

Alcohol consumption and associated sociodemographic factors among medical students in an urban locality

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ABSTRACT


Background: India has experienced a substantial increase in alcohol consumption especially young adults engaged in harmful drinking habits and medical college students constitute an important high-risk population for this hazard. Different population groups have different factors which determine alcohol consumption, differential vulnerability to alcohol-related problems with varying needs for intervention. These differential behaviors and outcomes are influenced and maintained by structural and cultural factors (which internship is influenced by sociodemographic determinants). Thus, tailored strategies to improve outcomes by targeting specific social determinants among vulnerable groups play an important role. **Objectives:** The objective of the study was to find an association between sociodemographic factors and alcohol consumption habits among medical college students in Kalaburagi district. **Materials and Methods:** A cross-sectional study was undertaken among 255 medical college students studying in different phases. Study duration was for 3 months from April to June 2018. Screening for alcohol use disorders was undertaken using alcohol use disorders identification test questionnaire. Multivariate logistic regression analysis was undertaken to assess significantly associated sociodemographic factors with alcohol consumption. **Results:** Prevalence of alcohol consumption, hazardous drinking and alcohol dependency were 25.5% with 95% confidence interval (22.36–28.63), 19.2% and 8.7%, respectively. On multivariate analysis, sociodemographic factors such as total family income and past place of residence were significantly associated with alcohol consumption. **Conclusion:** Early identification of at-risk groups and timely brief interventions of behaviors inclined toward developing hazardous drinking habits is crucial by addressing specific sociodemographic determinants such as isolation and limited access to services.

KEY WORDS: Sociodemographic Factors; Alcohol; Abuse; Addiction; Dependency

INTRODUCTION

Worldwide, it is estimated that the harmful use of alcohol contributes to 5.9% of all deaths and it is estimated that more than 200 diseases and injury conditions are directly

or indirectly implicated in alcohol consumption.^[1] In recent years, India has experienced, a steep rise in the number of bars and restaurants proportionately increasing the percentage of alcohol consumers as well. Major concern today is rise in undocumented usage of illicit liquors as well as change in pattern, and trends of alcohol consumption habits among young adults. It has been observed that there is a significant shift in the age composition of drinkers worldwide, with greater proportion of young women drinkers engaged in bingeing and solitary consumption to the point of intoxication.^[2] However, traditionally gender-related factors and certain norms existing in Indian society have resulted in greater access to alcohol usage among men compared to

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women, which has led to increased mortality and morbidity due to alcohol among men.^[3,4]

Worldwide, about 20% of college students meet the criteria for an alcohol use disorder in a given year (8% alcohol abuse and 13% alcohol dependence).^[5] Several studies have shown that alcohol use disrupts learning and memory. However, the information pertaining to severity and duration of effects, with varying frequency and quantity of alcohol consumed are still inadequate. On the other hand, some large-scale surveys and research studies have demonstrated; heavy episodic drinkers were a far more likely than non-heavy drinkers to report drinking caused them to miss class, fall behind in their schoolwork, and perform poorly on a test or other project.^[5,6] One more major concern being, college students and other young adults lack awareness about standard serving sizes of alcohol, this could lead students to underestimate their true levels of alcohol consumption, and they tend to over-drink and thus under-report. Excessive alcohol usage among college students is known to disrupt sleep, and thus causing daytime sleepiness and decreased alertness. An analysis of survey finding by Schoenborn and Adams (2008) found young adults (ages 18–44 years) who had five or more drinks in 1 day in the past year got less sleep than others. And thus, poor sleep quality and deprivation contributed to impaired learning and academic performance.^[6] Harmful alcohol usage, can also act as an independent risk factor, as well as synergize with other risk factors contributing to the growing burden of non-communicable diseases and neuropsychiatric disorders among college students.^[7-9]

Sociodemographic factors have known to play a crucial role in the initiation and continuation of drinking during early life. Some studies undertaken among older adults have shown male gender, higher socioeconomic status and living alone were important determinants of alcohol consumption.^[10-13] Despite many studies showing alcohol consumption being high in lower socioeconomic status, lower qualification and low standard of living indicating poor and underprivileged groups are often at higher risk to drink; these relations were found to be complex and sometimes controversial.^[14] A study among Korean women of reproductive age found; sociodemographic factors such as young age, a lower level of education, and unmarried status were more likely to be associated with high-risk behaviors such as smoking, heavy alcohol consumption.^[15] A study by Portuguese public health institute to assess the association between social and behavioral factors with alcohol consumption revealed; high-intake drinkers were significantly older, less educated, and more frequently in women.^[16] In another study in Australia parent's role modeling of alcohol use played an important part in addressing the misuse of alcohol as ubiquitous cultural drink by young students; parents who were non-daily/non-smokers were 2.36 times more likely to disagree with the purchase and consumption of alcohol among their children.^[17] Thus, there

was a wide variation in alcohol consumption patterns with varying nature of determinants for different geographical regions influenced by local sociocultural and demographic factors.

College students constitute a key vulnerable population for early initiation of drinking habit and development of substance use disorders. This may be due to various reasons such as academic pressure, temptation by peer groups, the lure of popularity, easy access, and availability of many alcohol and related products. Hence, they are more pre-disposed to several consequences of harmful alcohol use such as injuries, sexual assaults, overdoses, memory blackouts, suicide attempts, drunk driving, changes in brain function, lingering cognitive deficits, and death. Sometimes alcohol when consumed in large quantities during a single occasion, such as a binge episode, can cause death directly by suppressing brainstem nuclei that control vital reflexes.^[5] There is dearth in a number of studies understanding the association between harmful alcohol consumption habits and sociodemographic factors (especially from regional context); among young medical students. Therefore, in the current study, some of the sociodemographic factors presumed to be associated with alcohol consumption were assessed from the preview of local context. Thus, understanding of the nature of the problem and establishing newer criteria to recognize vulnerabilities continues to help, for delivering targeted interventions, among identified high-risk groups. Declines in precollege drinking will lead to reductions in both the levels of alcohol consumption by college students and the negative consequences. Therefore, the current study was designed with an objective; to assess the association between alcohol consumption habits and sociodemographic factors among medical college students in Kalaburagi district.

MATERIALS AND METHODS

Study Setting and Sample Size

A cross-sectional study was undertaken among medical students in ESIC Medical College, Kalaburagi district. The study was conducted for 3 months from April 1, 2018, to June 30, 2018. Expecting the frequency of outcome (prevalence of alcohol consumption) to be $21\% \pm 5^{[15]}$ and considering 5% precision, 1% design effect, the sample size was estimated to be 255. Subjects within 18–24 years age group were included in the study. A total of 495 students currently pursuing their studies in this institute, 50 students from each batch including interns were called up randomly and explained about the purpose of the study and simultaneously contents of the tools were also elaborated. Participation was purely voluntary. Before commencing the study informed written consent was obtained from all the study participants. Students were ascertained about the confidentiality of the information provided by them, following this an e-form of questionnaire

was sent on their mobile phone through a link for self-administration. A total of 230 students participated in the study of which 6 responses were dropped-out for analysis due to their incomplete nature.

Study Tool

Screening for alcohol use disorders was undertaken using alcohol use disorder identification test questionnaire tool.^[18] Initial part of the tool contained questions pertaining to sociodemographic characteristics of participants, whereas subsequent part collected information about alcohol consumption habits during past 12 months and responses were coded from 0 (never occurs) to 4 (daily). Information was gathered on drinking habits such as the type of liquor, frequency, and quantity of drink. Questions were also asked to illicit symptoms of alcohol dependency such as bingeing, impaired control over drinking, early morning drinks, and alcohol-related falls/injuries. A total score >8 indicated hazardous drinking habit and score >15 was considered as alcohol dependency. Those who consumed alcohol monthly/less than that were considered as occasional drinkers while those who consumed alcohol 2–3 times in a month or more than that were as regular drinkers.^[3]

Statistical Analysis

Data were entered into excel spreadsheet and analyzed using statistical package for the social sciences version 20.0 for Windows. Qualitative variables were expressed in terms of proportions, whereas quantitative variables in terms of mean and standard deviation. Pie of pie charts, simple, and component bar-graphs were used to make pictographic depictions of findings. $P < 0.05$ was considered as statistically significant for 95% confidence interval (CI).

Ethics

Ethical clearance was obtained from the Institutional Ethical Clearance Committee, ESIC Kalaburagi. Subjects found to have suicidal ideation during the course of study were referred to Department of Psychiatry, ESIC Medical College Hospital, Kalaburagi.

RESULTS

As shown in Table 1, most of the subjects, i.e. 55.8% were present in 20–21 years age group with the mean age being 20 years. Majority of the participants were males (54.9%), and most of them belonged to Hindu religion (76.8). There was more or less equal participation of study participants from first 3 years of graduation, however, subjects studying in the final year (14.3%) and those perusing their internship (8%) represented in lesser number. Considering current residential details; subjects residing in hostel were present

Table 1: Sociodemographic profile of the study subjects

Particulars	n (%)
Age (in years)	
18–19	56 (25)
20–21	125 (55.8)
22–23	43 (19.2)
Gender	
Male	123 (54.9)
Female	101 (45.1)
Religion	
Hindu	172 (76.8)
Muslim	36 (16.1)
Christian	8 (3.6)
Others	6 (2.7)
Current year of graduation in MBBS	
1 st year	62 (27.7)
2 nd year	55 (24.6)
3 rd year	57 (25.4)
4 th year	32 (14.3)
Internship	18 (8)
Current residential details	
Home	46 (20.5)
Hostel	164 (73.2)
Staying single	5 (2.2)
Staying with friends	9 (4)
Past residential details	
Home	148 (66.0)
Hostel	65 (29)
Staying single	3 (1.3)
Staying with friends	8 (3.5)
Particulars	
Monthly family income from all sources	
≤25,000	56 (25)
26,000–50,000	58 (25.9)
51,000–100,000	46 (20.5)
101,000–150,000	13 (5.8)
≥151,000	24 (10.7)
Do not know	27 (12.1)
Fathers educational status	
Illiterate	4 (1.8)
Primary school	3 (1.3)
Middle school	6 (2.7)
High school	29 (12.9)
Intermediate degree	49 (21.9)
Graduate	91 (40.6)
Post-graduate and above	42 (18.8)
Mothers educational status	
Illiterate	11 (4.9)

(Contd...)

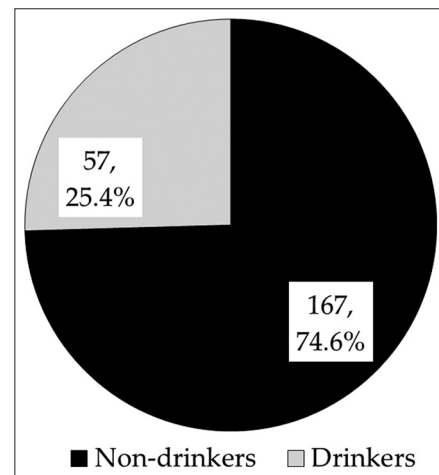
Table 1: (Continued)

Particulars	
Primary school	5 (2.2)
Middle school	11 (4.9)
High school	50 (22.3)
Intermediate degree	51 (22.8)
Graduate	78 (34.8)
Postgraduate and above	18 (8)

in greater number (73.2%) compared to all other groups. As less as 4% and only 2.2% of subjects stayed in room (outside the campus) with friends and in room without friends or singly respectively. A significant proportion of subjects reported their total family income, ranging from 25,000 to 1 lakh per month and minority (10.7%) of them reported it to be >1½ lakh/month, but 12.1% of subjects did not reveal their income. Substantial proportion of subject's parents was educated up to high school or more than that; of which majority of fathers (40.6%) and mothers (34.8%) were graduate degree holders. Subjects having a history of at least one person regularly consuming alcohol in their family were in more number (13.4%) compared to subjects having a family history of more than one-person consuming alcohol.

The prevalence of alcohol consumption was 25.4% with 95% CI (22.36–28.63) [Figure 1]. Prevalence of hazardous drinking habit was 19.2%, whereas the prevalence of alcohol dependency was 8.7% [shown in Figure 2]. The prevalence of hazardous drinking habits was relatively high among participants.

On univariate analysis, it was observed that among all sociodemographic variables: Age, gender, total family income, current place of residence, and past place of residence were significantly associated with alcohol consumption habits, while religion, current year of graduation, were not associated with alcohol consumption habit. Further, on multivariate analysis after adjusting for various confounders, it was found that only variables such as total family income and past place of residence were found to be statistically significant. Alcohol consumption habits were 7.25 times and 1.41 times more likely to be prevalent among income group ranging from 26,000 to 50,000 and <25,000 per month, respectively, compared to subjects whose total family income was >51,000 per month. The difference in the prevalence of alcohol consumption between different income groups was statistically significant ($P = 0.017$). Results show that subjects in lower income group were more predisposed to drinking habits compared to the subjects in a high-income group. Similarly, participants who stayed in a room outside the education campus during their past years of study and those who stayed in the hostel were 21 times and 6.36 times, respectively, more likely to consume alcohol compared to

**Figure 1:** Prevalence of alcohol consumption habit

the subjects whose past place of residence was home. The difference in the prevalence of alcohol consumption habit and the past place of residence was statistically significant ($P < 0.01$) as shown in Table 2.

DISCUSSION

Thus, the current study illustrated the higher prevalence of alcohol consumption among, medical college students (25%) with 19.2–8.7% of them having hazardous drinking habits and alcohol dependency respectively. The prevalence of alcohol consumption was more among males compared to females and was statically significant on univariate analysis. Although a higher proportion of alcohol consumers were found in 20–21 years age group, most of the initiation of drinking habits occurred in 18–29 years or even before that. Alcohol consumption proportionately increased with increasing age. On multivariate analysis after adjusting for various confounders, total family income and past place of residence of the subjects were significantly associated with current alcohol consumption habits.

In 2018, a comparative study was done by Zilberdan *et al.*, to explore personality traits of addictive behaviors revealed; age, gender, and socioeconomic status found significant between-group differences.^[19] Similar to the findings of above study, our results showed sociodemographic variables: Age, gender, and total family income were significantly associated with alcohol consumption habits on univariate analysis but after adjusting for confounding variables; only total family income was significantly associated with alcohol consumption. Our findings showed, even though most drinking habits originated in 18–19 years age group but subjects in 22–23 year ages were 2.93 times more likely to consume alcohol compared to those in 20–21 years age. Similar to our findings, a survey undertaken in Australia showed; younger Australians drank larger quantities per occasion, while older Australians drank more frequently.

Failure to decrease intake with age increased the risk of harm due to reduced metabolism.^[20] The reason could be increase in alcohol dependency with age might had increased the frequency and likelihood of alcohol consumption in higher age groups. However, some of the systematic reviews have revealed; subjects in their ages 18–34 were most likely to engage in hazardous consumption, with odds declining as age increased.^[21–25] Whereas in a few other studies, the findings were contradictory to above results, Pärna

et al. (2010) found that men and women in Finland aged 35–44 exhibited the highest odds of consuming alcohol at least once a week; a multi-country study by Pomerleau *et al.* demonstrated, men aged 40–45 were most likely to participate in episodic heavy drinking. Consistent to the findings of several studies, our study has shown that men were more likely to consume alcohol compared to women (2.76 times).^[26] This may be due to greater time spent by males in enhanced outdoor activities, laxity of movements, etc. A systematic review from the former soviet union to assess factors associated with alcohol consumption showed; 16 studies were found to have a statistically significant association between one or more demographic characteristics and alcohol consumption. Those that combined men and women all found that men had higher odds of exhibiting all types of alcohol consumption measured.^[27] A similar finding was observed in a study done by Dias *et al.*, department of hygiene and epidemiology, found a high prevalence of high-intake drinkers among men, compared to women (40.1% vs. 15.6%). For both sexes, the prevalence of high-intake drinkers was significantly higher among the age group 40–59 years, in less educated individuals. Comparing moderate and high-intake drinkers with non-drinkers it was revealed, after adjustment for potential confounders, high-intake drinkers were significantly older and less educated.^[28] In our study, income was strongly associated

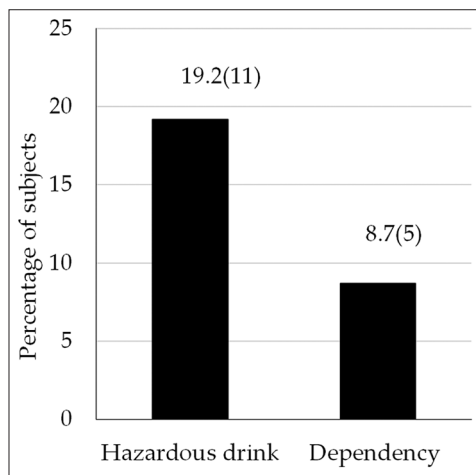


Figure 2: Prevalence of alcohol use disorders

Table 2: Univariate and multiple logistic regression analysis of alcohol consumption and associated factors

Variables	Level	Alcohol consumption		Univariate		Multiple logistic regression	
		Present n (%)	Absent n (%)	OR (95% CI)	P value	OR (95% CI)	P value
Age (in years)	18–19	5 (17.2)	51 (26.2)	0.84 (0.28–2.49)	0.78	-	-
	22–23	11 (37.9)	32 (16.4)	2.93 (1.17–7.28)	0.021	-	-
	20–21	13 (44.8)	112 (57.4)	1	-	-	-
Gender	Male	21 (75)	102 (52)	2.76 (1.12–6.80)	0.026	-	-
	Female	7 (25)	94 (48)	1	-	-	-
Religion	Hindu	22 (78.6)	152 (77.6)	1.58 (0.48–7.01)	0.49	-	-
	Muslim	3 (10.7)	33 (16.8)	0.53 (0.14–2.54)	0.37	-	-
	Others	3 (10.7)	11 (5.7)	1	-	-	-
Current year of graduation	Internship	4 (14.3)	14 (7.1)	2.62 (0.58–10.96)	0.19	-	-
	4 th	6 (21.4)	26 (13.3)	2.13 (0.59–7.64)	0.23	-	-
	3 rd	9 (32.1)	48 (24.5)	1.74 (0.57–5.60)	0.33	-	-
	2 nd	3 (10.7)	52 (26.5)	0.54 (0.10–2.28)	0.42	-	-
	1 st	6 (21.4)	56 (28.6)	1	-	-	-
Income groups	≤25,000	10 (38.5)	46 (26.9)	6.00 (1.37–42.03)	0.013	1.41 (0.51–3.88)	0.50
	26,000–50,000	2 (7.7)	56 (32.7)	0.17 (0.02–0.72)	0.012	7.25 (1.41–37.19)	0.017
	≥51,000	14 (53.8)	69 (44.4)	1	-	1	-
Current place of residence	Hostel	17 (58.6)	107 (54.9)	28.23 (9.06–98.14)	<0.001	-	-
	Room	5 (17.2)	2 (1)	28.34 (4.75–243)	<0.001	-	-
	Home	7 (24.1)	86 (44.1)	1	-	-	-
Past place of residence	Hostel	12 (41.4)	48 (24.6)	3.22 (1.31–7.97)	0.01	6.36 (1.31–30.82)	0.022
	Room	6 (20.7)	4 (2.1)	18.7 (4.49–85.3)	<0.001	21 (4.37–100.89)	<0.001
	Home	11 (37.9)	143 (73.3)	1	-	1	-

CI: Confidence interval

with alcohol consumption habits, and the association was statistically significant ($P = 0.017$), even after adjusting for some known confounders. This may be due to the fact that lower income and poor parental role modeling might had played a role in increasing the freedom of purchasing and using alcohol-related products among college students. The type of drink consumed might had also played a significant role, as lower income may signify purchase of poor quality, illicit, and concentrated spirits. Consistent to our findings Zilberdan *et al.* demonstrated that the addicted groups AUD were the oldest and all groups consisted of mainly male participants and additionally it disclosed that there was a distinct difference between substance-related and behavioral addictions on all variables, with substance-related individuals being of lower socioeconomic status.^[19] Sometimes it may be projected that excessive alcohol consumption can have an inverse relationship with family income. Alcohol dependency in one or more family members may have bearing on employment and wage loss, etc., influencing the income and savings in a family. A study undertaken in Austria, by European center for social welfare policy and research, identified changes in selected (“unplanned”) sociodemographic and economic factors that most strongly correlated with changes in alcohol consumption and alcohol consumption-related harm. The study identified among the unplanned factors, income was well connected (0.96–0.97) with the decrease in spirits consumption, and with the increase in consumption of beer and wine; which is again consistent with our findings.^[29] Excepting a very few studies (by Carlson and Vågerö - 1998), findings from most of the studies have detected a significant relationship between income and drinking habits. Among men, low economic status was strongly associated with various measures of alcohol consumption. Men who had “2–4 economic problems” or “3 economic problems on measures such as being unable to afford meat or fish more than once or twice per week, being unable to purchase necessary clothing, abstaining from social or cultural events or having to borrow money were more likely to binge drink. Proportions of abstainers decline as per-capita income increases.^[30,31] In contrast, findings in women drinkers were conflicting; McKee *et al.* revealed, women in Estonia, Latvia, and Lithuania with “high income” were 2.33, 5.33, and 3.07 times more likely to consume alcohol at least once per week compared with women with very low incomes.^[32] Our study demonstrated a significant association between place of residence and propensity to develop alcohol consumption habits. It was observed that those subjects, whose past place of residence was other than their home, had higher odds of getting exposed to alcohol consumption habits compared to those whose past place of residence was their home. Complimentary to the above findings, Loxley *et al.*, 2004, demonstrated a complex relationship between alcohol use and homelessness. Alcohol contributed to homelessness through job loss or income displacement and exacerbated other contributory

factors such as mental health problems.^[32] Several studies have supported a significant association between place of residence and alcohol consumption.^[33] Men in urban areas in Latvia and women in urban areas in Latvia, Lithuania, and Estonia were more likely to be heavy drinkers than those in small towns or villages.^[27,32]

Strengths and Limitations

The information gathered from this can contribute to set medical school policies and deal with student well-being and alcohol awareness. Those at the risk of developing dependency can be identified at early stages, and targeted interventions/specific preventive measures can be delivered considering important sociodemographic determinants. Given that results are based on a cross-sectional survey, so the direction of relationship could not be established. Assessment of chronic morbidity, tobacco and alcohol use was self-reported by the respondents, which also might had influenced the results. Since the participation of subjects was voluntary there is scope for selection bias; individual’s unwillingness to acknowledge that they drink is likely to have biased our prevalence estimates low and thereby reducing the magnitude of effects. Sampling technique being the convenient external validity of results is compromised. There is an indeterminate number of social factors that could have played a role in alcohol consumption; it was not possible for our team to include all.

CONCLUSION

The current study showed that high prevalence of drinking habits among medical college students (25.5%) and further the prevalence of hazardous drinking (19.2%), as well as alcohol dependency (8.7%) were also high among regular drinkers. Important sociodemographic factors found to be associated with alcohol consumption were economic status of family and past place of subject’s residence. Low family income and history of staying in hostel/room increased the likelihood of initiating and continuing alcohol consumption currently. It is very crucial to curtail this rising problem of hazardous alcohol usage among young adults as a public health problem by early identification of at-risk groups and timely brief interventions of behaviors inclined toward developing hazardous drinking habits and dependency. Formulating college level policies, mass media “drink driving” campaigns and promoting physical activity by establishing sports clubs. Interventions which fail to address social-demographic determinants perspective are unlikely to achieve lasting change; thus, holistic health strategy has to developed that value indigenous culture. Thus, it is important to formulate interventions which address social isolation, limited access to services, etc., more research has to be undertaken in the direction to establish causality by considering others social factors which may influence alcohol consumption.

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