

Substance use and misuse among college students: Results of an online survey from three neighboring cities of North India

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ABSTRACT

We estimated prevalence and severity of substance use in college students from three cities in North India and explored demographic correlates of substance use. This was a cross-sectional online survey. We used Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST). We contacted respondents through social groups. We performed analyses from the original sample, bootstrapped samples, and random subsamples. A total of 229 (58.3%) respondents reported any lifetime substance use. A third of substance-using respondents were female. Alcohol (54.7%), tobacco (40.2%), and cannabis (15%) use were most commonly reported. Prevalence estimates did not differ between original and subsample analyses. A significant proportion of respondents (alcohol 29.7% and amphetamines 66.7%) were at moderate risk level. Male gender, family history of substance use, and commerce stream correlated with substance use. There were positive correlations between tobacco and alcohol and licit and illicit substance use. The study highlights the need for a comprehensive college substance misuse prevention policy.

Key words: College, India, online survey, substance use

INTRODUCTION

Substance use has negative health, social, and economic consequences. Globally, more than 5% of the total disability-adjusted life years are attributed to substance use.^[1] College students are at a critical stage of brain development and have a biological and psychosocial vulnerability to drug use. Peer influence, low-risk perception, and coping with the stress of difficult transitions may influence the risk of drug use among college students.^[2] They may have a riskier

pattern of substance use and are more likely to encounter harmful consequences.^[3] Substance use in college is associated with poor academic performance, violence, and cognitive problems.^[4] The United States and Europe conduct periodic surveys to determine the prevalence of drug use in educational settings.^[5,6] Substance use is the most widespread health concern in US colleges.^[3] Similar reports are seen from European countries.^[7]

The per-capita alcohol consumption has been on the rise in Southeast Asia, especially in India. The prevalence of current drinking is nearly 1.5 times higher in 15- to 19-year-old Indian than in the overall population (15+ years).^[8] India is a young country, and the median age of its population

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is 28 years. More than 60 percent of the Indians fall within the working-age population. The economic potential of this demographic dividend may be negatively impacted by substance use.^[9] In spite of the huge burden and its potential adverse consequences, the availability of substance use-related data among Indian college students is limited. The nationwide household survey is unlikely to inform us of the magnitude of illicit drug use in college students, owing to the stigma and criminalization of drug use in the country.

Through an online survey, we estimated the prevalence and severity of substance use in college students from three neighboring cities in North India. We also examined the demographic correlates of substance use.

METHODOLOGY

Design

This was a cross-sectional online survey of college students. We aimed to estimate the lifetime and current prevalence of substance use (tobacco, alcohol, cannabis, cocaine, opioids, stimulants, sedative–hypnotics, and inhalants). We also assessed the severity of substance use and demographic correlates of substance use.

IRB approval

The study was approved by the Institutional Ethics Committee. The first page of the online survey explained the purpose of the survey, approximate duration to complete the questionnaire, anonymity, and confidentiality of the data, and the name and designation of the investigators. We did not collect any personal identification data (e.g., name, contact numbers, and address).

Development and pretesting

The online survey was hosted on a Google Form. It comprised study information, consent, participants' sociodemographic details (age, sex, education stream, and course, family history of substance use, family income, locality of residence), and Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST).^[10] ASSIST was used to screen and measure the severity of substance use. The self-administered ASSIST has been validated in primary care and among college students.^[11,12] Students aged 18–24 years, studying in any of the included colleges, and capable of reading English were eligible. All data were collected between May 2021 and August 2021. Before the actual data collection, a pilot study was carried out to understand the overall comprehension of the consent and questionnaires. We added local names of substances (e.g., *Bhukki*, *Afeem* in opioids category, *Charas*, and *Ganja* in cannabis) as suggested by the pilot study participants.

Recruitment

The study target was the college students of three neighboring cities from three different states in Northern

India. We approached seven colleges selected by cluster randomization. However, only one of these colleges granted permission to conduct the online survey. Hence, we were forced to do a non-probability sampling. Respondents were contacted through three different channels:

1. Form was circulated to approximately 900 students of one of the large government colleges that granted permission.
2. Form was circulated to one of the investigator's (NJ) contacts and was further circulated by these contacts among individuals who satisfy the inclusion criteria.
3. Form was circulated in specific WhatsApp groups of college students in the study area.

Overall, approximately 1500 people received the form of whom 393 (26.2%) completed the whole survey. The number was calculated from the sizes of the WhatsApp groups and the number of emails/text/WhatsApp messages sent. The response rate was calculated by dividing the number of responses with the number of people who received the electronic form.

The form was not advertised, nor was it made available as an open link on any social media platform. The link was sent individually via email or WhatsApp. We set a single response limit to the Google Form, to minimize duplicate responses.

No incentives were offered, and the response was voluntary. Adaptive questions were added so that if any respondent denied any substance use ever in their lifetime, they could complete the survey without going through the severity rating.

Analysis

We performed bootstrapping of 1000 random samples with replacement of the observations, to estimate the confidence interval (CI) for the prevalence of substance use. Bootstrapping could also address some concerns of non-probability sampling. We also selected a subsample of one-third (139) of the total sample by simple randomization and estimated the prevalence of substance use in that subsample. Further, bootstrapping was carried out for this subsample. The associations between substance use and severity and demographic characteristics were measured by the Chi-square test in the original and bootstrapped samples. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 23.^[13]

RESULTS

The mean age of the respondents was 22.7 years (± 1.6 , range = 18–24). Forty-five percent were female students, 67.7% were studying in an undergraduate course, 61.6% were pursuing a science stream, 73.3% were urban residents, and 63.9% had an annual family income of more than 3 lakhs.

A total of 229 (58.3%, 95% CI 52.9-62.8) respondents reported any substance use in their lifetime. The majority reported the use of 1–2 substances in the lifetime [$n = 72$ (18.3%) for 1; $n = 73$ (18.5%) for 2]. Alcohol (54.7%) and tobacco (40.2%) were the most common substance. Lifetime use of cannabis was reported by nearly 15% (95% CI 11.5-18.3) of students. It was followed by inhalants (12.7%) and cocaine (9.1%). Although two-thirds of the respondents with any substance use were men, sedative use was more common in women (52.1%). Women formed a substantial minority for other substances (ranging from 22.5% for lifetime cannabis use to 41.7% for amphetamine-like stimulants). The current use patterns were similar to the lifetime use for all substances. We observed a strong positive correlation between tobacco and alcohol use (Pearson's $r = 0.66$, $P < 0.001$) and a modest positive correlation between any licit substance and illicit substance use (Pearson's $r = 0.48$, $P < 0.001$). The observed prevalence of lifetime and current use of all substances fell within the 95% CI of the bootstrapped sample and subsample. The prevalence estimated from the random subsample also was similar to that of the original sample [see Table 1].

A significant proportion of respondents fell in the moderate-risk category for substance use. For amphetamines (66.7%), tobacco (62.1%), and sedatives (58.9%), more respondents were at moderate than low risk.

Male students reported higher ($P < .001$) lifetime and current prevalence of any substance use and the severity of the substance use. Respondents pursuing commerce stream reported to have higher lifetime use of cocaine [χ^2 (3, $N = 393$) = 11.71, $P = 0.01$], amphetamines [χ^2 (3, $N = 393$) = 18.49, $P < 0.001$], sedatives [χ^2 (3, $N = 393$) = 9.8, $P = 0.02$], and hallucinogens [χ^2 (3, $N = 393$) = 8.6, $P = 0.03$], when compared to science, arts or, other streams. A total of 134 (34%) respondents reported substance use among at least one of their family members. Students reporting substance use among family members had a higher frequency of lifetime ($P < 0.001$) and current substance use ($P < 0.001$) and higher ASSIST risk scores for all the substances ($P = 0.001$). We did not observe associations between substance use and age, family income, and residence (urban vs. rural).

DISCUSSION

Substance use is common among third-level college students. More than half of our survey respondents reported lifetime use of any substances. Alcohol and tobacco were the most commonly reported substances. This is not surprising given the easy availability and access and reflects trends of substance use in the general population.^[14] However, the minimum legal age for purchasing and consuming alcoholic beverages is 25 years in these three states, and our study

population was between 18 and 24 years. This fact points toward a need for stricter enforcement of laws. Previous studies among college students in Punjab and Kerala reported less prevalent alcohol use—current and lifetime use in nearly 30% and 20%, respectively.^[15,16] These studies were older and had different methodologies. Nevertheless, the converging evidence suggests high rates of alcohol use, possible increasing trends, and variability across states.

Among the illicit substances, cannabis and inhalants use were most commonly reported; however, the use of cocaine, amphetamines, hallucinogens, and sedatives was more than that was expected based on the recently conducted national household survey.^[14] Household surveys might not be ideal to estimate the prevalence of drug use because of the stigma and criminalization against people who use these drugs, and consequent possibilities of under-reporting. Anonymous online surveys might be an alternative.

Alcohol and tobacco co-use was common; licit substance use was associated with the consumption of illicit substances. Although we did not examine the sequence of substance initiation, we can assume the use of illicit substances might have been preceded by licit substance use. This has a preventive implication.

Significant proportions of respondents were at moderate risk for their substance use and might need brief intervention and referral to treatment. The high prevalence of overall and at-risk substance use among college students highlights the need for a comprehensive college substance misuse prevention policy that encompasses the involvement of teachers, peers, and families of college students, preventive interventions, campus-based interventions for mental health promotion, and provision of referral to treatment.^[17]

Although substance use was more common among men, a significant proportion of female students reported substance use, especially sedative use. Higher substance use among women might represent the changing sociocultural scenario in India. However, in India, substance use in women is more stigmatized (than men). The treatment gap is larger because of limited availability and access to gender-sensitive treatment.^[18]

It was difficult to obtain permission from the college administration. This could be because of public stigma associated with drugs and alcohol use, the fear of a breach of confidentiality, and its potential legal and social ramifications, and having unwarranted media attention. It would be difficult to conduct a random response survey through the college administration. The initial plan of probability sampling could not be implemented. To improve internal validity, we added bootstrapped samples and random subsamples. However, neither of these could substitute a random response survey or a respondent-driven

Table 1: Prevalence of various substance use in lifetime and last three months and risk category on ASSIST

Substance	Prevalence (n=393)	Bootstrapped 95% CI	Randomized sample prevalence (n=139)	Bootstrapped 95% CI for randomized sample
Any substance use (lifetime)	229 (58.3) 154 (67.2)/75 (32.8)	52.9-62.8	81 (58.3) 55 (67.9)/26 (32.1)	49.6-66.2
Male/female				
Alcohol				
Lifetime	215 (54.7)	49.4-59.5	75 (54.0)	46.2-62.6
Male/female	145 (67.4)/70 (32.6)		49 (65.4)/26 (34.6)	
Last three months	173 (44.0)	39.0-49.0	62 (44.6)	36.9-52.9
Male/female	126 (72.8)/47 (27.2)		40 (64.5)/22 (35.4)	
Low risk	151 (70.2)		50 (66.6)	
Moderate risk	64 (29.7)		18 (33.4)	
Tobacco				
Lifetime	158 (40.2)	33.3-42.7	54 (38.8)	30.5-47.6
Male/female	115 (72.7)/43 (27.3)		44 (81.4)/10 (18.6)	
Last three months	112 (28.5)	24.0-32.9	45 (32.4)	24.6-40.5
Male/female	88 (78.5)/24 (21.5)		32 (71.1)/13 (28.9)	
Low risk	60 (37.9)		21 (38.8)	
Moderate risk	98 (62.1)		26 (61.2)	
Cannabis				
Lifetime	58 (14.8)	11.5-18.3	24 (17.3)	11.7-23.6
Male/female	45 (77.5)/13 (22.5)		16 (66.6)/8 (33.4)	
Last three months	20 (5.1)	3.1-7.4	9 (6.5)	2.8-11.4
Male/female	15 (75.0)/5 (25.0)		6 (66.6)/3 (33.4)	
Low risk	36 (62.0)		15 (62.5)	
Moderate risk	22 (38.0)		9 (37.5)	
Inhalants				
Lifetime	50 (12.7)	8.7-15.0	20 (14.4)	8.7-20.8
Male/female	35 (70.0)/15 (30.0)		16 (80.0)/4 (20.0)	
Last three months	25 (6.4)	4.3-8.9	13 (9.4)	5.0-14.4
Male/female	14 (56.0)/11 (44.0)		7 (53.8)/6 (46.2)	
Low risk	30 (60.0)		13 (65.0)	
Moderate risk	20 (40.0)		7 (35.0)	
Cocaine				
Lifetime	36 (9.1)	5.3-10.9	10 (7.2)	3.1-12.0
Male/female	24 (66.6)/12 (33.4)		7 (70.0)/3 (30.0)	
Last three months	14 (3.6)	2.0-5.6	7 (5.0)	1.6-9.1
Male/female	10 (71.4)/4 (28.6)		5 (71.4)/2 (28.6)	
Low risk	22 (61.1)		6 (60.0)	
Moderate risk	14 (38.9)		4 (40.0)	
Opioids				
Lifetime	26 (6.6)	3.8-8.4	9 (6.5)	2.7-10.7
Male/female	17 (65.3)/9 (34.7)		7 (77.7)/2 (22.3)	
Last three months	8 (2.0)	0.8-3.6	4 (2.9)	0.6-5.8
Male/female	6 (75.0)/2 (25.0)		3 (75.0)/1 (25.0)	
Low risk	17 (65.3)		5 (55.5)	
Moderate risk	9 (34.7)		4 (45.5)	
Hallucinogen				
Lifetime	19 (4.8)	2.3-5.9	7 (5.0)	2.1-9.1
Male/female	11 (57.8)/8 (42.2)		4 (57.1)/3 (42.9)	
Last three months	10 (2.5)		6 (4.3)	1.4-8.1
Male/female	6 (60.0)/4 (40.0)	1.0-3.8	4 (66.6)/2 (33.4)	
Low risk	10 (52.6)		4 (57.1)	
Moderate risk	9 (47.4)		3 (42.9)	
Sedatives				
Lifetime	17 (4.3)	1.8- 5.3	5 (3.6)	0.8-7.1
Male/female	8 (47.1)/9 (52.9)		2 (40.0)/3 (60.0)	
Last three months	7 (1.8)	0.8-3.3	4 (2.9)	
Male/female	3 (42.8)/4 (57.2)		1 (25.0)/3 (75.0)	0.7-5.9
Low risk	7 (41.1)		2 (40.0)	
Moderate risk	10 (58.9)		3 (60.0)	

Contd...

Table 1: Contd...

Substance	Prevalence (n=393)	Bootstrapped 95% CI	Randomized sample prevalence (n=139)	Bootstrapped 95% CI for randomized sample
Amphetamines				
Lifetime	12 (3.3)	1.3-4.6	5 (3.6)	0.7-7.2
Male/female	7 (58.3)/5 (41.7)		3 (60.0)/2 (40.0)	
Last three months	5 (1.3)	0.3-2.6	4 (2.9)	0.6-5.8
Male/female	3 (60.0)/2 (40.0)		3 (75.0)/1 (25.0)	
Low risk	4 (33.3)		2 (40.0)	
Moderate risk	8 (66.7)		3 (60.0)	

sampling, which is especially suited for the hidden population like ours. The response rate was relatively low, and we did not have information regarding the nonresponders. Hence, sampling bias remains another major limitation of our study. The study population was from urban colleges in North India. This limits the generalizability of our results.

Future research may consider implementing online surveys through the state education departments and conducting two-stage cluster random sampling across the state(s). An online assessment would make it less expensive, and it would be possible to do a periodic review.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Degenhardt L, Charlson F, Ferrari A, Santomauro D, Erskine H, Mantilla-Herrera A, *et al.* The global burden of disease attributable to alcohol and drug use in 195 countries and territories, 1990–2016: A systematic analysis for the Global Burden of Disease Study 2016. *Lancet Psychiatr* 2018;5:987-1012.
- Welsh JW, Shentu Y, Sarvey DB. Substance use among college students. *Focus (Am Psychiatr Publ)* 2019;17:117-27.
- Schulenberg JE, Johnston LD, O'Malley PM, Bachman JG, Miech RA, Patrick ME. Monitoring the Future National Survey Results on Drug Use, 1975-2017. College Students & Adults Ages 19-55. Vol II. National Institute of Drug Abuse; 2021.
- McAlaney J, Dempsey RC, Helmer SM, Van Hal G, Bewick BM, Akvardar Y, *et al.* Negative consequences of substance use in European university students: Results from project SNIPE. *Eur Addict Res* 2021;27:75-82.
- ESPAD Group. ESPAD report 2019. Results from the European School Survey Project on Alcohol and Other Drugs. Luxembourg: EMCDDA Joint Publications, Publications Office of the European Union; 2020. p. 136.
- Johnston LD, O'Malley PM, Miech RA, Bachman JG, Schulenberg JE. Monitoring the Future National Survey Results on Drug Use, 1975-2014: Overview, Key Findings on Adolescent Drug Use. Ann Arbor, MI: Institute for Social Research, University of Michigan; 2015.
- Wicki M, Kuntsche E, Gmel G. Drinking at European universities? A review of students' alcohol use. *Addict Behav* 2010;35:913-24.
- Global Status Report on Alcohol and Health 2018. Geneva: World Health Organization; 2018. Licence: CC BY-NC-SA 3.0 IGO.
- Droogers M, Jansen D, Lindert J, Saboga-Nunes L, Rudén M, Guichardon M, *et al.* Health-related sustainable development goals: Countdown on alcohol use, smoking prevalence, child overweight and suicide mortality. *Eur J Public Health* 2020;30(Suppl 1):i10-3.
- WHO ASSIST Working Group. The alcohol, smoking and substance involvement screening test (ASSIST): Development, reliability and feasibility. *Addiction* 2002;97:1183-94.
- McNeely J, Strauss SM, Rotrosen J, Ramautar A, Gourevitch MN. Validation of an audio computer-assisted self-interview (ACASI) version of the alcohol, smoking and substance involvement screening test (ASSIST) in primary care patients. *Addiction* 2016;111:233-44.
- Tiburcio Sainz M, Rosete-Mohedano MG, Natera Rey G, Martínez Vélez NA, Carreño García S, Pérez Cisneros D. Validity and reliability of the alcohol, smoking, and substance involvement screening test (ASSIST) in university students. *Adicciones* 2016;28:19-27.
- IBM SPSS Software 23. IBM corp 2015/2022. Available from: <https://www.ibm.com/analytics/spss-statistics-software>. [Last accessed on 2022 Sep 24].
- Ambekar A, Agarwal A, Rao R, Mishra A, Khandelwal S. Magnitude of Substance Abuse in India 2019. New Delhi: Ministry of Social Justice and Empowerment, Government of India; 2019. on Behalf of the Group of Investigators for the National Survey on Extent and Pattern of Substance Use in India.
- Jaisoorya TS, Gowda GS, Nair BS, Menon PG, Rani A, Radhakrishnan KS, *et al.* Correlates of high-risk and low-risk alcohol use among college students in Kerala, India. *J Psychoactive Drugs* 2018;50:54-61.
- Khosla V, Thankappan KR, Mini GK, Sarma PS. Prevalence & predictors of alcohol use among college students in Ludhiana, Punjab, India. *Indian J Med Res* 2008;128:79-81.
- Jaisoorya TS. A case for college mental health services. *Indian J Med Res* 2021;154:661-4.
- Lal R, Deb KS, Kedia S. Substance use in women: Current status and future directions. *Indian J Psychiatry* 2015;57(Suppl 2):S275-85.