Int. J. School. Health. 2026; 13(1)

Published online 2026 January.

Original Article

The Prevalence of Alcohol and Tobacco Use Among Adolescents and Young Adults in Bengaluru, India

Shreyas Bellur[1], MBBS; Jeffrey Pradeep Raj[2*], DM; Suraj Samuel Thota[1], MBBS; Tomy K Kallarakal[3], PhD; Twinkle Agrawal[4], MD

[1]Medical Student, St. John's Medical College, Bengaluru, Karnataka - 560034, India
[2]Division of Clinical Pharmacology, Department of Pharmacology, Kasturba Medical College, Manipal, Manipal Academy of Higher Education (MAHE), Manipal, Karnataka – 576104, India
[3]School of Commerce, Finance and Accountancy, CHRIST University, Bengaluru- 560029, Karnataka, India
[4]Department of Community Health, St. John's Medical College Hospital, Bengaluru, Karnataka- 560034, India

Corresponding author:* Jeffrey Pradeep Raj, DM; Division of Clinical Pharmacology, Department of Pharmacology, Kasturba Medical College, Manipal, Manipal Academy of Higher Education (MAHE), Manipal, Karnataka – 576104, India. **Tel: +80-95464464; **Email:** jeffrey.raj@manipal.edu

Received: April 14, 2025; **Revised:** July 15, 2025; **Accepted:** December 08, 2025

Abstract

Background: Substance use can affect scholastic performance. The present study aimed to estimate the prevalence of alcohol and tobacco use and associated outcomes of their use among adolescents and young adults.
Methods: We carried out a cross-sectional study in Bengaluru, India, over the period of September 2017 to September 2021. The study participants included students enrolled in pre-university courses, undergraduate colleges, and higher secondary classes (11th and 12th grades). Upon obtaining consent/assent, the study participants completed a pre-tested semi-structured questionnaire covering basic demographics and history of alcohol and tobacco use and their associated characteristics. Data were summarized using frequencies, medians (IQR), and proportions with 95% CI; sex-wise differences were assessed using Chi-square test and odds ratios, with a significance level set at P<0.05.
Results: A total number of 4093 students participated in the study including 54.41% (n=2227) male and 45.59% (n=1866) female students. Lifetime alcohol use was reported by 33.33% (95% CI: 31.88–34.79; n=1364) and tobacco use by 17.84% (95% CI: 16.67–19.04; n=730) of the study participants. Curiosity was the most commonly reported reason for initiating alcohol (55.2%) and tobacco use (48.8%). Among alcohol consumers, 12.4% reported having sought help to quit, with no significant sex-wise difference (OR 1.234; 95% CI 0.886–1.719; P=0.213). In contrast, 34.2% of tobacco users reported having sought help to quit, which was significantly more common in men than women (OR 1.483; 95% CI 1.080–2.037; P=0.015).
Conclusions: Alcohol and tobacco use appeared more common in Indian adolescents in our study compared with previously reported rates in the country's general population. Therefore, appropriate interventions should be planned in early school/college days by the concerned authorities.

Keywords: Good Health and Well-being, Adolescent Health, Alcohol Drinking, Tobacco Use, Health Promotion

How to Cite: Bellur S, Raj JP, Thota SS, Kallarakal TK, Agrawal T. The Prevalence of Alcohol and Tobacco Use Among Adolescents and Young Adults in Bengaluru, India. Int. J. School. Health. 2026;13(1):2-10. doi: 10.30476/intjsh.2025.106651.1511.

1. Introduction

Substance abuse and dependence serves as a major public health concern worldwide. The two most used substances are nicotine and alcohol. Other substances, though less frequently misused, comprise cannabinoids, opioids, hallucinogens, as well as central nervous system (CNS) depressants and stimulants (1). It was reported in 2017 that at least 44 million Americans admitted using illicit substances (1). This scenario is no different in India. The prevalence of alcohol use in the nation was 14.6% in 2017-2018 with a male preponderance. The prevalence of alcohol abuse was estimated to be at 5.2% and that of dependence at 2.7% (2). Tobacco use was estimated to be at 7.9% nationwide (3).

According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), a substance use disorder is diagnosed when an individual meets at least two out of several criteria, which include hazardous consumption, interpersonal or social difficulties linked to use, neglect of major responsibilities, development of tolerance or withdrawal, consuming larger amounts or for longer than intended, unsuccessful attempts to cut down, spending excessive time on obtaining or using the substance, experiencing physical or psychological harm due to use, and giving up important activities in favor of substance use (4). Despite the increasing evidence on the debilitating effects of alcohol abuse, alcohol even to this day remains, the poison of choice

in India (2). Blood alcohol concentration (BAC) effects are dose dependent. At lower BACs (up to ~0.05%), individuals may experience relaxation, talkativeness, and mild mood elevation with decreased inhibition, while higher concentrations are associated with increasingly severe central nervous system depression; BACs above approximately 0.40% can lead to respiratory depression, coma, and even death (5). The long-term effects of alcohol abuse include cardiovascular diseases, (stroke, myocardial infarction, cardiac rhythm abnormalities and likewise), cirrhosis of the liver, epilepsy, polyneuropathy, Korsakoff's psychosis, peptic ulcers, and sexual dysfunction (6). Cigarette smoking remains a widely adopted means of stress relief, particularly among young adults, and its use is increasingly extending to both adolescents and older age groups. It is recognized as the foremost preventable cause of mortality in the United States, (7) while India accounts for nearly one-sixth of tobacco-related deaths worldwide (8). Notably, India ranks second globally in the consumption of tobacco, in both smoking and smokeless forms (8).

Frequent exposure of alcohol to the adolescent mind reduces the critical thinking and decision-making ability due to neuroplasticity (9, 10). Evidence also indicates that initiating heavy alcohol use at an early age can adversely affect the development of brain structures (11). All of these could therefore result in impaired academic performance among many other ill-effects. On the other hand, nicotine, although not established as a carcinogen by itself, but acts as a tumour promoter. Along with additives such as palladium, as in the cigarettes, nicotine is known to increase the risk of carcinomas such as the carcinoma of the lung (12). Accordingly, the main aim of this study was to determine the prevalence of alcohol and tobacco use, with a secondary aim of examining factors associated with their use among adolescents and young adults.

2. Methods

2.1. Study Design

We conducted a cross-sectional observational study over four years (September 2017–September 2021) in Bengaluru, India. Participant enrolment occurred over a 2.5-year period (September 2017–March 2020), overlapping with the nationwide COVID-19 lockdown. Ethical clearance for the study was obtained from the institutional Ethics Committee (Ref. No. 60/2017). Written informed consent was taken from participants aged 18 years and older, while for those under 18 years, consent was obtained from a parent or legal guardian along with the participant's written consent. The study adhered to the principles of Good Clinical Practice, Declaration of Helsinki (Fortaleza, 2013), and National Ethical Guidelines for Biomedical and Health Research Involving Human Participants issued by the Indian Council of Medical Research (2017).

2.2. Selection and Description of Participants

Eligible participants were students from pre-university colleges, undergraduate (degree-granting) colleges, and higher secondary classes (11th and 12th grades) at institutions that permitted the study. Students absent on the day of survey administration or those with incomplete questionnaires were excluded.

2.3. Sample Size Determination

The prevalence of Nicotine use and alcohol use, based on previously published studies, were estimated to be at 20% and 15%, respectively (13, 14). The other assumptions were as follows: α error – 5%; power of the study - 80% and a margin of error (d) - 10%. Using Cochran's formula [$n=Z_{\alpha}^{2} * p (100-p)/d^2$] (15) for calculating the sample size for a single proportion, the estimated sample sizes required to determine the prevalence of nicotine use and alcohol use were 2,266 and 1,600, respectively. To account for alpha adjustment across two primary endpoints, as well as potential non-response and incomplete questionnaires, the sample size was increased to 4500 students—roughly double the highest calculated requirement.

2.4. Data Collection and Measurements

A multistage sampling approach was employed. A government-provided list of educational institutions in Bengaluru, Karnataka, India, served as the sampling frame. Institutions were selected through simple random sampling using a random number table, after which formal approval was obtained from their respective heads. Within each participating institution, cluster random sampling was employed, with classrooms serving as the sampling units. All students in the selected

classrooms were briefed about the study procedures by institutional faculty.

2.5. Procedures

For participants younger than 18 years, parental consent forms were sent home via the students ahead of the scheduled assessment day. A suitable date was then fixed to meet the selected classrooms, where the research team obtained written consent from these students. For those aged 18 years and above, consent was obtained directly in the classroom. Following this, all participants completed a pre-tested, semi-structured questionnaire covering demographic details, history of alcohol and tobacco use with related risk factors such as parental use and peer influence, as well as perceptions, practices, and after-effects—sections that had been refined through pilot testing.

The questionnaire consisted of 35 items covering three main domains: demographic details, substance use history, and perceptions or attitudes related to alcohol and tobacco use. It was pilot-tested among 10 students to ensure clarity and acceptability. Face and content validity was established through expert consultation with six professionals in the fields of public health, internal medicine, paediatrics, psychiatry, educationists and ethicists. As the tool was semi-structured and not intended as a psychometric instrument, formal reliability statistics were not calculated.

Neither patients nor members of the public were engaged in formulating the research question, designing the study, recruitment, reporting, or dissemination activities. However, all individuals who fulfilled the eligibility criteria were invited to participate. While the participants did not receive individual notifications regarding the study's findings, they could access the results upon request. Additionally, the outcomes will be disseminated in the scientific publication derived from the collected data.

2.6. Data Analysis

Responses obtained through paper-based questionnaires were entered into Microsoft Excel (Microsoft Corp., USA, 2016) and stored on password-protected computers with limited access to the study team or authorized personnel. Statistical analyses were conducted using SPSS for Windows, version 20.0 (IBM Corp., USA, 2011). Demographic characteristics and variables related to alcohol and tobacco use were summarized as frequency for categorical data, and as median with interquartile ranges for continuous variables that did not follow a normal distribution (assessed using the Kolmogorov–Smirnov test). Prevalence estimates were presented as proportions with 95% confidence intervals (CI). Differences by sex were evaluated using Chi-square tests and odds ratios with 95% CI, with statistical significance defined at $P<0.05$.

3. Results

3.1. Demographic Characteristics

Of the seven institutions approached, four were granted the permission to conduct the study. A total number of 4789 students from these four institutions were contacted, of whom 4502 students or their legally acceptable representatives (LARs) provided consent. Among those consented, 151 were absent on the day of data collection and 258 questionnaires were incomplete, yielding a final analytic sample of 4093 participants. The median age was 18 years (IQR: 17–19), with 54.41% male students (n=2227) and 45.59% female students (n=1866).

3.2. Prevalence of Alcohol and Tobacco Use

In the study population, lifetime prevalence of alcohol use was 33.33% (95% CI: 31.88–34.79; n=1364/4093). When stratified by sex, prevalence was 35.34% (95% CI: 33.35–37.37; n=787/2227) among men and 30.92% (95% CI: 28.83–33.07; n=577/1866) among women, showing a significant difference (P=0.003; OR=1.22). Lifetime prevalence of tobacco use was 17.84% (95% CI: 16.67–19.04; n=730/4093), with men reporting 19.49% (95% CI: 17.86–21.20; n=434/2227) and women reporting 15.86% (95% CI: 14.23–17.60; n=296/1866), showing a statistically significant difference (P=0.003; OR=1.28).

3.3. Characteristics of Alcohol Users

The median (IQR) age at which both male and female participants had their first drink was 17 (16, 18) years. There were male participants who had their first drink as early as 8 years of age and female participants who had their first drink as early as 7 years of age.

Table 1: Characteristics of alcohol users

Characteristics		Overall (N=1364)		Men (n=787)		Women (n=577)		P value (Men vs Women)
		n	%	n	%	n	%	
Reason for Beginning to Consume Alcohol	Peer Pressure	144	10.6	78	9.9	66	11.4	0.486
	Curiosity	753	55.2	427	54.3	326	56.5	
	Bored	360	26.4	218	27.7	142	24.6	
	Adult Influence	107	7.8	64	8.1	43	7.5	
Frequency of Alcohol Consumption	Everyday	64	4.7	40	5.1	24	4.2	0.096
	3-5 Times a Week	83	6.1	57	7.2	26	4.5	
	Once a Week	76	5.6	39	5.0	37	6.4	
	Only on Weekends	118	8.7	74	9.4	44	7.6	
	Special Occasions	1023	75.0	577	73.3	446	77.3	
Time Spent During the Last Drink	Less than an Hour	410	30.1	242	30.7	168	29.1	0.408
	One Hour	425	31.2	229	29.1	196	34.0	
	2-3 Hours	347	25.4	206	26.2	141	24.4	
	4-5 Hours	105	7.7	62	7.9	43	7.5	
	More than 5 hours	77	5.6	48	6.1	29	5.0	
Number of Drinks Consumed Last Time	1-2	710	52.1	393	49.9	317	54.9	0.429
	3-4	340	24.9	201	25.5	139	24.1	
	5-6	157	11.5	97	12.3	60	10.4	
	7-9	90	6.6	54	6.9	36	6.2	
	>9	67	4.9	42	5.3	25	4.3	
Perception Regarding a Typical Student's Frequency of Alcohol Consumption	Less than Once a Week	354	26.0	213	27.1	141	24.4	0.403
	1-2 days	380	27.9	219	27.8	161	27.9	
	3-4 days	308	22.6	183	23.3	125	21.7	
	5-6 days	117	8.6	60	7.6	57	9.9	
	Everyday	205	15.0	112	14.2	93	16.1	
Family History of Alcohol Use		299	21.9	157	19.9	142	24.6	0.040*

*Odds Ratio (95% Confidence Intervals)=1.310 (1.012, 1.695) for women

The main reason for starting to drink alcohol was reported as curiosity (55.2%) and almost three-fourths of the participants who reported to have consumed alcohol had stated that they drink only during special occasions. The other characteristics of users of alcohol are summarized in Table 1. The perceptions, practices, and after-effects of drinking experienced by consumers of alcohol are depicted in Table 2.

3.4. Characteristics of Tobacco Users

The median (IQR) age at which both male and female participants had their first tobacco was 16 (15, 18) years. There were male and female participants who had their first tobacco as early as 9 years and 10 years of age, respectively. Cigarettes emerged as the predominant form of tobacco used. Table 3 summarizes the characteristics of consumers of tobacco in any form and there is no significant difference between genders for all characteristics except for the help seeking behaviour to quit tobacco (Odds Ratio (95% CI) = 1.483 (1.080, 2.037) for men).

4. Discussion

In this cross-sectional study on 4093 adolescents and young adults from four educational institutions in Bengaluru, we found that one in three reported alcohol use (33.3%) and nearly one in five reported tobacco use (17.8%). Curiosity emerged as the most common reason for initiation, and initiation of alcohol use tended to occur earlier than tobacco (7 vs. 9 years). Notably, 12.4% of alcohol consumers and 34.2% of tobacco users had sought help to quit. While no sex-wise differences were observed for alcohol, men were significantly more likely than women to seek help for quitting tobacco. These patterns may reflect the greater social acceptability and accessibility of alcohol relative to tobacco in this population, peer influences driving early initiation, and gendered differences in attitudes toward health-seeking and cessation support.

The prevalence of the consumption of alcohol and tobacco seems to be much higher than the nation-wide prevalence of 8.7% and 7.9%, respectively (3).

Table 2: Association between sex and perceptions, drinking practices, and alcohol-related consequences among alcohol consumers

	Overall (N=1364)		Men (n=787)		Women (n=577)		Odds Ratio*		P value*
	n	%	n	%	n	%	Estimate	95% CI	
Perceptions Related to Alcohol Use									
Ability to Stop Drinking When Needed	1144	83.9	676	85.9	468	81.1	1.418	1.062, 1.894	0.018
Drinking to Feel Good / Function Better	536	39.3	302	38.4	234	40.6	0.913	0.733, 1.137	0.415
Drinking to Escape Physical/ Emotional Pain	328	24.0	191	24.3	137	23.7	1.029	0.800, 1.324	0.822
Feeling of Guilt about your Drinking	313	22.9	178	22.6	135	23.4	0.957	0.742, 1.235	0.735
Drinking Practices and Habits									
Engage in Binge Drinking (≥ 5 Drinks/ Sitting)	387	28.4	238	30.2	149	25.8	1.245	0.979, 1.584	0.074
History of Drinking to Get Drunk	539	39.5	293	37.2	246	42.6	0.798	0.641, 0.994	0.044
History of Passing out/ Memory Loss	358	26.2	190	24.1	168	29.1	0.775	0.608, 0.988	0.039
History of Becoming Violent/ Aggressive While Drinking	143	10.5	96	12.2	47	8.1	1.567	1.086, 2.261	0.016
Alcohol-Related Consequences									
Lost Relationship Due to Drinking	196	14.4	125	15.9	71	12.3	1.346	0.984, 1.841	0.063
Skipped Classes Due to Drinking	286	21.0	170	21.6	116	20.1	1.095	0.840, 1.427	0.502
Problem at Home Due to Your Drinking	124	9.1	65	8.3	59	10.2	0.790	0.546, 1.144	0.212
Hospitalisation Due to Drinking	59	4.3	33	4.2	26	4.5	0.928	0.548, 1.569	0.779
Retained by Police Due to Drinking	72	5.3	41	5.2	31	5.4	0.968	0.599, 1.563	0.894
History of Having Sought Help to Quit Drinking	169	12.4	105	13.3	64	11.1	1.234	0.886, 1.719	0.213

*Crude odds ratios were calculated from 2×2 contingency tables comparing men with women (women as the reference group). P values were obtained using the chi-square test.

It is also much higher when compared with the prevalence of alcohol (8.5%) and tobacco use (4.7%) in Karnataka state, India. This difference could be attributed to the selection of only adolescents and young adults in the present study who had also reported to be curious to try new things out. In contrast to adolescents in the United States, a high-income country, the prevalence of alcohol use among Indian adolescents and young adults was substantially lower. A nationally representative survey of 10,123 American adolescents aged 12–18 years published as early as 2012, reported that 78.9% had tried alcohol at least once, and 47.1% had consumed at least 12 drinks in a year, suggesting regular drinking patterns (16). Tobacco use in our study was broadly consistent with the global prevalence of 19.33% among adolescents aged 13–15 years, but lower than the rates reported from 33 high-income countries, where prevalence was 24.76% in male students and 19.40% in female ones (17). More male students consume both alcohol and tobacco when as compared with female ones. This was consistent with the existing literature (3, 17).

A sizeable proportion of our study participants who reported to have consumed alcohol reported to drink everyday (4.7%), spend more than 5 hours on a drinking day (5.6%), and consume more than nine drinks on a day (4.9%). This is concerning as frequent alcohol consumption hampers decision making ability and as a corollary, curbs one's academic potential due to neuroplasticity (8, 9). About 22% of the study participants reported a family history of alcohol use, as a recognized risk factor. Students with parental alcohol consumption had greater odds of using alcohol themselves compared with those without such exposure (18). This is likely be due to either an impaired

Table 3: Characteristics of tobacco users

Characteristics		Overall (N=730)		Men (n=434)		Women (n=296)		P value
		n	%	n	%	n	%	
Reason for Beginning to Consume Tobacco	Peer Pressure	163	22.3	93	21.4	70	23.6	0.114
	Curiosity	356	48.8	227	52.3	129	43.6	
	Bored	171	23.4	91	21.0	80	27.0	
	Adult Influence	40	5.5	23	5.3	17	5.7	
Frequency of Tobacco Consumption	Everyday	132	18.1	89	20.5	43	14.5	0.081
	3-5 Times a Week	103	14.1	65	15.0	38	12.8	
	Once a Week	60	8.2	39	9.0	21	7.1	
	Only on Weekends	36	4.9	22	5.1	14	4.7	
	Special Occasions	399	54.7	219	50.5	180	60.8	
Type of Tobacco Consumed	Cigarette	583	79.9	356	82.0	227	76.7	0.077
	Beedi	130	17.8	80	18.4	50	16.9	0.593
	Chewable Tobacco	99	13.6	62	14.3	37	12.5	0.489
	Hookah	160	21.9	90	20.7	70	23.6	0.351
Perception Regarding a Typical Student's Frequency of Tobacco Consumption	Less than Once a Week	175	24.0	100	23.0	75	25.3	0.532
	1-2 days	130	17.8	73	16.8	57	19.3	
	3-4 days	114	15.6	74	17.1	40	13.5	
	5-6 days	52	7.1	34	7.8	18	6.1	
	Everyday	259	35.5	153	35.3	106	35.8	
Reason for Tobacco Usage – Feels Good	Yes	276	37.8	171	39.4	105	35.5	0.283
	No	454	62.6	263	60.6	191	64.5	
Family History of Tobacco Usage	Yes	299	41.0	175	40.3	124	41.9	0.672
	No	431	59.0	259	59.7	172	58.1	
Using Tobacco to Escape Physical/ Emotional Pain	Yes	219	30.0	137	31.6	82	27.7	0.263
	No	511	70.0	297	68.4	214	72.3	
Feels Guilty About Tobacco Use	Yes	337	46.2	201	46.3	136	45.9	0.922
	No	393	53.8	233	53.7	160	54.1	
History of Having Sought Help to Quit Tobacco	Yes	250	34.2	164	37.8	86	29.1	0.015*
	No	480	65.8	270	62.2	210	70.9	

* Odds Ratio (95% Confidence Intervals) = 1.483 (1.080, 2.037) for men

parent-child interaction and the resultant family dysfunction (19) or a shift in perceptions of alcohol consumption as an acceptable part of daily living (20). It was also concerning to note that the median age of initiating alcohol was 17 years, and some have started as early as 8 years old which is much lesser than the legal age of drinking in our country (21 years in most states of India and 18 years in Karnataka). It is therefore important to initiate primordial prevention activities to curb the looming threat of an epidemic of alcohol-related morbidity and mortality in our country (21).

One in 10 people reported aggression as an after-effect of alcohol and 26% had passed out as a result. This is of great concern as alcohol related aggression has been a well-documented phenomenon and has been attributed to a higher degree of impulsiveness (22) and low tolerance (23). For example, an analysis of homicide cases in Lithuania reported that in alcohol-involved homicides in 2019, 92.3% of perpetrators were intoxicated at the time of the offence (24). However, 84% of consumers of alcohol reported that they had the ability to quit whenever needed.

Nearly 50% of tobacco users tried a tobacco product because of their curiosity and approximately 18% of them used it every day. Cigarettes were the most popular product used probably because of its legal marketing in the Indian subcontinent, ready availability, and unrestricted sale. The majority of users reported a sense of feel good when they consumed tobacco. This is because it causes an adrenaline rush when absorbed in the bloodstream or inhaled via smoking and triggers an increase in dopamine that stimulates the area of the brain associated with pleasure and reward. However, a good number of consumers of tobacco have also reported a history of having sought help to quit tobacco.

4.1. Limitations

The present study had certain limitations. Since

the study deals with a sensitive and stigmatizing issue, there is a possible lack of transparency in self-reporting substance use by the participant truthfully for fear of information about their habits reaching their parents/ guardians or the administration of the educational institution. We assured the students of strict confidentiality with no personal identifiers collected and ensured complete privacy while the students answered the questionnaire to limit this bias. Secondly, our knowledge, attitude, and practice section of the questionnaire was not validated but was only standardised and pilot tested. Further, our results may not be generalizable to the general adolescent/ adult population as the study was not community-based and only included students who were enrolled in a school/ college. However, we expect that the large sample size is likely to mitigate this selection bias. Having said that, a key strength of our work is that it is among the limited number of studies with a large sample size examining alcohol and tobacco use specifically in Indian adolescents and young adults.

5. Conclusions

In our study, the prevalence of alcohol and tobacco use among Indian adolescents was 33.33% and 17.84%, respectively. These rates were higher than earlier estimates for the general Indian population; yet, the rates were lower than those reported among adolescents in many high-income countries. Curiosity emerged as the leading reason for initiating use of both substances, with initiation observed as early as 9 years of age. Daily alcohol use among underage students is of particular concern. Given the long-term health risks and addictive potential of these substances, there is a need for timely interventions beginning at the school and early college level, supported by parents and the wider community.

Acknowledgement

The authors would like to acknowledge Medirite Research Trust, Tamil Nadu, India for providing medical writing and publication support.

Authors' Contribution

Shreyas Bellur: Contributed substantially to the study's conception and design, data collection, analysis, and interpretation; drafted the work and critically reviewed it for important intellectual content. Jeffrey Pradeep Raj: Contributed substantially to the study's conception and design, data collection, analysis, and interpretation; drafted the work and critically reviewed it for important intellectual content. Suraj Samuel Thota: Contributed substantially to the study's conception and design, data collection, analysis, and interpretation; drafted the work and critically reviewed it for important intellectual content. Tomy K Kallarakal: Contributed substantially to the study's conception and design, data collection, analysis, and interpretation; drafted the work and critically reviewed it for important intellectual content. Twinkle Agrawal: Contributed substantially to the study's conception and design, data collection, analysis, and interpretation; drafted the work and critically reviewed it for important intellectual content.

All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work, such that the questions related to the accuracy or integrity of any part of the work.

Conflict of interest: None declared.

Funding: None.

Ethical Approval

The study received clearance from the Institutional Ethics Committee of St. John's Medical College and Hospital (Approval No. 60/2017). Written informed consent was obtained from participants aged 18 years or older. For those below 18 years, consent was provided by a parent or legal guardian, and written assent was additionally obtained from the student.

References

1. McLellan AT. Substance Misuse and Substance use Disorders: Why do they Matter in Healthcare? Trans Am Clin Climatol Assoc. 2017;128:112-130. PubMed PMID: 28790493; PubMed Central PMCID: PMC5525418.
2. Singh OP. Substance use in India - Policy implications. Indian J Psychiatry. 2020;62(2):111. doi: 10.4103/psychiatry.IndianJPsychiatry_207_20. PubMed PMID: 32382167; PubMed Central PMCID: PMC7197827.
3. Sivapuram MS, Nagarathna R, Anand A, Patil S,

Singh A, Nagendra HR. Prevalence of Alcohol and Tobacco Use in India and Implications for COVID-19 - Niyantrita Madhumeha Bharata Study Projections. J Med Life. 2020;13(4):499-509. doi: 10.25122/jml-2020-0079. PubMed PMID: 33456598; PubMed Central PMCID: PMC7803324.
4. Hasin DS, O'Brien CP, Auriacombe M, Borges G, Bucholz K, Budney A, et al. DSM-5 criteria for substance use disorders: recommendations and rationale. Am J Psychiatry. 2013;170(8):834-51. doi: 10.1176/appi.ajp.2013.12060782. PubMed PMID: 23903334; PubMed Central PMCID: PMC3767415.
5. LaHood AJ, Kok SJ. Ethanol Toxicity. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2025. PubMed PMID: 32491313.
6. Bharati B, Sahu KS, Pati S. Prevalence of smokeless tobacco use in India and its association with various occupations: A LASI study. Front Public Health. 2023;11:1005103. doi: 10.3389/fpubh.2023.1005103. PubMed PMID: 36923032; PubMed Central PMCID: PMC10008850.
7. Perez-Warnisher MT, Carballosa de Miguel MDP, Seijo LM. Tobacco Use Worldwide: Legislative Efforts to Curb Consumption. Ann Glob Health. 2018;84(4):571-579. doi: 10.9204/aogh.2362. PubMed PMID: 30779502; PubMed Central PMCID: PMC6748295.
8. Ruhil R. India has Reached on the Descending Limb of Tobacco Epidemic. Indian J Community Med. 2018;43(3):153-156. doi: 10.4103/ijcm.IJCM_213_17. PubMed PMID: 30294078; PubMed Central PMCID: PMC6166507.
9. Fein G, Cardenas VA. Neuroplasticity in Human Alcoholism: Studies of Extended Abstinence with Potential Treatment Implications. Alcohol Res. 2015;37(1):125-41. PubMed PMID: 26259093; PubMed Central PMCID: PMC4476599.
10. Lees B, Meredith LR, Kirkland AE, Bryant BE, Squeglia LM. Effect of alcohol use on the adolescent brain and behavior. Pharmacol Biochem Behav. 2020;192:172906. doi: 10.1016/j.pbb.2020.172906. PubMed PMID: 32179028; PubMed Central PMCID: PMC7183385.
11. Spear LP. Effects of adolescent alcohol consumption on the brain and behaviour. Nat Rev Neurosci. 2018;19(4):197-214. doi: 10.1038/nrn.2018.10. PubMed PMID: 29467469.
12. Cheng WL, Chen KY, Lee KY, Feng PH, Wu SM. Nicotinic-nAChR signaling mediates drug resistance in lung cancer. J Cancer. 2020;11(5):1125-1140. doi: 10.7150/jca.36359. PubMed PMID: 31956359; PubMed Central PMCID: PMC6959074.
13. Mony PK, John P, Jayakumar S. Tobacco use habits and beliefs among undergraduate medical and nursing students of two cities in southern India. Natl Med J India. 2010;23(6):340-3. PubMed PMID: 21561044.
14. Jaisoorya TS, Beena KV, Beena M, Ellangovan K, Jose DC, Thennarasu K, et al. Prevalence and correlates of alcohol use among adolescents attending school in Kerala, India. Drug Alcohol Rev. 2016;35(5):523-9. doi: 10.1111/dar.12358. PubMed PMID: 26711321.
15. Cochran W.G. Sampling Techniques. 3rd ed. New York: John Wiley & Sons; 1977.
16. Swendsen J, Burstein M, Case B, Conway KP, Dierker L, He J, et al. Use and abuse of alcohol and illicit drugs in US adolescents: results of the National Comorbidity Survey-Adolescent Supplement. Arch Gen Psychiatry. 2012;69(4):390-8. doi: 10.1001/archgenpsychiatry.2011.1503. PubMed PMID: 22474107; PubMed Central PMCID: PMC3746542.
17. Nazir MA, Al-Ansari A, Abbasi N, Almas K. Global Prevalence of Tobacco Use in Adolescents and Its Adverse Oral Health Consequences. Open Access Maced J Med Sci. 2019;7(21):3659-3666. doi: 10.3889/oamjms.2019.542. PubMed PMID: 32010395; PubMed Central PMCID: PMC6986508.
18. Kabwama SN, Matovu JK, Ssenkusu JM, Ssekamatte T, Wanyenze RK. Alcohol use and associated factors among adolescent boys and young men in Kampala, Uganda. Subst Abuse Treat Prev Policy. 2021;16(1):49. doi: 10.1186/s13011-021-00385-8. PubMed PMID: 34107981; PubMed Central PMCID: PMC8191098.
19. Nkobi M, Kingan M. The Impact of Parental Alcohol Misuse on Children: A Systematic Review. Subst Use Misuse. 2025;60(11):1690-1698. doi: 10.1080/10826084.2025.2512232. PubMed PMID: 40538294.
20. Maggs JL, Cassinat JR, Kelly BC, Mustillo SA, Whiteman SD. Parents Who First Allowed Adolescents to Drink Alcohol in a Family Context During Spring 2020 COVID-19 Emergency Shutdowns. J Adolesc Health. 2021;68(4):816-818. doi: 10.1016/j.jadohealth.2021.01.010. PubMed PMID: 33582017; PubMed Central PMCID: PMC8101493.
21. Soundararajan S, Narayanan G, Agrawal A, Prabhakaran D, Murthy P. Relation between age at first alcohol drink & adult life drinking patterns in alcohol-dependent patients. Indian J Med Res. 2017;146(5):606-611. doi: 10.4103/ijmr.IJMR_1363_15. PubMed PMID: 29512602; PubMed Central PMCID: PMC5861471.

22. Mankin JL, Thompson C, Branigan HP, Simner J. Processing compound words: Evidence from synaesthesia. Cognition. 2016;150:1-9. doi: 10.1016/j.cognition.2016.01.007. PubMed PMID: 26848730; PubMed Central PMCID: PMC4989033.
23. Chiu NC, Ho CH, Shen SH, Tsuei YC, Lee KL, Huang CY, et al. Impact of hysterosalpingography after operative treatment for ectopic pregnancy in Taiwan: A 16-year Nationwide Population-Based Analysis. Medicine (Baltimore). 2017;96(25):e7263. doi: 10.1097/MD.0000000000007263. PubMed PMID: 28640130; PubMed Central PMCID: PMC5484238.
24. Miščikienė L, Trišauskė J, Štelemėkas M, Astromskė K. Explaining the Link Between Alcohol and Homicides: Insights from the Analysis of Legal Cases in Lithuania. Medicina (Kaunas). 2025;61(4):657. doi: 10.3390/medicina61040657. PubMed PMID: 40282948; PubMed Central PMCID: PMC12028723.