ORIGINAL RESEARCH PAPER

Community Medicine

FREQUENCY, CONSUMPTION PATTERN, DEPENDENCE AND ADVERSE EFFECTS OF ALCOHOL USING AUDIT SCORE IN COLLEGE STUDENTS OF A PROFESSIONAL INSTITUTE, INDORE

KEY WORDS: alcohol dependence , audit score.

Thakur Apurv Bhupendra	
Ritesh Upadhyay*	*Corresponding Author
R. R. Wavare	
A. R. Deshpande	
Jaya Singh	

ABSTRACT

Background - Human beings have been using various forms of substances derived from plants, as well as alcohol for thousands of years.1 One of the most common substance of abuse known from the ancient times in the Old World was alcohol. **Material and methods -** An institution based cross sectional study was conducted to assess the consumption of alcohol among the students of four Professional colleges from December 2015 to December 2016, in Sri Aurobindo Group of Institutions. After obtaining the permission from the Institutional Ethics committee and the respective Deans/ Principles of the above mentioned colleges. The tool used was a pre-designed and pre-tested semi-structured questionnaire which was self-administered by the students. The questions were based on the studies which had previously been conducted in India as well as abroad. The questionnaire consisted of questions regarding the demographic details, use of substances by the students and AUDIT scores of individual students. **Results-** All colleges had a higher number of male participants except the nursing college, where the female participation was higher. The male to female ratio was exceptionally low in the engineering college, i.e. 310 (22.58%) males to 60 (4.37%) females in comparison with other colleges.These trends are consistent in all four colleges, however the highest number of females who are drinkers is from the medical college i.e. 38 (11.88%).The current study does point out some worrying facts like the high alcohol intake among students, and the adverse effects related to alcohol consumption. **Conclusion -** The percentage of problematic drinkers and dependency on alcohol is very high, and this may lead to an eventual increase in the number as the students progress through college and indeed after that as well

INTRODUCTION

Human beings have been using various forms of substances derived from plants, as well as alcohol for thousands of years.[1] One of the most common substance of abuse known from the ancient times in the Old World was alcohol. It is the only substance from the ancient times which still retains its status as a legal substance in most of the world, with exclusion of religious Islamic countries.[2] The product of natural fermentation was discovered by man in prehistoric time and was soon followed by deliberate production of wines and beers from sugary and starchy plants. Primitive alcoholic beverages served as foods, medicines, and euphoriants, in religious symbolism and social facilitation. Alcohol is a CNS depressant that acts on receptors for -aminobutyric acid (GABA), the major inhibitory neurotransmitter in the nervous system. Behavioral, cognitive, and psychomotor changes can occur at blood alcohol levels as low as 0.02–0.03 g/dL, a level achieved after the ingestion of one or two typical drinks. Alcohol poisoning, known in emergency departments as acute intoxication, is when a large amount of alcohol is drunk, followed shortly afterwards by changes in mood or behaviour, impaired judgment or social functioning, and one or more physical signs of drunkenness, such as slurred speech, unsteadiness, lack of coordination, impaired attention or loss of consciousness.[3] Apart from this alcohol has an effect on cardiovascular system[3], neuropsychiatric effects like drowsiness, loss of memory and depression.[3, 4] Alcohol may also serve as a triggering mechanism to instigate aggressive acts for those who already have violent propensity and who find themselves in "aggressible" situations. Chronic alcoholism can lead to personality changes in which the tendency to blame others becomes more prominent. [5] A Rohtak study (2002) showed a prevalence of alcohol abuse of 19% and in terms of age of onset, the study revealed a significant fact that 83% respondents had their first drink between the ages of 15-25 years. Most commonly consumed type of alcohol was country liquor (by 69.07%) followed by English and Country liquor (both by 10 99%).[6]Studies done in Chandigarh, Meerut, Guwahati have also shown that alcohol is the most commonly used substance among college students [7, 8,9].

OBJECTIVES

1. To assess the frequency and prevalence of alcohol consumption in college students.
2. To determine the dependence on alcohol among college students using the AUDIT score.
3. To find out the adverse effects of alcohol consumption in college students.

MATERIALS AND METHODS

An institution based cross sectional study was conducted to assess the consumption of alcohol among the students of four Professional colleges from December 2015 to December 2016, in Sri Aurobindo Group of Institutions. After obtaining the permission from the Institutional Ethics committee and the respective Deans/ Principles of the above mentioned colleges, a pilot study was conducted on 40 students from a College of Physiotherapy so as to assess the viability of the questionnaire and the average time taken to complete the questionnaire. A feedback was taken from these students and improvements were made on the questionnaire. These students were then excluded from the study. The population targeted was all the students of the above mentioned institutes provided they were registered students in the institute, consenting to participate in the study and were between 18 to 25 years of age. The calculated sample size came to 396 (Approximately 400) using the formula Zpq/L2 and the final sample size was multiplied by 3 so as to increase the power of the study, and hence the targeted sample size

was 1200 students. A dummy drug was included in the questionnaire and any student claiming to take the drug was automatically excluded from the study. Out of a total of approximately 3500 students from all four institutions 1450 agreed to participate in the study, of which 30 did not meet the prerequisite criteria and were excluded from the study. A total of 47 students provided incomplete questionnaires and were also excluded from the study. The final number of participants from all four colleges was 1373 students.

The tool used was a pre-designed and pre-tested semi-structured questionnaire which was self-administered by the students. The questions were based on the studies which had previously been conducted in India as well as abroad. The questionnaire consisted of questions regarding the demographic details, use of substances by the students and AUDIT scores of individual students.

Results
Overall Socio- demographic factors of study subjects

Table 1 : Age, Gender and Course wise Distribution of College Students

Age	Nursing			Pharmacy			Engineering			MBBS			Total		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
18 Yrs	36	62	98	75	31	106	125	28	153	20	18	38	256	139	395
19 Yrs	43	53	96	43	5	48	85	19	104	25	18	43	196	95	291
20 Yrs	52	54	106	46	26	72	46	8	54	23	22	45	167	110	277
21 Yrs	28	30	58	39	14	53	38	3	41	15	50	65	120	97	217
22 Yrs	5	8	13	16	0	16	14	2	16	25	24	49	60	34	94
23 Yrs	2	1	3	7	0	7	2	0	2	24	26	50	35	27	62
24 Yrs	1	0	1	0	0	0	0	0	0	14	3	17	15	3	18
25 Yrs	3	3	6	0	0	0	0	0	0	12	1	13	15	4	19
Total	170	211	381	226	76	302	310	60	370	158	162	320	864	509	1373

Table 1 gives a description of the study population. As can be observed there were a total of 1373 participants from four colleges. The age of the participants was from 18 to 25 yrs. A total of 864 (62.93%) males and 509 (37.07%) females agreed to participate in the study. The largest sample was from the nursing college of 381(27.75%) students, followed by engineering college 370(26.99%), Medical College 320(23.30%), and Pharmacy College 302(22%). All colleges had a higher number of male participants except the nursing college, where the female participation was higher. The male to female ratio was exceptionally low in the engineering college, i.e. 310 (22.58%) males to 60 (4.37%) females in comparison with other colleges.

Table 2: Frequency of Consumption of Alcohol

	Nursing			Pharmacy			Engineering			MBBS			Total		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Never	104	190	294	169	65	234	246	53	299	103	124	227	622	432	1054
Sometimes	46	17	63	28	5	33	41	4	45	24	23	47	139	49	188
Monthly	10	0	10	9	0	9	9	1	10	6	1	7	34	2	36
Weekly	6	2	8	18	5	23	12	1	13	22	9	31	58	17	75
Daily	4	2	6	2	1	3	2	1	3	3	5	8	11	9	20
Total	170	211	381	226	76	302	310	60	370	158	162	320	864	509	1373

Table 2 shows the alcohol consumption frequency by the students in the four colleges. A total of 1054 (76.77%) students claimed to have never consumed alcohol which means that 319 (23.23%) students consume alcohol in varying degrees. Students who sometimes consume alcohol are 188(13.69%) in number. 75 (5.46%) students are weekly drinkers and 20 (1.46%) are daily drinkers. Majority of all drinkers are males (75.86%), as compared to females (24.14%). These trends are consistent in all four colleges, however the highest number of females who are drinkers is from the medical college i.e. 38 (11.88%).

Table 3: Factor and Structure Reliability of AUDIT

Items Alcohol Use Disorders Identification Test (AUDIT)		Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if item Deleted
Domain 1. Hazardous Alcohol Use	1. How often do you have a drink containing alcohol?	0.699	0.569	0.870
	2. How many drinks containing alcohol do you have on a typical day when you are drinking?	0.644	0.521	0.879
	3. How often do you have 6 or more drinks on one occasion?	0.663	0.638	0.873
	4. How often during the last year have you found that you were not able to stop drinking once you had started?	0.697	0.616	0.874
Domain 2: Dependence Symptoms	5. How often during the last year have you failed to do what was normally expected of you due to drinking?	0.709	0.706	0.873
	6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	0.702	0.679	0.876
	7. How often during the last year have you had a feeling of guilt or remorse after drinking?	0.657	0.545	0.877
Domain 3: Harmful Alcohol Use	8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?	0.721	0.663	0.874

9. Have you or someone else been injured as a result of your drinking?	0.635	0.448	0.881
10. Has a relative or friend or doctor or other health worker been concerned about your drinking or suggested you cut down?	0.647	0.498	0.888

Table 3 shows the reliability of the AUDIT score used in the study. Internal consistency of the screening measures was evaluated using the data from the 1373 students who reported alcohol consumption or not. These analyses yielded strong evidence of internal consistency reliability for the AUDIT (Cronbach's = 0.88, correlations ranged from 0.44-0.71). All questions except the last question (No. 10), show a reduced Cronbach's Alpha score on their omission.

Table 4: AUDIT (Alcohol Use Disorders Identification Test) Score of College Students.

	Nursing			Pharmacy			Engineering			MBBS			Total		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Zone I (0-7)	135	200	335	195	73	268	286	57	343	135	146	281	751	476	1227
Zone 2 (8-15)	30	10	40	23	1	24	15	2	17	14	10	24	82	23	105
Zone 3 (16-19)	4	1	5	4	0	4	5	0	5	8	1	9	21	2	23
Zone 4 (20-40)	1	0	1	4	2	6	4	1	5	5	1	6	10	8	18
Total	170	211	381	226	76	302	310	60	370	162	158	320	864	509	1373

**The AUDIT score was developed by the World Health Organization so as to assess the possibility of excessive drinking in subjects and the assistance that can be provided. It consists of a questionnaire which divides the participants into 4 distinct zones so as to assess the mode of intervention[10, 11].

Table 4 shows the AUDIT scores of the students in the four colleges. A majority of students fall in the Zone 1 i.e. 1227 (89.36%) students. 105 (7.65%) students come in the Zone 2, 23 (1.68%) in Zone 3 and 18(1.31%) in Zone 4, and a similar trend is seen in all four colleges. Using a cut-off score of 8 for the AUDIT analysis indicated 146 (10.1 %) students have problematic drinking issue (77.39 % males and 22.60 % females). The highest amount of problematic drinking seems to occur in the Nursing and medical colleges respectively, which is around 12% of all students. More worryingly 18 students (1.31%) appear to fall into the category of probable alcohol dependence (i.e. a cutoff score of 20 or more on the Audit scale)

Table 5: Adverse effects of Alcohol Use in College Students

VARIABLE	SIGNIFICANCE	ADJUSTED ODDS RATIO	95% CI For ADJUSTED ODDS RATIO	
			LOWER	UPPER
Guilt	0.000	1.911	1.414	2.583
Blackouts	0.074	1.348	.972	1.870
Complaints From Family Members	0.935	1.014	.730	1.409
Neglecting Family	0.208	1.298	.865	1.948
Family Members Afraid	0.806	.953	.647	1.402
Not Spending Time with Family	0.004	1.590	1.162	2.175
Fights with Family Members	0.890	1.024	.733	1.430
Neglecting Studies	0.041	1.374	1.014	1.862
Failed Exams	0.000	2.451	1.806	3.324
Illegal Activities	0.053	1.718	.994	2.971
Medical Issues	0.003	2.052	1.275	3.302
Financial Difficulties	0.000	3.220	2.012	5.154
Sold Drugs	0.167	1.513	.841	2.722

Table 5 shows the various effects that alcohol use has on the various aspects of the students' lives such as familial, studies and health. A significant association has been found between the use of alcohol and students neglecting studies (AOR 1.30). A highly significant association has been noted between alcohol consumption and Guilt (AOR 1.91), not spending time with family members (AOR 1.59), failing in exams (AOR 2.45), Medical issues (AOR 2.05), Financial Difficulties (3.22).

Discussion.
Alcohol consumption in colleges seems to be a rising phenomenon, which could be attributed to further exposure of students via media, larger number of students moving away from home for study purposes, or it is possible that the problem was always prevalent but was hidden due to the social taboo which used to be associated with alcohol consumption which is diminishing in the modern era. Furthermore the increased pressure to perform and the rising competition may be culpable in pushing the students towards substance use and alcohol consumption. The easy availability of the alcoholic beverages is another factor which may be held responsible. In recent years there has been an increasing shift of the population towards urban areas resulting in added social as well as financial pressures on families, not to mention shrinking and breaking of families, which may be compounding the fact that students look for easy release from pressure.

The overall Cronbach's of AUDIT in English version used in this study was 0.86 for the stated sample. This value is in accord with findings from other reports of different language versions and populations, where yielded a comparable median reliability coefficient of 0.83, with a range of 0.75 to 0.97 (10, 11, 12). Medical and pharmacy students appear to score higher in the Audit score, which is consistent with the prevalence of alcohol consumption and does point to the fact that the problem of alcohol use is greater among these students.

Alcohol consumption usually tends to be higher among males than females in most settings, however research seems to indicate that women are susceptible to the physiological effects that are caused by alcohol and the blood alcohol level in women tends to be higher than men when a similar amount of alcohol is consumed (10,13). The study highlights that the majority of alcohol consumers are males in all colleges, which is similar to the trends portrayed in the studies by Gaviria-Criollo et al (10), Deressa et al (14).

The study which was conducted showed that there was a high prevalence of alcohol consumption among students (23.23%) in all four colleges which is similar to the results obtained by Deressa et al (22 %) (14), however this percentage of alcohol consumption is much lower in the study conducted by Baba T et al (6.2%) (1), but it was higher in the studies done by Goswami (49 %), Tesfaye et al (50.2%) (15) and Andrade et al

(66.2 %) (16), the percentage of students consuming alcohol was higher than the average in the Pharmacy College (25.17%), and was considerably higher among the medical college students (29.07). Prevalence of higher frequency of consumption among the medical college students, could be due to the possibility that the medical students all appeared to be from affluent backgrounds, however in this setting it was difficult to surmise whether this could actually lead to the other students from obtaining cheaper sources of alcohol which may have higher deleterious effects on their health.

Alcohol consumption appears to negatively impact the students in a various ways, out of which a high association was seen with alcohol consumption and Guilt (AOR 1.91), not spending time with family members (AOR 1.59), failing in exams (AOR 2.45), Medical issues (AOR 2.05), Financial Difficulties (3.22). This was in accordance with the results obtained by White & Higson, Enyi U J et al (17, 18)

CONCLUSION
The research was carried out in a reputed institute with a large number of students from different disciplines. The current study does point out some worrying facts like the high alcohol intake among students, and the adverse effects related to alcohol consumption. The percentage of problematic drinkers and dependency on alcohol is very high, and this may lead to an eventual increase in the number as the students progress through college and indeed after that as well.

Recommendation
Considering the large amount of data that was gathered from the institute from Indore, it is still very important to perform this study on a larger scale, possibly with the inclusion of more institutes in more than one city. The scope of this study can also be broadened so that it could include young adolescents, as there is plenty of evidence gathered from this study itself that students tend to start using substances at a much younger ager. The current study was based on anonymity and protection of the identities of the students, however, now that it has been established that substance use is a common phenomenon in the concerned institute, it would be prudent to re-conduct this study, with the purpose of specifically identifying, the students who are using substances, while maintaining the required ethical boundaries.

Limitations
In spite of the large number of students who participated in the study and the various colleges from which the sample was collected, this study has some limitations.

1. The students were from the same parent institute and campus, hence the sample may not be representative of the student population of Indore, or Madhya Pradesh.

2. Due to maintenance of confidentiality of the students it is impossible to actually pinpoint the students who are in trouble due to substance use.

3. Some students could not be properly encouraged to participate in the study, who might actually be substance users.

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