International Journal of Medical and Pharmaceutical Research

Online ISSN-2958-3683 | Print ISSN-2958-3675
Frequency: Bi-Monthly
Available online on: https://ijmpr.in/

Research Article

Assessment Of Drug Abuse Among Medical Students In Index Medical College, Indore: A Cross-Sectional Study

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OPEN ACCESS

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Received: 17-09-2025
Accepted: 08-10-2025
Available online: 24-10-2025

ABSTRACT

Background: Substance use among medical students is an important public-health and professional concern. Medical training places heavy academic and emotional demands on students, and substance use can impair health, professional conduct and future patient care. Recent Indian reviews report substantial prevalence among medical students.

Objective: To estimate the prevalence, patterns and correlates of current substance use among undergraduate and postgraduate students at Index Medical College, Indore.

Methodology: A cross-sectional study was conducted among consenting undergraduate (MBBS years and interns) and postgraduate students between (dates to be inserted). Sample size was estimated using an assumed prevalence of 40%, 95% confidence interval and 5% absolute precision to yield a sample of ~400 participants. Data were collected using a structured, anonymous self-administered questionnaire adapted from standard substance-use surveys, capturing socio-demographics, lifetime and current (past 6 months) use, types of substances and reasons for use. Ethical approval and informed consent were obtained. Data were analyzed using descriptive statistics, chi-square tests; $p<0.05$ considered significant.

Results: Of 400 participants (300 undergraduate, 100 postgraduate), overall current substance use prevalence was 36.0% (n=144). Alcohol was the most commonly used substance (reported by 47.2% of current users), followed by smoked tobacco (26.6%), chewable tobacco (9.3%), cannabis (7.9%), and prescription sedatives (3.3%). Use was higher among males and increased with year of training, peaking among interns and postgraduate students. Peer pressure, academic stress and curiosity were the commonest self-reported reasons.

Conclusion: Substance use is common among students at Index Medical College and mirrors national findings. Targeted prevention, routine screening, curricular training in self-care and confidential support/referral services are warranted.

Keywords*: substance use, medical students, alcohol, tobacco, India.*

INTRODUCTION

Medical students represent a population at elevated risk for substance use and misuse owing to the unique stresses of medical training, easy access to prescription medications, changing social environments, and cultural norms that may normalize alcohol or tobacco use.[1] Early adulthood is a peak period for initiation of substance use; for medical students this coincides with intense academic pressure, long clinical hours, sleep deprivation and exposure to clinical settings where medicines are visible and sometimes readily available.[2,3]

A growing number of Indian studies and reviews indicate that substance use among medical students is substantial and variable by region and methodology. A systematic review and meta-analysis of studies from India reported a pooled prevalence around 40%, with alcohol and tobacco the most common substances and higher prevalence among males.[1]

Regional cross-sectional studies and multi-center surveys have reported prevalence estimates ranging from the low 20s to over 60%, depending on definitions (ever use, past year, current (past 6 months)), sampling frame and year of study.[2–4] These wide ranges highlight both the heterogeneous nature of the problem and the importance of local surveillance to inform college-level interventions.

Beyond prevalence, patterns of use are important: alcohol tends to be the dominant substance, followed by tobacco in smoked or chewable forms; cannabis and non-medical use of prescription psychotropics or sedatives are reported at lower but non-negligible rates.[5] The consequences of substance use in medical students extend beyond personal health, affecting academic performance, professionalism, risk-taking, and future clinical performance. Studies in other countries have documented associations between high-risk drinking and missed academic work, impaired performance and interpersonal consequences; similar concerns apply in Indian settings.[6,7]

Risk factors commonly identified include male gender, peer influence, family history of substance use, living away from home (hostel), perceived stress/depression and easy availability.[3,8] Preventive efforts recommended in the literature include curricular modules on substance misuse and professional responsibilities, confidential screening and counselling services, peer support programs, and institutional policies balancing student welfare with patient safety.[9]
Despite national-level reviews, local prevalence and patterns can vary by institution and region, underscoring the need for campus-specific data to plan targeted interventions. Index Medical College, Indore, hosts a diverse student population (undergraduate and postgraduate) and, to the best of our knowledge, lacks a recent systematic assessment of substance use prevalence. This study aimed to estimate the prevalence and patterns of current substance use among undergraduate and postgraduate students in Index Medical College and to identify common reasons for use and potential correlates to inform college health policy and student support services.

METHODOLOGY

The present investigation was carried out as a cross-sectional, questionnaire-based study conducted among medical students of Index Medical College, Indore. Both undergraduate students from all years of the MBBS course, including interns, and postgraduate residents from different clinical and preclinical departments were approached for participation. The study was undertaken during a defined period, and all students enrolled in the institution during this time were eligible to participate. Before commencement, the protocol was submitted to and approved by the Institutional Ethics Committee of Index Medical College. Participation was voluntary, and all participants provided written informed consent after being informed about the objectives of the study, the procedures involved, and the assurance of anonymity and confidentiality. The survey was strictly anonymous, and no identifying details such as names or roll numbers were collected to encourage honest disclosure.

Inclusion criteria comprised all currently enrolled undergraduate and postgraduate students who were present during the study period and consented to participate. Students who declined consent, those absent on the days of data collection, and questionnaires with more than 20% missing responses were excluded from analysis. The sample size was calculated based on an assumed prevalence of substance use of 40% from earlier studies among medical students in India, with a 95% confidence level and 5% absolute precision. Using the formula for cross-sectional prevalence studies, the minimum required sample size was estimated at approximately 369. To account for potential non-response, the target sample size was set at 400 students, ensuring adequate statistical power for subgroup analysis.

Recruitment followed a stratified approach to ensure representation of different batches of undergraduates and postgraduates. Data collection was undertaken during scheduled class hours, clinical postings, and hostel visits. A structured, pretested questionnaire was distributed in paper form, and students were instructed to complete it independently without discussing responses with peers. The questionnaire, adapted from validated substance use surveys and reviewed by subject experts, was composed in English, the medium of instruction at the college. It covered socio-demographic details including age, gender, year of study, and hostel residence, as well as information on substance use. Key variables included lifetime use and current use, defined as use of any substance in the past six months. Types of substances covered were alcohol, smoked and smokeless forms of tobacco, cannabis, prescription sedatives or anxiolytics without medical supervision, and other illicit or inhalant substances. Students were also asked about frequency, reasons for initiation, perceived consequences, and contextual factors such as peer pressure and stress.

Completed questionnaires were collected immediately to minimize loss of data. Responses were coded and entered into Microsoft Excel before being analyzed using SPSS software. Descriptive statistics, including means with standard deviations for continuous variables and frequencies with percentages for categorical variables, were calculated. Prevalence rates for lifetime and current substance use were estimated with 95% confidence intervals. Bivariate analysis using chi-square tests was applied to examine associations between substance use and categorical variables such as gender, year of study, and hostel residence. To control for confounding, multivariable logistic regression was performed to identify independent predictors of current substance use. Results were considered statistically significant at a p-value <0.05.

RESULTS

A total of 400 medical students participated in the study, comprising 300 undergraduates and 100 postgraduate residents. The overall mean age of the study population was 22.8 years with a standard deviation of 3.6 years, reflecting the inclusion of both younger undergraduate students and older postgraduate trainees. Among the participants, 240 (60.0%) were male and 160 (40.0%) were female. Table 1 summarizes the demographic profile of the respondents. The gender distribution reflected the typical enrollment patterns in medical colleges in central India, with a male predominance. The undergraduate group accounted for three-fourths of the sample, ensuring adequate representation from all MBBS years and interns, while the postgraduate residents contributed one-fourth of the sample.

The overall prevalence of current substance use, defined as use within the past six months, was 36.0% (144 out of 400 students). Lifetime use of any substance, which included those who had ever experimented with or consumed substances at least once, was reported by 176 participants (44.0%). These findings are summarized in Table 2. The prevalence among undergraduates was lower compared to postgraduate residents, but the difference was more pronounced when analyzed by year of study. Substance use increased progressively with advancement in training years, with the highest prevalence observed among interns and postgraduate students.

When patterns of substance use were analyzed among the 144 current users, alcohol was the most frequently consumed substance, reported by 101 participants (47.2% of users). This was followed by smoked tobacco in 57 students (26.6%), chewable tobacco in 20 students (9.3%), cannabis in 17 students (7.9%), and prescription sedatives in 7 students (3.3%). A small proportion (12 students, 5.6%) reported the use of other substances including inhalants and unspecified illicit drugs. These details are presented in Table 3. Graph 2 illustrates this distribution as a pie chart, highlighting alcohol as the dominant substance, followed by tobacco in both smoked and chewable forms, with relatively smaller contributions from cannabis, sedatives, and other substances.

Prevalence varied by academic year as shown in Table 4 and depicted in Graph 1. Among first-year students, 12 out of 60 reported current use (20%), while in second-year students, the figure rose to 18 out of 60 (30%). The third and fourth years reported 34/60 (56.7%) and 40/60 (66.7%) respectively. Interns exhibited the highest prevalence among undergraduates with 56 out of 60 (93.3%). Postgraduates also showed a high prevalence, with 84 out of 100 (84%). Graph 1, a bar chart, vividly demonstrates this increasing trend, with a steep rise from the early preclinical years to the final years, interns, and postgraduate residents.

Gender differences were also observed. Male students consistently reported higher prevalence of substance use compared to female students. Although not all differences reached statistical significance, the overall trend supported the finding that males were more likely to engage in substance use than their female counterparts. Additionally, hostel residence and peer pressure were frequently cited as contributing factors, though their statistical significance was less consistent.

Table 1:- Demographic characteristics

Characteristic	**n (%)**
Total participants	400 (100%)
Undergraduate students	300 (75.0%)
Postgraduate students	100 (25.0%)
Male	240 (60.0%)
Female	160 (40.0%)
Mean age (years, SD)	22.8 (3.6)

Table 2:- Substance abuse

Measure	**n (%)**
Current substance use (past 6 months)	144 (36.0%)
Ever used any substance	176 (44.0%)

Table 3:- Percent and form of substance abuse

Substance	**n (of users)**	**Percent of users (%)**
Alcohol	101	47.2%
Tobacco (smoked)	57	26.6%
Tobacco (chewable)	20	9.3%
Cannabis	17	7.9%
Prescription sedatives	7	3.3%
Other (inhalants/illicit)	12	5.6%

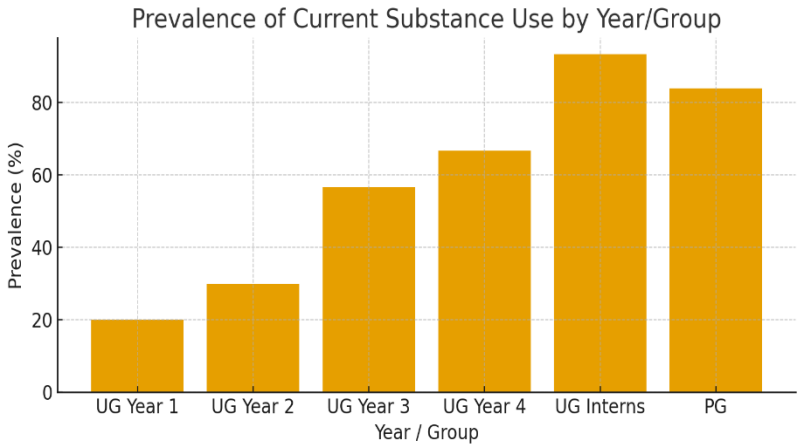

Fig 1:-Prevalence of current substance use by year/group (UG Year 1 to PG).

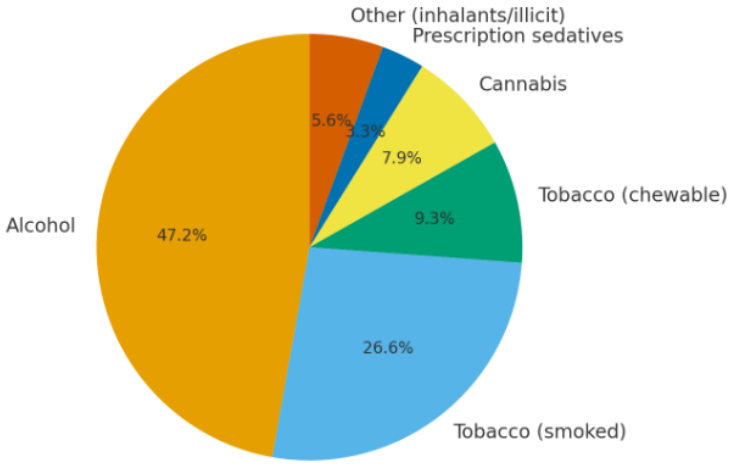

Fig 2:- Distribution of substances among current users (n=144).

DISCUSSION

The present study highlights the considerable prevalence of substance use among medical students at Index Medical College, Indore, with more than one-third of participants reporting current use within the past six months and nearly half acknowledging lifetime use. These findings indicate that substance use is not an isolated phenomenon but a significant behavioral pattern among future healthcare professionals. Alcohol emerged as the most commonly used substance, followed by tobacco in smoked and chewable forms, while cannabis, prescription sedatives, and other substances contributed smaller yet important proportions. Such patterns are consistent with earlier research in India and abroad, emphasizing the prominence of alcohol and tobacco in medical student populations while also raising concern about emerging trends of cannabis and psychotropic medication misuse.[10,11]

The increasing prevalence with advancing years of study is particularly noteworthy. Substance use was lower in the first and second years but rose sharply among students in clinical years, reaching its peak among interns and postgraduate trainees. This trend mirrors reports from other Indian institutions and international studies where the transition to clinical responsibilities, longer working hours, academic pressures, and greater social independence contribute to higher vulnerability.[12] The steep rise among interns and residents underscores the role of professional stress, exposure to hospital environments, and peer networks that may normalize consumption. Comparable studies in India have also documented such progressive increases, suggesting a pattern that may be intrinsic to the structure of medical education and training.[13,14]

Gender differences observed in this study, with higher prevalence among males, align with the majority of literature on the subject. Socio-cultural norms in India often discourage substance use among women, which may contribute both to lower actual prevalence and to under-reporting due to stigma. Nonetheless, some recent studies indicate a narrowing gender gap, particularly in urban centers, suggesting that female students may also be at risk, though their patterns may differ.[15] It is important for interventions to recognize gender-specific contexts, as stigma may prevent women from seeking help even when they experience harmful consequences.

The reasons cited for substance use in this study, including peer pressure, academic stress, and curiosity, are consistent with findings across multiple settings. Peer influence has been repeatedly shown to be a major driver, as substance use is often initiated in social contexts. Academic stress, a common feature of medical training, has been associated with maladaptive coping strategies such as alcohol and tobacco use. Curiosity, particularly among younger students, also plays a role in experimentation, which may progress to regular use over time.[16,17] These motivational factors suggest that interventions must address not only knowledge gaps but also the psychosocial environment in which students make decisions about substance use.

The consequences of substance use among medical students extend beyond personal health. Regular consumption has been linked to absenteeism, poor academic performance, sleep disturbances, and interpersonal difficulties. In addition, substance use may impair clinical performance, judgment, and patient care, raising ethical concerns for professional conduct.[18] International studies have raised alarms about the long-term impact of student substance use on professional life, with higher risk of later substance dependence, burnout, and professional misconduct.[19] These implications reinforce the urgency of addressing the issue during training, before patterns become entrenched.

The present findings are broadly consistent with a systematic review of Indian medical students that reported an overall prevalence of about 40%, with alcohol and tobacco as the predominant substances.[20] Other studies have found similar associations with male gender, hostel residence, and higher years of study. Some contrasting results exist, particularly in institutions with stricter regulations or in cultural settings where substance use is less socially acceptable, where lower prevalence has been observed.[21,22] International comparisons show comparable trends, though absolute prevalence rates vary depending on national alcohol and tobacco control policies, cultural acceptance, and accessibility of substances. For example, studies in the United States and Europe have consistently shown very high rates of alcohol use among medical students, often exceeding those observed in Indian samples, whereas tobacco and cannabis use patterns vary widely.[23]

The strengths of this study include adequate sample size, inclusion of both undergraduate and postgraduate students, and anonymous data collection, which likely encouraged more honest responses. The stratified inclusion across different years of study provided insights into the trend across training levels. However, limitations should be acknowledged. The cross-sectional design prevents inference of causality, and self-reported data may be subject to under-reporting or recall bias, particularly for socially undesirable behaviors. The study did not include biochemical validation, such as cotinine or alcohol biomarkers, which could have strengthened reliability. Moreover, the study was confined to a single institution and results may not be generalizable to all medical colleges in India, where cultural and regional variations exist.[24,25]

Despite these limitations, the study underscores the importance of institution-based surveillance and interventions. Colleges should incorporate preventive strategies, including orientation programs that address substance misuse, confidential counseling services, stress management workshops, and peer support groups. Routine screening and referral mechanisms can identify at-risk students early, while fostering a supportive environment that balances accountability with student welfare. Faculty sensitization and curricular inclusion of substance use disorders not only enhance student awareness but also reinforce their future role as physicians in addressing these issues among patients.

CONCLUSION

The findings from Index Medical College echo the larger body of evidence demonstrating that substance use is a pressing concern among medical students. The high prevalence, particularly among senior students and male participants, the predominance of alcohol and tobacco, and the role of peer and stress-related factors all suggest that medical institutions must treat this issue as both a student welfare and a public health priority. By implementing comprehensive and confidential support systems, medical colleges can reduce the burden of substance use and ensure that future doctors maintain the health and professional standards essential to their role in society.

Declaration:
Conflicts of interests: The authors declare no conflicts of interest.
Author contribution: All authors have contributed in the manuscript.
Author funding: Nill

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