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Original Research Article

A study to assess the prevalence of substance abuse and its impact among medical students in a medical college

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ABSTRACT

Background: Psychoactive drug is an emerging global problem. This is a disturbing matter, especially in the case of medical students, affecting their health and academic performance, which in turn affects the health outcomes of patients. The objectives of our study were to assess the prevalence and impact of substance abuse among medical students.
Methods: This was cross-sectional study conducted in tertiary care center. A pretested semi structured questionnaire was used to collect the data. Medical students who were available during the study period and who were willing to participate were included in the study. A total of 301 students were interviewed. Data was entered and analysed in SPPSS version 22.0. Descriptive statistics and inferential statistics were used for the statistical analysis.
Results: We had a total of 301 responders. Among them, only 70(23.3%) have been a subject to substance abuse. Alcohol was the most abused substance (19.3%). The most common reason for starting these substances was out of curiosity (15.6%). 24.6% of the students have either thought of or tried stopping, however majority of them have not. Out of these students, 10 (3.3%) have experienced withdrawal symptoms.
Conclusions: The substance abuse among youngsters in medical colleges is a highly alarming situation. Proper counselling with planned policies should be implemented to root out this evil among the future doctors which will help in providing better health care services to the people.

Keywords: Alcohol, Anxiety, Smoking, Substance abuse

INTRODUCTION

Psychoactive drug is an emerging worrisome global problem. Psychoactive drugs are substances that, when taken in or administered into one's system, affect mental processes, e.g., perception, consciousness, cognition, or mood and emotions. The use of psychoactive drugs without medical supervision is associated with significant health risks and can lead to the development of drug use disorders. Drug use disorders, particularly when untreated, increase morbidity and mortality risks for individuals, can trigger substantial suffering and lead to impairment in personal, family, social, educational, occupational or other important areas of functioning.[1]

From traditional plant-based drugs such as cannabis, cocaine, and heroin to synthetic drugs such as tramadol, consumption of narcotic substances in India has increased manifold in recent years. In terms of users, India's illicit drug markets are mostly dominated by cannabis and opioids. The use of illegal cannabis in India is lower than the global average. However, opioid use is three times higher here.[2]

Some drug users, fewer in number, take the inhalational route for psychoactive drugs. Inhalants are the only drug category prevalent among children. Some 1.17 per cent of children consume inhalants, compared to 0.58 per cent of adults.[2]

Another drug category, hallucinogens, is used in limited circles. According to the AIIMS report, India has nearly 12.6 lakh users in this category.[2]

Consumption of illicit substances is worldwide problem, and its incidence is increasing among college students. Research shows the estimated prevalence rate of substance abuse among students is around 20 to 40 percent worldwide.[3]

Medical school life is an important transition period of life where students may start to consume alcohol, tobacco, and other substances. Medical students have a constant burden of academic and clinical activities and have easy access to drugs that might influence the students to misuse the substances. The consumption of substances such as alcohol, tobacco, cannabis, benzodiazepines, cocaine and opioids is a common practice among the medical students and their use might reduce their educational and clinical performances and also their judgments. Moreover, the negative impact on their academic and clinical performance affects the health outcomes of patients. Hence, the lifestyle and behavior of medical students need to be studied carefully.[4]

The effect of substance abuse is highest on the psychological health of college students with the possibility of developing substance use disorder, leading to major behavior changes observed, including mood disorders, anxiety, etc. and leads to long lasting effects like cancers. Other consequences like bad social behaviors and criminal activities are also increasing.[5]

Also, in students who develop significant levels of dependence, withdrawal is often an inevitable response to the sudden absence or declining blood concentration of a given substance. This can result in temporary disruptions in brain chemistry and may be accompanied by significant mental and physical health repercussions.[6]

This research was intended to determine the prevalence and asses impact of psychoactive drug use among medical students in a medical college in India.

METHODS

Study period

This cross-sectional study was conducted over a period of one year from October 2022 to September 2023.

Study design

This was a cross-sectional study.

Sampling method

Purposive sampling technique was used in this study.

Data collection

Data was collected using semi structured, pretested questionnaire. Students who were available during the study period and who gave consent of their participation were included for the study. A total of 301 students were interviewed and the information related to socio-demography and substance abuse was collected.

The study was conducted in compliance with ethical principles for medical research involving human subjects. Invasive procedure and active interventions were not done in the study and informed verbal consent was taken. They were assured that their responses would be kept anonymous and confidentiality would be maintained.

Statistical tools

Data was entered and analyzed in SPSS version 22.0. Descriptive statistics like frequencies and percentages were calculated for categorical data while mean deviation and standard deviation were calculated for matrix data. Inferential statistics like chi-square test was used to check for the association between withdrawal symptoms and type of substance abused, quantity of alcohol and type of drug abused.

RESULTS

We had a total of 301 responders among which 197 were female and 104 were male. Majority of the responders (38.2%) were between 18 to 20 years of age. Only 12% of them were above the age of 24. Most of our responders were doing their internship (41.5%) and living in the college hostel (68.4%). 84.1% of them were single. A large chunk of them came from a monogamous family (91.75%), with happily married parents (99.7%). It was observed that 180 of the 301 responders had only one working parent (father) (Table 1).

Majority of the students/interns went for an outing once a week, while only 3% went out every day. 200 of them regularly engaged in physical activity. It was noticed that about 41.2% of the students at least skipped 1 or 2 classes in a span of 30 days. There were about 15 responders who skipped more than 7 classes in the same duration. Among these students, about 72% students have skipped class for reasons other than sickness (Table 2).

Among 301 students/interns, only 70 (23.3%) have been subject to substance abuse. Alcohol was the most abused substance (19.3%), while only 1 responder abused drugs. 4.7% of the responders have agreed to be using all forms of substance (including alcohol, tobacco and drugs). The students perceived a variety of reasons for using these substances. The most common was out of curiosity (15.6%), followed by stress (5.3%). Less than 2% of the people have started abusing substances due to peer pressure or having a mental breakdown (Table 3).

Table 1: Distribution of study subjects based on socio-demographic characteristics.

Determinants		Frequency	Percentage
Age (in years)	18 to 20	115	38.2
	20 to 22	51	16.9
	22 to 24	99	32.9
	24 or more	36	12
Gender	Female	197	65.4
	Male	104	34.6
Year of study	1st year	119	39.5
	2nd year	18	6
	3rd year	18	6
	4th year	21	7
	Internship	125	41.5
Residence	Hostel	206	68.4
	Apartment (alone)	53	17.6
	Apartment (with family)	42	14
Relationship status	Single	253	84.1
	Married	46	15.3
	Committed	2	0.7
Parent's marital status	Married	300	99.7
	Divorced	1	0.3
Family background	Monogamous	276	91.7
	Polygamous	25	8.3
Are your parents working?	Father	180	59.8
	Mother	8	2.7
	Both	113	37.5

Table 2: Distribution of study subjects based on lifestyle.

Determinants		Frequency	Percentage
How often do you go for outing?	Once a week	165	54.8
	2-3 times a week	84	27.9
	4-5 times a week	17	5.6
	Daily	9	3
	Never	26	8.6
Do you engage in any physical activity?	Yes	200	66.4
	No	101	33.6
In last 30 days, how many classes/duties did you miss?	1 to 2	124	41.2
	2 to 3	0	0
	3 to 4	74	24.6
	5 to 6	11	3.7
	7 or more	15	5
	none	77	25.6
Reason of missing class/duty	Illness	82	27.2
	Other	219	72.8

While 83 students (27.6%) had their first drink after the age of 18, about 2.3% of the responders had it as early as the age of 12. Majority of the responders take alcohol about 2 to 3 times a week (1.7%), while one of them has agreed to take alcohol every single day. Vodka (8%) was the most popular drink among the students, followed by whiskey (7.3%) and beer (5.6%). Wine and rum were the least popular with only 2% of the students drinking them. 32 of our responders drink all the above-mentioned types of alcohol. It was noticed that vast majority of the alcohol drinkers, drink about 60 ml/day (6%) (Table 4).

While asked about smoking, we found out that 80.1% of our responders have never smoked in their lives. Among the others, 15.6% (47), started smoking after the age of 18. About 3% started smoking between the ages of 15 and 18 years. 1 of them started smoking at a tender age of 12 (Table 5).

Table 3: Distribution of study subjects based on substance abuse.

Determinants		Frequency	Percentage
Any past use of substance?	Yes	70	23.3
	No	231	76.7
Type of substance	None	216	71.8
	Tobacco	12	4
	Alcohol	58	19.3
	Drugs	1	0.3
	All of the above	14	4.7
What made you try any of it?	Mental breakdown	4	1.3
	Curiosity/wanting to try	47	15.6
	Peer pressure	6	2
	Stress	16	5.3
	Not applicable	228	75.7

Table 4: Distribution of study subjects based on use of alcohol.

Determinants		Frequency	Percentage
Had alcohol the first time (age in years)	<12	7	2.3
	13-14	2	0.7
	15-16	7	2.3
	16-17	0	0
	17-18	20	6.6
	>18	83	27.6
	Never	182	60.5
How frequently you take alcohol?	Never	224	74.4
	Daily	1	0.3
	Once a week	67	22.3
	2-3 times a week	5	1.7
	4-5 times a week	4	1.3
Quantity of alcohol (ml/day)	Not Applicable	239	79.4
	30	15	5
	60	18	6
	90	14	4.7
	>90	15	5
Type of alcohol	None	194	64.5
	Beer	17	5.6
	Vodka	24	8
	Rum	6	2
	Whiskey	22	7.3
	Wine	6	2
	All of the above	32	10.6

Table 5: Distribution of study subjects based on smoking.

	Determinants	Frequency	Percentage
Smoke your first cigarette (age in years)	<12	1	0.3
	13-14	3	1
	15-16	4	1.3
	17-18	5	1.7
	>18	47	15.6
	Never	241	80.1
In last 30 days, how many cigarettes you smoked (cigarettes/week)?	1 to 2	13	4.3
	3 to 4	10	3.3
	5 to 6	0	0
	>6	20	6.6
	None	258	85.7

Table 6: Distribution of study subjects based on use of drugs.

Determinants		Frequency	Percentage
First time used drugs (age in years)	<12	2	0.6
	13 to 14	1	0.3
	15 to 16	1	0.3
	>18	25	8.3
	Never	272	90.4
How often do you take drugs?	Never	274	91
	Rarely	19	6.3
	Frequently	8	2.7
Type of drugs	None	262	87
	Marijuana	27	9
	Cocaine	1	0.3
	Ecstasy	1	0.3
	All	10	3.3
When was the last time you took any of these?	Yesterday	14	4.7
	Today	7	2.3
	Last week	16	5.3
	Last month	24	8
	Last Year	14	4.7
	Never	226	75.1

Table 7: Distribution of study subjects based on substance withdrawal.

Determinants		Frequency	Percentage
Have you ever thought of or tried stopping any of it?	Yes	74	24.6
	No	158	52.5
	Other	69	22.9
If yes, in which way you tried?	Nicotine patch	1	0.3
	Rehabilitation centre	1	0.3
	Strong will	44	14.6
	All	255	84.7
Did you experience any withdrawal symptoms?	Yes	10	3.3
	No	230	76.4
	Maybe	10	3.3
	Other	51	16.9

90.4% (272 out of 301) of the students have never tried any form of drugs. Only 4 of the rest, have started abusing drugs below the age of 18, while 8.3% of them have started as adults. Majority of these students abuse drugs rarely (6.3%), while 2.7% abuse frequently. Marijuana was the most popular drug among medical students. Cocaine and ecstasy were only used by 1 person each. However, 3.3% of the responders have agreed to abuse all the above drugs (marijuana, cocaine and ecstasy). When asked about the last time they abused any of these drugs, 7 of them had done it on that same day while majority responded saying they had done it in the past month (8%) (Table 6).

24.6% of the students have either thought of or tried stopping the different kind of substances they abuse, however majority of them have not even thought about stopping (52.5%). 44 out of 301 responders have tried stopping with their own strong will, while rehabilitation centers and nicotine patches are used by 0.3% each. 84.7% have tried all the above-mentioned ways to quit substance abuse. Out of these students, 10 (3.3%) have experienced withdrawal symptoms (Table 7).

When we studied association between alcohol use, types of drugs and types of substance abuse with withdrawal symptoms it showed statistically significant result (p value <0.01) (Tables 8-10).

Table 8: Distribution of study subjects based on association between alcohol use and withdrawal symptoms.

		Did you experience any withdrawal symptoms?				Chi square	P value
		Yes	No	Maybe	Other		
Quantity of alcohol	Not applicable	5	180	3	51	55.25	<.001
	30 ml/day	0	14	1	0		
	60 ml/day	1	16	1	0		
	90 ml/day	2	11	1	0		
	>90 ml/day	2	9	4	0		

Table 9: Distribution of study subjects based on association between type of substance use and withdrawal symptoms.

		Did you experience any withdrawal symptoms?				Chi Square	P value
		Yes	No	Maybe	Other		
Type of substance	None	2	159	5	50	61.25	<0.001
	Tobacco	4	7	1	0		
	Alcohol	3	50	4	1		
	All	1	13	0	0		
	Drugs	0	1	0	0		

Table 10: Distribution of study subjects based on association between type of drug use and withdrawal symptoms.

		Did you experience any withdrawal symptoms?				Chi square	P value
		Yes	No	Maybe	Other		
Type of drugs	Marijuana	4	20	3	0	58.203	<0.001
	None	5	201	5	51		
	All	1	8	1	0		
	Cocaine	0	0	1	0		
	Ecstasy	0	1	0	0		

DISCUSSION

In this study, majority of the responders were female (65.4%), while only 34.6% were male. Studies have shown that male constituted 94.0%, whereas females were 6.0% out of total substance abusers.[7] Out of these students, 23.3% had use of past substance in our college. Similar results were seen in a study done by Arora et al in a college in north India, where the prevalence of substance abuse was 20.43% among medical students.[8]

Alcohol (19.3%) was the most popular substance abused among medical students in our study, followed by tobacco (4%) and then drugs (0.3%). However, in a study done by Padhy et al in three different medical colleges, cigarette (72%) was found to be the most common substance of abused followed by alcohol (68%), gutkha (24%) and drugs (23%).[9] Yet another study conducted in the state of Madhya Pradesh showed similar results with cigarettes (80.6%) being the most common substance abused with the order of preference being cigarettes (80.6%), alcohol (59.7%), cannabis (13.4%), gutkha/pan (10.4%), tobacco (7.5%), and nasal snuff (3.0%). It may be explained on the basis of a perception among medical students of cigarette being helpful to remain awake and active and to improve the attention and concentration especially during exams and lack of awareness of its potential side effects.[7]

In our college, most of the students started abusing any of these substances just out of curiosity (15.6%). 2% of them started due to peer pressure. While 5.3% and 1.3% gave stress and mental breakdown as reasons for abusing substance, respectively. Similarly, according to a study done by Padhy et al found that curiosity about the substance was the cause of initiation for about 46% substance abusers.[9] According to another study done in the northern part of India, peer influence and the perception of harm played a significant role in the decision to engage in substance use on college campuses.[8]

Most of the responders in our study were doing their internship (41.5%) and living in the college hostel (68.4%). While assessing the pattern of substance abuse in undergraduate medical students in central India, Kumar et al, found out that the risk of substance abuse increased with increase in seniority and was 22.4% substance abusers in final-I MBBS students, 25.4% in final-II MBBS and 28.3% substance abusers in interns. In the same study, risk of substance abuse was more among students who were staying in hostels (88.0%) than those who were at home (12.0%).[7] Another study by Padhy et

al showed that staying in hostel, non-satisfactory intra-familial relationship favored substance abuse.[9]

38.2% of students in our study were between the ages of 18 and 22. 27.6%, 15.6%, 8.3% started abusing alcohol, smoking and drugs, respectively, after the age of 18. However, there were a small number of students who started alcohol (2.3%), smoking (0.3%) and drugs (0.6%) before the mere age of 12. According to a study, 31.3% of medical students had started substance abuse when they were in school but 68.7% have started when they come in medical college. This showed that medical college environment favored for substance abuse.[7] Another study done by Imran et al in Lahore, found that more than a quarter of respondents also had started experimenting with these substances before the age of 15 years with almost 40% between the ages of 15-20 years.[10]

Vodka (8%) was the most popular drink among the students in our college, followed by whiskey (7.3%) and beer (5.6%). Wine and rum were the least popular with only 2% of the students drinking them. Similarly, Goel et al have showed that most preferred drink was beer.[11] However, a study conducted in Goa, showed that among undergraduate students, the most preferred beverage was wine followed closely by fruit based alcoholic beverage and beer.[12]

Marijuana was the most popular drug in our college, with 9% students consuming it in various forms. Studies have shown that in terms of users, India's illicit drug markets are mostly dominated by cannabis and opioids. In our study, 6.3% of the responders took these rarely, while 2.7% of them took them quite frequently. In another study done in central India, 52.3% of the medical students occasionally use the substance and 34.3% were habitual user.[7]

Among the substance abusers in our survey, as many as 52.5% have not even thought about quitting. These results are extremely worrisome. On the contrary, a study done in Central India has shown that out of 58 substance users, majority 67.2% had made some attempts at quitting the use of these substances.[7] We also noticed that out of all the students who actually tried to quit, 14.6% used their own strong will to quit, while both nicotine patches and rehabilitation centers were utilized by 0.3% of the people. Jagnany et al found that 45.7% students quit as they stopped enjoying, 41.3% due to ill effects on health, 26.1% due to cost and 8.7% students due to family pressure.[13]

In our study, only 3.3% among all the students abusing any form of substance experienced withdrawal symptoms. According to some studies, the most prevalent indicators of withdrawal were those that are less severe, such as inability to sleep (i.e., insomnia), anxiety, depression, and headaches.[14] However, other studies have shown that about 4-40% of patients admitted to ICU will have alcohol withdrawal symptoms (AWS). Patients who have AWS have an increased length of hospital stay and increased mortality than those who do not have AWS. The same study has shown that Opiate withdrawal is uncomfortable, but fatalities are rare. Withdrawal from cocaine and amphetamine results in sedation and a state resembling adrenergic blockade, death is rare.[15]

Since study done in only one college, results cannot be generalized.

CONCLUSION

The substance abuse is becoming highly prevalent among youngsters in medical colleges, which is a highly alarming situation, as they are not just putting their health into danger but also their future patients. In our college, there were less than a quarter of the students who indulged in abusing any form of substance. However, among these substance abusers, more than half have not even thought about quitting. Efforts need to be directed to increase awareness about the dangers of drug abuse on their physical and mental health and to make students realize that experimental use of drugs may lead to abuse and dependence.

Recommendations

Proper counseling with well-planned policies should be implemented to root out the evil of substance abuse among the future doctors which will help in providing better health care services to the people. Intensive search for abusers should be carried out regularly to trace all students abusing one or more substances. Education can help students make informed choices about their behavior by providing them with information about the dangers of substance abuse and the signs and symptoms of addiction.

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