

## RESEARCH ARTICLE

# Patterns of Substance Use in First Year and Final Year Medical Students: A Cross-sectional Study

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## ABSTRACT

**Aim:** The aim of this article is to compare substance use and abuse in medical students of a tertiary care hospital involved in various undergraduate and postgraduate teaching programs.

**Materials and methods:** Using a structured epidemiological survey questionnaire for psychoactive substance use based on Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV criteria, 50 medical students in the first year and 50 medical students in the final year were compared.

**Results:** One-fourth of all students reported nonmedical substance use. The substances used were alcohol, tobacco smoking, caffeine, etc. Most frequent substance use was alcohol and tobacco smoking due to easy availability. Their use mostly began after entry into medical college. Also, it was for a longer duration in final year students.

**Conclusion:** Substance use disorders among medical students should be taken more seriously because they may influence their professional behavior. A well-planned program should be designed and implemented to train the medical students helping them develop coping skills and educating them about social, legal, and ethical impacts of substance use.

**Keywords:** Diagnostic and statistical manual of mental disorders IV, Medical, Students, Substance abuse, Substance dependence, Substance-related disorders.

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## INTRODUCTION

Substance-related disorders have become a matter of global concern because of their negative impact on an

individual's health, financial, social, and professional life. Medical students not only represent a young and responsible population of the society, but are pillars of health. Substance use among medical students can affect the conduct, safety, and efficiency of future doctors. Moreover, for professionals like doctors who are directly involved with human life, substance use disorders could prove disastrous. Another aspect of substance use habit is "Younger substance users are more likely to develop dependence or abuse!"<sup>1</sup>

Almost all medical students belong to the young age group with high risk-taking behavior. They can resort to substance use easily because of stress, poor coping skills, psychological distress, peer pressure, relief from fatigue/boredom, and curiosity. The medical curriculum also induces insecurity among the students because of its vastness and tough career options adding to the substance-seeking behavior.<sup>2</sup> Despite serious medicolegal and ethical ramifications, there is little research on this subject, especially from the Indian subcontinent.

In view of the seriousness of this problem, this study was undertaken to compare patterns of substance use in first and final year medical students. The phrases "Substance use disorder or disorders due to psychoactive drug use" refer to conditions arising from the abuse of alcohol and psychoactive drugs.<sup>1,3</sup> Alcohol and other substances can have varied physiological and psychological effects. In the short term, the individual may perceive these effects as quite desirable. For example, the effects are the anxiety-relieving properties of alcohol, alertness by caffeine, and the sense of well-being induced by opioids. However, prolonged and heavy usage may result in physical harm, dependency, and withdrawal problems and long-term psychological damage or social harm. The variety of substances abused is very wide, but common ones are alcohol, tobacco, stimulants (cocaine, amphetamine, and ecstasy), sedatives (Lorazepam and Alprazolam), hallucinogens (lysergic acid diethylamide, magic mushrooms), opioids, and cannabis. Experimentation with one or more drugs (polydrug abuse) is particularly common among teenagers. Some people use drugs recreationally (e.g., at weekends only). Regular use (e.g., daily) may lead to dependence (e.g., opiates) where continued use is required to prevent withdrawal symptoms. Drug users, particularly injecting drug users,

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have high morbidity and mortality rates. The key to successful intervention is to bring about change in the individual, his/her life situation or the availability of drugs; otherwise, continued drug taking is likely. Various studies have shown that medical students and physicians respond well to interventions as compared with general population.<sup>4,5</sup> So, early intervention is advocated. Our study will throw some light on the relatively new area of knowledge concerning substance use by medical students.

## MATERIALS AND METHODS

A cross-sectional study was carried out at a tertiary care center with undergraduate and postgraduate teaching programs in all major disciplines. Following clearance from the Institutional Ethics Committee, the students were informed about the purpose of the study and also assured that their responses would be kept confidential. Randomly selected 50 medical students from first year and 50 medical students from final year were recruited in the study after due informed consent procedure. All consenting medical students were requested to respond to a structured self-report questionnaire based on DSM IV criteria for substance use. Data were analyzed using

Statistical Package for the Social Sciences version 11.0 software. Frequency tables were generated and relevant cross-tabulations made. Means were compared using Student's t-test, while proportions were compared using chi-squared test.

## OBSERVATIONS AND RESULTS

Overall, 25 (25%) students admitted to using substance as per DSM IV criteria. Substance use was significantly ( $p = 0.002$ ) higher in final year students ( $n = 19, 38\%$ ) than in first year students ( $n = 6, 12\%$ ). Substance pattern did not differ significantly with respect to gender within medical students ( $p = 0.49$ ) (Table 1).

Alcohol consumption and cigarette tobacco smoking alone or in combination were found to be most commonly used substances. There were 17 alcohol users in final year compared with 2 in first year ( $p = 0.003$ ), and 13 final year students smoked compared with 4 smokers in first year ( $p = 0.033$ ). Other substances used were tobacco, caffeine, cannabis, and benzodiazepines and were found to be more frequent in the final year (Table 2).

**Table 1:** Demographic characteristics

Medical student	First year	Final year
N	50	50
Male:female	28:22	26:24
Mean age (years)	18.64	22.02
Substance use (%)	6 (12%)	19 (38%)

**Table 2:** Types of substance use

Medical student	First year	Final year	p-value
Alcohol	2	17	0.003
Smoking	8	13	0.033
Tobacco chewing	2	1	0.02
Caffeine	0	1	0.02
Cannabis	0	2	0.49
Benzodiazepines	1	2	1.00

**Table 3:** Chronology of substance use

When started	First year	Final year	p-value
Before MBBS	6	3	0.48
First year MBBS	0	7	0.01
Second year MBBS	0	9	0.002
Final year MBBS	0	0	0

Out of 19 final year students using substances, 3 were using substance before entering medical college while all 6 users of first year started before admission to the college. Majority of the students started using substance either in the first year (7/19) or during second year of Bachelor of Medicine, Bachelor of Surgery (MBBS; 9/19) (Table 3). Among all the students including both first and final year medical students approximately 50% agreed to have a family history of substance use. This is probably one of the predictive factors in substance use.

Considering multiple factors that play a role in psychoactive substance use and multiple responses, the commonly cited reasons for substance use were peer pressure, exam stress, flamboyancy, boredom, and home sickness. Also the reasons stated by few students were financial stress, anxiety of curriculum, failures, and personal problems. The difference in reasons cited above for substance use in the final year and first year was not found to be statistically significant, limited by small sample size. But 6 out of 19 final year students agreed that the substance use progressed with time during the medical course ( $p = 0.03$ ). According to DSM IV criteria of Drug Abuse and Drug Dependence, we found that 5 students out of 19 in the final year and 4 out of 6 in the first year were drug abusers ( $p = 1.00$ ). Drug dependence was significantly higher with 11 out of 19 students in the final year than 2 out of 6 students in the first year ( $p = 0.02$ ). Both duration and frequency of substance use were considerably higher in final year students than first year students (Table 4).

## DISCUSSION

According to the World Health Report 2002, psychoactive substance use poses a significant threat to the health, social, and economic fabric of families, communities, and nations. The extent of worldwide psychoactive substance use is estimated at 2 billion alcohol users, 1.3 billion smokers, and 185 million drug users.<sup>6</sup>

**Table 4:** Reasons cited for substance use

Reasons	First year	Final year	p-value
Peer pressure	5	8	0.55
Anxiety	0	3	0.24
Financial stress	0	2	1.00
Exam stress	2	8	0.09
Failures	0	3	0.24
Homesickness	0	4	0.11
Boredom	1	7	0.06
Fatigue	1	2	1.00
Flamboyancy	5	9	0.38
Others	0	3	0.24

Overall prevalence of substance use in medical students was 25% in this study, higher than the general population of similar age group.<sup>7-13</sup> Substance use in final year medical students was significantly higher compared with first year medical students. Similar prevalence rates of between 20 and 50% were observed in similar studies conducted elsewhere.<sup>4,5,14-19</sup> Alcohol and tobacco smoking were found to be the most commonly used substances in our sample population, probably as these substances are easily available with negligible legal hindrances. Similar findings were seen in other studies conducted elsewhere.<sup>5,14-16,19</sup> All the substance users in the first year admitted that they started substance use before the admission to the medical college, but they also stated that the use started around higher secondary and premedical examinations. These exams are part and parcel of stress related to medical admission. Majority of the substance users in the final year admitted that they started using substances either in the first year or during medical education. This suggests that there can be various common factors playing a crucial role in development of substance-seeking behavior and the current medical education system. Also, few students of the final year admitted that their substance use progressed during their tenure in medical college.<sup>16,17</sup> Among the reasons sought for substance use are peer pressure, exam stress, flamboyancy, boredom (i.e., for enjoyment), and homesickness. The minor reasons include dire financial stress, anxiety of curriculum, failures, and personal problems. As seen in our study and some other studies that were discussed earlier, medical students have higher risk of adopting substance use habits and are more liable for its abuse and dependence.<sup>4,15,19</sup> Various studies showed that substance use is less when students know peers well as they are able to see the impact of substance use in them.<sup>9,20</sup> Though the statistical difference found was not significant ( $p = 0.12$ ), family history of substance use was a predictive factor in all the substance users and it conformed with the available literature.<sup>13-17,20</sup> Substance dependence was comparatively higher in final year students than fresh entrants

( $p = 0.02$ ). Younger medical students were mostly substance abusers, although not dependent. This reflects that the substance use during medical education goes through phases of use, then abuse, and then dependence. Our study was not able to aptly explain the possible reasons and factors playing a role in patterns of substance use seen in medical students as there is no single answer for substance use. This study was a cross-sectional study and limited by a small sample size. A longitudinal and more complex study is required to go into details to find the various socioeconomic, biological, demographical, geographical, and environmental factors playing a role in substance use by medical students.

## CONCLUSION

Based on the findings of our study, we conclude that the substance use is higher in medical students than the general population, data of similar age groups being made available from a World Health Organization Health report.<sup>6,7</sup> The most frequent substances used were alcohol and tobacco smoking due to easy availability. Substance use was more frequent and for a longer duration in the final year medical students. Drug dependence is significantly higher in the final year compared with new entrants. Some of the commonly cited reasons playing a role were exam stress, boredom, peer pressure, flamboyancy, and few others including financial stress, personal problems, anxiety, and fatigue. Family history of substance use was found to be of predictive value. Our study was limited by small sample size, warranting the need of a large prospective study to evaluate multifactorial etiologies of substance use in medical students.

## CLINICAL SIGNIFICANCE

It is important to prevent and diagnose early substance use in young budding doctors. A well-planned program should be designed and implemented to train medical students helping them develop coping skills, educating them about social, legal, and ethical impacts of substance use. Proper diagnostic and referral units should be setup in medical schools to manage the substance use disorders. Steps should be taken to reduce or prevent the factors in medical education responsible for substance use and also social factors should be taken care of simultaneously.

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