consumed caffeine at random times of the day (164; 47.67). Most of them commonly consumed it anywhere (143; 41.57%). The majority of the students purchased caffeinated beverages from grocery or convenience stores (224; 65.12%). Majority of the students reported of no symptom (163; 47.38), and commonly reported symptoms after caffeine consumption included stomach upset (71; 20.64%).

Table 5: Descriptive statistics of daily caffeine consumption from different caffeinated beverages among college students
n= 344

Variable	Mean	Median	S.D	Minimum	Maximum	Range
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Daily caffeine consumption	103.20	80.00	83.664	36	600	564
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Table 5 depicts the mean daily caffeine consumption among the college students was 103.20 mg/day, with a median intake of 80 mg/day. These findings suggest that the mean caffeine consumption among the college students per day was within the recommended amount as per U.S FDA that is 400mg/day ^[11].

Table 6: Level of caffeine consumption

Level of caffeine consumption	Cups	Caffeine per day	Frequency (f)	Percentage (%)
Low intake	1	0 – 199 mg per day	213	61.92
Moderate intake	2 – 4	200 – 399 mg per day	127	36.92
High intake	≥ 5	More than 400 mg per day	4	1.16

Table 6 depicts the level of caffeine consumption among the college students. The majority of the students (213; 61.92%), had low caffeine intake ranging from 0–199 mg per day. The findings indicate that most participants consumed caffeine at a low level, while only a small proportion consumed caffeine at high levels.

Table 7: Association between the point prevalence of caffeine consumption and selected socio-demographic variables

Socio-Demographic Variable	χ^2 value	df	p-value
Age in years	3.991	2	0.109
Gender	0.506	1	0.386
Religion	0.125	2	1.000
Educational Level	0.787	2	0.779
Socio-economic status	1.290	3	0.840
Current living arrangement	0.957	2	1.000

*p<0.05 level of significance

Table 7 shows that there was no statistically significant association between prevalence and selected socio-demographic variables among college students, as all the p-values were greater than 0.05. This suggests that, caffeine consumption was relatively similar across the different socio-demographic groups of college students. In other words, variables such as age, gender, educational level, socio-economic status and current living arrangement did not significantly influence whether students consumed caffeine.

DISCUSSION AND CONCLUSION

Finding related to point prevalence revealed that caffeine consumption was highly prevalent among college students, with 98.3% of the participants reporting consumption of caffeinated beverages. This finding indicates that caffeine intake has become a common lifestyle practice among young adults and college students. The findings of the present study was compared with studies conducted in other parts of India, such as in Karnataka and Jammu among undergraduate students reported high prevalence ranging between 85 – 93% ^{[14], [15]}. In the findings related to pattern of caffeine consumption identifies tea as the most commonly consumed caffeinated beverage, followed by coffee, soft drinks, and energy drinks. In contrast, international studies conducted by ^[16] in Italy and ^[17] among university students reported coffee and energy drinks as the most commonly consumed caffeinated beverages. These differences may be related to cultural practices, lifestyle patterns, and beverage preferences across countries. The present study also found that most students consumed caffeine 1 cup per day, while a smaller proportion consumed 2 or 3 cups daily. The mean caffeine consumption among participants was 103.20 mg/day, indicating relatively low to moderate consumption. Likewise, a study conducted among university students in the United States by ^[2] reported a mean daily caffeine intake of 159 mg/day among college students, which was comparatively higher than the findings of the present study. In this study, the students mainly consumed caffeine 2-3 times per week. Nearly half of the participants had been consuming caffeine for more than three years, indicating habitual consumption patterns. Similar findings were reported by ^[2], where students consumed caffeine regularly to remain alert, improve concentration, and manage academic stress. Taste preference emerged as the major reason for caffeine consumption in the present study, followed by the need for energy and alertness. Comparable findings were reported in the study conducted by ^[2], where students reported consuming caffeine for enjoyment, improved concentration, and enhanced physical energy. The present study revealed that nearly half of the participants did not report any symptoms following caffeine consumption. However, some students experienced symptoms such as stomach upset and increased urination. Likewise, a study conducted by ^[18] and ^[16] among college students reported that high caffeine consumption was associated with symptoms including stomach irritation, nervousness, frequent urination, and sleep-related problems. The occurrence of these symptoms may depend on the quantity and frequency of caffeine intake, individual tolerance levels, and the type of caffeinated beverages consumed. These findings highlight the importance of educating students regarding the possible adverse health effects associated with excessive caffeine intake.

Overall, the findings highlight the need for health education programmes and awareness interventions to promote safe and responsible caffeine consumption among college students. Educational institutions and healthcare professionals should encourage students to adopt healthy caffeine consumption practices and increase awareness regarding the potential health effects associated with excessive caffeine intake.

DECLARATION

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Conflict of interest: None declared

Ethical Approval: Institutional Ethics Committee (IEC), RIPANS (Regional Institute of Paramedical and Nursing Sciences), Mizoram.

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