



PREVALENCE OF CAFFEINE INTAKE AMONG MEDICAL STUDENTS AND FACTORS ASSOCIATED WITH IT

Dr. Hemavarneshwari S.^{1*}, E. Sai Varshitha², Harshitha B. S.³, Dr. Chaithali Gore⁴

^{1*}Associate Professor, Department of Community Medicine, Vydehi Institute of Medical Sciences & Research Centre, Bangalore, Karnataka, India.

²Undergraduate MBBS Student, Vydehi Institute of Medical Sciences & Research Centre, Bangalore, Karnataka, India.

³Undergraduate MBBS Student, Vydehi Institute of Medical Sciences & Research Centre, Bangalore, Karnataka, India.

⁴Professor & HOD, Department of Community Medicine Vydehi Institute of Medical Sciences & Research Centre, Bangalore, Karnataka, India.

Corresponding Author: Dr. Hemavarneshwari S.

Associate Professor, Department of Community Medicine, Vydehi Institute of Medical Sciences & Research Centre, Bangalore, Karnataka, India.

ABSTRACT

Background: Caffeine is one of psychoactive substances in the world and it is taken as coffee, tea, energy drinks etc. The adverse effects of caffeine range from mild to severe and generally go unnoticed by an individual. Medical student's life begins with regular exam preparation. Medical students have to put forth extra effort beyond their mental threshold and physical stress to show progress in their exams. Increased stress status among medical students promotes the use of caffeine. The study was postulated in order to know the reasons, circumstances under which students consume caffeine and the symptoms that they face due to caffeine consumption.

Objectives

1. To assess the prevalence of Caffeine intake among medical students.
2. To identify the factors associated with the intake of Caffeine among the medical students

Methods: A cross sectional study was conducted among the medical college students. A total of 140 students participated in the study. Prevalence of caffeine consumption was assessed using a pretested semi structured questionnaire.

Results: Among the 140 students, about 112 (80%) were caffeine consumers and 28 (20%) did not consume caffeine. The type of caffeine product consumed varied from Coffee/ Tea (83%), Energy drinks (7.1%) and Soft drinks (9.8). Among 112 students, 77 (68.75%) of students consumed caffeine due to stress during exams and second reason for caffeine consumption in 69 (61.61%) students was to stay alert. 107 (95.54%) of consumers fall into the low- moderate intakers category, consuming less than 3 cups of caffeine per day and only 5 (4.46%) consumed more than 3 cups per day.

Conclusions: Although moderate caffeine intake is generally safe, its overuse among medical students could have led to adverse health outcomes, including sleep disturbances, anxiety, and increased stress. It is essential to encourage healthy lifestyle practices, stress and time management and also to reduce reliance on caffeine.

Keywords: Caffeine, Moderate Consumers, Medical Students.

INTRODUCTION

Caffeine is one of the most widely consumed psychoactive substances in the world and it is taken as coffee, tea, cola etc.^[1] Caffeine (1,3,7-trimethylxanthine or 3,7-dihydro-1, 3, 7-trimethyl-1H-purine-2,6-dione), is a purine alkaloid, odourless powder with a slightly bitter taste.^[2]



www.ajmrhs.com
eISSN: 2583-7761

Date of Received: 23-04-2026

Date Acceptance: 17-06-2026

Date of Publication: 24-06-2026

<https://doi.org/10.65605/a-jmrhs.2026.v04.i02.pp1904-1909>

The adverse effects of caffeine range from mild to severe and are generally related to the dose consumed and an individual's sensitivity to the drug. Higher caffeine consumption was associated with a worse sleep routine, morning tiredness, and restless sleep. Mortality is usually associated with cardiac arrhythmia, hypotension, myocardial infarction, electrolyte disturbances, and aspiration.

Caffeine can also cause withdrawal symptoms if habitual users abruptly stop. These symptoms usually begin 12 to 24 hours from last consumption, peak in 1 to 2 days, and may persist for up to 1 week. Withdrawal is preventable if caffeine is tapered off instead of abruptly discontinued.

Consumption of caffeine-containing beverages is a common element of social gatherings and leisure activities. The primary goal of caffeine consumption

is to combat fatigue and drowsiness. Younger generations frequently drink caffeine to feel alert, enjoy the flavour, socialise, enhance physical energy, improve mood, and reduce stress as it is a coping mechanism to deal with academic stress.

Side effects of caffeine consumption generally go unnoticed as they are overlapping one another or due to the lack of knowledge of the adverse effects of this compound. Bertasi et al. in their study among college students, showed that high caffeine intake is associated with depressive symptoms and higher levels of anxiety.^[3]

A study conducted by Martini stated that depends on age, sex, body mass index and dose of caffeine intake will induce oxidative stress among caffeine consumers.^[4]

Hedstrom et al. study stated that men had a higher anxiety than women after the consumption of caffeine.^[5]

Medical student's life begins with regular tests, internal exam preparation and throughout the medical course the students are subjected to excessive stress, majorly due to sleepless working hours. Medical students have to put forth extra effort beyond their mental threshold and physical stress to show progress in their exams. Increased stress status among medical students promotes the use of caffeine especially during preparatory phases/exams to stay awake and increase the efficiency and study for longer hours.

The purpose of this research is to gather an estimate of the number of individuals consuming caffeine and caffeine related products, factors promoting caffeine intake among medical students and symptoms experienced due to caffeine consumption by these individuals.

The study was postulated in order to know the reasons, circumstances under which students consume caffeine and the symptoms that they face due to caffeine consumption.

Objectives

1. To assess the prevalence of Caffeine intake among medical students.
2. To identify the factors associated with the intake of Caffeine among the medical students

MATERIAL & METHODS

Study Design

A cross sectional study was conducted and aims at gathering information regarding caffeine intake patterns and factors promoting intake and any symptoms experienced due to caffeine intake among the medical college students through the help of Google forms. The sample selection is done based on inclusion and exclusion criteria, who have consented to the study.

Study Setting

The study was conducted at Vydehi Institute of Medical Sciences and Research Centre, Bangalore.

Inclusion Criteria

1st, 2nd, 3rd, 4th year medical students, both male and female were included in the study.

Exclusion Criteria

Medical students who are on sick leave or absent during the data collection.

Study Duration

The duration of study was 6 months. The study was conducted from September 2024 till February 2025.

Sample Size

The sample size was calculated by using the following formula:

$$n = \frac{z^2 \cdot p(1-p)}{d^2}$$

$$n = \frac{1.96^2 \cdot 0.2333(1-0.2333)}{0.07^2} = 140$$

Where,

$z_{1-\alpha/2} = 1.96$, standard normal score at 95% level of confidence.

p = caffeine consumption about 23.33% of them were moderate consumers (from related article).

d = absolute error 7% margin of error.

Hence the minimum sample size was 140.

Sampling Technique and Study Population

The sample population of the study was the medical college students who are above the age of 18 years and have voluntarily consented to participate in the study. With the help of proportional random sampling, it is derived that 35 students from each year (1st, 2nd, 3rd, 4th), male and female would take part in the research study.

Statistical Analysis

Data was entered in MS Excel and analysed using SPSS Version 23. Descriptive analysis of all the explanatory and outcome parameters was done using mean and standard deviation for quantitative variables, frequency and proportions for categorical variables. Chi square test was used for finding the association between the categorical variables. Correlation test was used for finding the relationship between the quantitative variables. The level of significance was set at $p < 0.05$.

Study Tool

A questionnaire was used and the responses were recorded through Google forms.

Procedure

A total of 140 medical students who have voluntarily consented to participate in the study was informed about the rationale and implementation of the study. A questionnaire consisting of 16 questions was sent as a Google form typed in English through various social media platforms like Telegram and Gmail. The participants were given a time of 2 weeks to fill the form. A reminder was sent 1 week prior to the final date of submission.

The questionnaire is divided into three section, the first section represent the demographic data section which included the age, sex and location of the students. The second section had questions on the

amount of caffeine consumed, with respect to the frequency and type of caffeinated drinks consumed daily and questions the reasons and circumstances of caffeine intake. The last section was on effects and perceptions on caffeine consumption.

According to the U.S Food and Drug Organization and American Medical Association the following criteria has been adopted for defining the type of caffeine consumers:

1. Low Intakers: 1- 199 mg/day or 1 cup of any caffeinated beverage/per day
2. Moderate Intakers: 200–399 mg/day or 2 cups of any caffeinated beverage/per day

3. High intakers: More than 400 mg/day or 5 or more cups of any caffeinated beverage/per day.^[6]

RESULTS

A total of 140 medical students participated in the study of which 94 students were females (67.1%) and 46 students were males (32.9%). The research involved 35 students each from 1st, 2nd, 3rd and 4th years. Among the 140 students, about 112 (80%) were caffeine consumers and 28 (20%) did not consume caffeine. The type of caffeine product consumed among the consumers varied from Coffee/ Tea (83%), Energy drinks (7.1%) and Soft drinks (9.8) as shown in Fig (1).

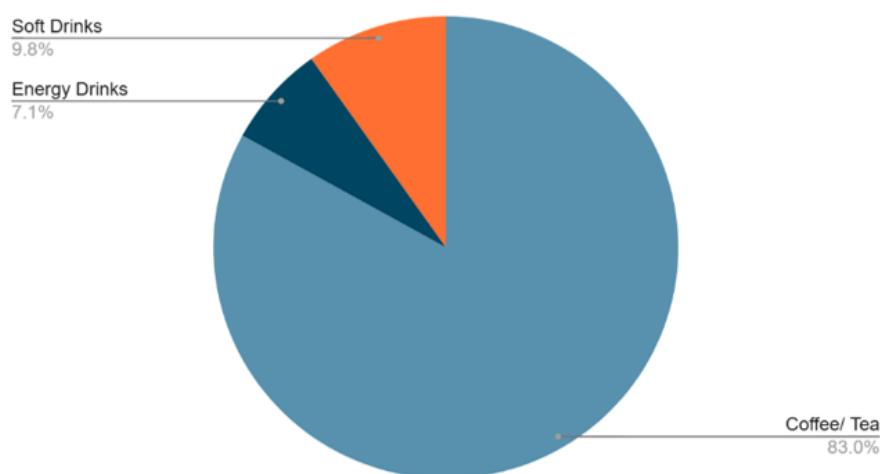


Figure 1: Types of Caffeine Products Consumed

Table 1: Percentage and category of caffeine consumers

Caffeine Consumption (in cups)	Frequency	Percent (%)	Category of Consumer
Less than 3 cups/ day	107	95.54%	Low-Moderate Intakers
More than 3 cups/ day	5	4.46%	High Intakers

Table (1) shows the percentage and category of caffeine consumers. In accordance with the American Medical Association and U.S Food and Drug Organisation, out of the 112 caffeine consumers, 107 (95.54%) of consumers fall into the low- moderate intakers category, consuming less than 3 cups of caffeine per day. In contrast, only 5 (4.46%) consumed more than 3 cups per day, highlighting a limited group of high caffeine consumers. This suggests that while the majority adhere to moderate caffeine habits, the proportion of heavy caffeine consumers remains relatively low.

Among 112 students, 77 (68.75%) of students consumed caffeine due to stress during exams, this being the commonest reason for caffeine intake. A close second reason for caffeine consumption in 69 (61.61%) students was to avoid sleeping/ to keep themselves awake and stay alert. While the other 60 (42.9%) students consumed caffeine to combat headaches. The other reasons were boredom and this accounted to about 51 (45.54%) students and 18 (16.07%) students consumed caffeine products due to family pressure.

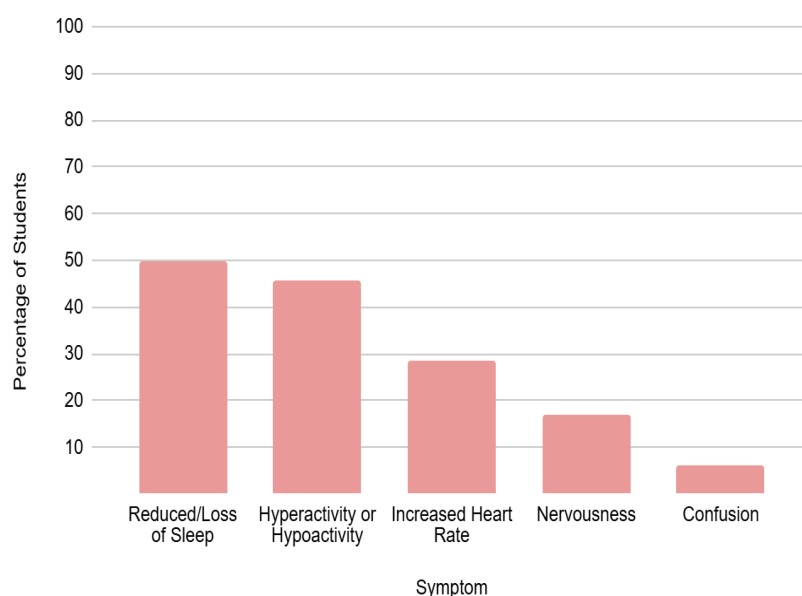


Figure 3: Graph Showing the Adverse Effects Due To Caffeine Consumption

Fig (3) shows the adverse effects experienced following caffeine consumption of which 56 (50%) students experienced reduced/ loss of sleep after caffeine intake, 51 (45.54%) reported having

hyperactivity or hypoactivity, 32 (28.57%) students experienced increased heart rate, 19 (16.96%) experienced nervousness, and confusion was seen among 7 (6.25%).

Table 2: Association between Caffeine Consumption and Stress /Studies

Caffeine Consumption	Stress during exams		Total
	Yes	No	
Less than 3	72	35	107
More than 3	5	0	5
Total	77	35	112

Table (2) shows a significant association between caffeine consumption and stress among the medical students during the exam time.

Table 3: Association between Caffeine Consumption and Reduced Sleep

Caffeine Consumption	Reduced Sleep		Total
	Yes	No	
Less than 3	53	54	107
More than 3	3	2	5
Total	56	56	112

Table 4: Association between Caffeine Consumption and Confusion

Caffeine Consumption	Confusion		Total
	Yes	No	
Less than 3	7	100	107
More than 3	0	5	5
Total	7	105	112

Table 5: Association between Caffeine Consumption and Anxiety

Caffeine Consumption	Anxiety		Total
	Yes	No	
Less than 3	19	88	107
More than 3	2	3	5
Total	21	91	112

Tables (3), (4), (5) show a significant association between caffeine intake and adverse effects like confusion, reduced sleep and anxiety following consumption of caffeine. Fisher's Exact Test was used for finding the association where P value less than 0.05 meant a significant association between the variables.

DISCUSSION

This paper explored the prevalence of caffeine intake among medical students and the factors influencing caffeine consumption. Caffeine is a central nervous system stimulant and mostly consumed as beverages like tea, coffee, energy drinks, soft drinks and has become an inevitable component of daily diet. Caffeine has its ability to enhance alertness, reduce fatigue, and improve cognitive function, making it especially popular among groups facing high cognitive demands, such as medical students. However, this raised the question of whether these drinks contributed positively to nutrition or posed health risks.

There was a notable gap in research regarding the impact of caffeinated drinks on the health of medical students, and this paper aimed to address that gap. A significant association was observed between caffeine consumption and stress, especially during exams. 77 (68.75%) of medical students consuming more caffeine during the academic exams. This finding was consistent with the study conducted by Shree Lakshmi Devi et al.^[1] Adverse effects following caffeine consumption included anxiety, insomnia, and confusion, which is similar with the findings of Bertasi RAO et al study.^[3]

The moderate caffeine consumption, defined as up to 400 mg per day was safe and unlikely to cause significant health issues. However, a minor percentage of individuals, approximately 3.6%, exceeded this threshold, potentially increasing their risk for adverse health effects, such as insomnia, heightened anxiety, and confusion. A study conducted by Haasan U et al in Islamabad, Pakistan showed that out of 220 respondents, the preferred choice of caffeine was tea (42.8%), the majority (58.2%) had less than 5 cups of caffeine per day. The study concluded that the majority of students were using caffeine without sufficient awareness of its adverse effects, withdrawal symptoms and benefits.^[7]

Most of the medical students fell within the moderate range of caffeine consumption, with the majority consuming less than 3 cups of caffeine per day which is similar to the study was conducted by Edward et al from Chennai in the year 2019. In his study it was mentioned that among 100 students, 60% were low consumers, 33% were temperate consumers, and 7% were elevated consumers.^[8]

A study conducted by Prabhakar et al from Pondicherry, stated that 29% of Medical college students were found to take caffeinated beverages. 15 % intake was in the form of tea while the remaining consumed coffee in morning and evenings. The study concluded that more than half of the students believed that caffeine increases their activeness and alertness during the day time.^[9] which is similar to this study results showed that 69 (61.61%) students was taking caffeine to avoid sleeping/ to keep themselves awake and to stay alert.

Conflict of Interest: NIL

Funding: Self

Ethical approval: Yes

CONCLUSION

In conclusion, while caffeine consumption provided short-term cognitive and performance benefits, its overuse among medical students could have led to adverse health outcomes, including sleep disturbances, anxiety, and increased stress. Although moderate caffeine intake is generally safe, it is essential to encourage healthy lifestyle practices, stress and time management and also to reduce reliance on caffeine.

Recommendations

Caffeine use is one of the important factor in researching psychological health among the general population. We need further epidemiological studies to determine whether there is a causal relationship between caffeine and psychological ill health or not.

REFERENCES

1. Devi SLS, Abilash SC, Basalingappa S. The rationale of caffeine consumption and its symptoms during preparatory and non-preparatory days: a study among medical students. *Biomed Pharmacol J* 2018;11(2).
2. Rodak K, Kokot I, Kratz EM. Caffeine as a factor influencing the functioning of the human body-friend or foe? *Nutrients* 2021;13(9):3088.
3. Bertasi RAO, Humeda Y, Bertasi TGO, et al. Caffeine Intake and Mental Health in College Students. *Cureus* 2021;13(4):e14313.
4. Martini D, Del Bo' C, Tassotti M, et al. Coffee consumption and oxidative stress: a review of human intervention studies. *Molecules* 2016;21:979.
5. Hedstrom AK, Mowry EM, Gianfrancesco MA, et al. High consumption of coffee is associated with decreased multiple sclerosis risk; results from two independent studies. *J Neurol Neurosurg Psychiatry* 2016;87:454-60.
6. Nor AR, Pavan SV, Hasanain G, et al. A study of caffeine consumption patterns and dependence among management and science university Students. *Indian Journal of Forensic Medicine & Toxicology* 2019;13:101.

7. Hassan U. Prevalence and awareness of caffeine consumption among medical students. The Professional Medical Journal 2020;27(12):2763-8.
8. Edward S, Kumar MS, Gopalkrishnan S. Trend of caffeine consumption among medical students and its side effects. Drug Invention Today 2019;12(11).
9. Reddy P, Kumar RS, Arun S, et al. A study of coffee addiction in the medical college, engineering students and in general population of in and around Pondicherry. Indian Journal of Public Health Research & Development 2018;9(4):160.

How to cite this article: Dr. Hemavarneshwari S., E. Sai Varshitha, Harshitha B. S., Dr. Chaithali Gore, PREVALENCE OF CAFFEINE INTAKE AMONG MEDICAL STUDENTS AND FACTORS ASSOCIATED WITH IT, Asian J. Med. Res. Health Sci., 2026; 4 (2):1904-1909.

Source of Support: Nil, Conflicts of Interest: None declared.