

Alcohol Use by Brazilian College Students

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Abstract

During college, there is an increase in alcohol consumption by students.

Objective: The aim of this study is to draw an epidemiologic profile of university students who consume alcohol and identify the prevalence of alcohol abuse among them through CAGE questionnaire.

Methods: This study was a descriptive, cross-sectional study with a sample of students enrolled at the Federal University of Piauí-Brazil.

Results: The prevalence of alcohol consumption was very high (91.1%), as well as the prevalence of alcohol abuse evaluated through the CAGE-questionnaire. The age group that had the highest ratio of alcohol consumers was between 20 and 24 years old, and students of the agriculture sciences center had the highest ratio of alcohol consumption (95%). The main reasons to drink, reported by the students, were their curiosity and influence of friends. Furthermore, 33.9% of the university students drink alcoholic beverage before reaching sixteen years old.

Conclusion: The high prevalence of alcohol consumption was alarming and claims to the attention of the government. It should be drawn an educational program regarding the danger of alcohol use.

Keywords: Alcohol drinking; Students; Alcoholic beverages; Alcoholism

Introduction

The beginning of life in college represents huge mark on students' lives. The absence of family supervision and the desire for new experiences make university students more vulnerable to adopt conducts once forbidden and even illicit. During this period, there is an increase in alcohol use, followed by tobacco, marijuana and stimulants such as amphetamines, ecstasy and cocaine [1].

The continued use of alcohol is associated with negative consequences that affect both physical and mental health of young people and the society. Those students spend their free time more likely in discos, at parties, with friends or in bars, in contrast to younger students, who prefer going to the movies [2]. Regarding risky sexual behavior, a study carried out with male Korean university students identified that heavier alcohol consumption was significantly related to multiple visits to prostitutes and sexual experiences with both prostitutes and girlfriends, suggesting that students who used alcohol assumed that they were not vulnerable to the dangers of alcoholic beverage [3].

Based on the latter facts, it has become necessary to identify university students who had already reached an excessive limit of alcohol consumption. On this purpose, the CAGE was developed based on a study realized on North Carolina Memorial Hospital [4] and allows tracking excessive abuse and alcoholic dependence. It is composed of four questions about alcohol use ordered in a mnemonic way through the acronym CAGE. Its name is a result of the first letters of keywords that appear in each one of four questions. The questions are: "Have you ever felt you should cut down on your drinking?"; "Have people annoyed you by criticizing your drinking?"; "Have you ever felt bad or guilty about your drinking?"; "Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover (eye-opener)?".

It is considered a positive test for those who answer "yes" to two questions or more. The CAGE questionnaire has a sensibility and a specificity ranging from 74% to 88% and 83% to 91%, respectively, in the adult population [5,6].

The aim of this study is to draw an epidemiologic profile of university students who consume alcohol and to identify the prevalence of alcohol abuse among them through the CAGE questionnaire.

Methodology

The present study is part of the research project titled "Socioeconomic, nutritional and health profile of students from the Federal University of Piauí-UFPI-Brazil". It is a descriptive, cross-sectional study with a sample of 654 students, of whom 305 were males and 349 females, with ages ranging from 16 to 57 years old, all regularly enrolled in the second semester of 2006. The data were collected in January and February 2007.

For the calculation of the sample size, a 95% confidence interval was considered, for a finite population of 11,152 students, using Martins' formula for proportion estimation in large samples [7];

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the error margin obtained was 3.75%. The sample was chosen by lot, proportionally to the number of students attending the course, semester attended, and teaching center of UFPI (Agriculture Sciences Center; Education Sciences Center; Humanities, Law and Languages Sciences Center; Natural Sciences Center; and Health Sciences Center).

The project was approved by the Research Ethics Committee of UFPI (Report no. 95/2006) and followed the guidelines of Resolution nº 196/96 of the National Health Council. Before the administration of the questionnaire, the students were informed about the objective of the study and the procedures that would be performed, and signed the Informed Consent Form.

The instrument used for data collection was a questionnaire containing dependent and independent variables. Independent variables included: gender (male or female), age range (16-19; 20-24; 25-57), graduation area (Agriculture Sciences Center; Education Sciences Center; Humanities, Law and Languages Sciences Center; Natural Sciences Center and Health Sciences Center; and Technology Center), family income (<1, >1 and ≤ 5, > 5 and ≤ 10, >10 minimal wage/month) and mother's education level (defined as the last grade completed by the mother - those who graduated at college and those who did not).

Dependent variables were alcohol consumption and alcohol abuse. The evaluation of alcohol consumption was performed by questionnaire about alcohol use (yes or no), reasons that lead to alcohol use (due to own curiosity, to release tensions, due to influence of family, due to influence of friends, to feel adult, due to unawareness of the damages of alcohol to health), age in which they started this habit (<16 or ≥ 16), frequency of alcohol use in the previous month (1-5 days, 6-19 days and 20 days or more), type of alcoholic beverage (beer, wine, rum, distilled drink) and alcohol consumption measured in grams (measurement based on shots, goblets, bottles or cans-depending on the type of alcoholic beverage). The CAGE questionnaire assessed the alcohol abuse.

Regarding heavy episodic drinking, we classified as heavy episodic drinkers those who had drunk six or more times during the month preceding the study. We also assessed the total consumption of pure alcohol in grams during the month preceding the study. The drinkers who reached the risk limits were those students who declared having drunk equal to or more than 45 grams, for women, and equal to or more than 90 grams, for men.

Data were processed in the Excel for Windows, BioEstat 4.0 and EpiInfo 6.04b programs. The statistical analysis for associations between the variables studied was carried out using the chi square test and simple linear regression test. The odds ratio was used in the relations between two variables in 2 × 2 tables. The level of significance was set at p<0.05.

Results

The prevalence of alcohol consumption was 91.1%. There was no positive association between alcohol consumption and the variables gender, age group, family income and the mother's education level (Table 1).

The Agriculture Sciences Center had the highest ratio of alcohol consumption (95%), and the Technology Center (86%) had the lowest (Table 2).

Considering the reasons given by students for drinking alcohol, the main reasons reported were their curiosity and friends' influence (p=0.0006) (Table 3).

As regards the age they started drinking, 33.9% of the university students started drinking alcoholic beverages before sixteen years old. The comparison between genders showed that 25.6% of females initiated this habit before sixteen years old and 41.6% of male students started drinking alcohol before sixteen years old (p=0.0003) (Table 3).

The prevalence of alcohol use in 20 days or more during the month preceding the survey, among the university students enrolled, was 6%. Among male students, 6.7% consumed alcohol in 20 days or more in the previous month and 5.2% of women had consumed alcohol in this frequency. However, there was no statistically significant difference between genders, regarding the frequency of alcohol consumption in the month preceding the study. Therefore, 33.2% of our samples were heavy drinkers (Table 3).

When asked about the type of alcoholic drink, men drank more beer and rum than women (Table 3). However, wine and distilled drinks were drunk in a higher ratio by women (p=0.0001).

Regarding the alcohol consumption measured in grams, in both genders, the group that had the highest prevalence among the students was that in which consumption was the highest: over 45 g for women (36.3%) and 90 g for men (49%). They had reached the risk limits of alcohol use (Table 3).

Variable	n	Alcohol consumption		Statistics
		c*	%	(χ ²) p
Age range (years)				0.43
16-19	164	154	93.9	
20-24	381	364	95.5	
25-57	108	100	92.6	
Gender				0.20
Female	349	313	89.7	
Male	305	283	92.8	
Family income (minimal wage/month)				0.75
≤ 1	17	16	94.1	
>1 e ≤ 5	280	254	90.7	
>5 e ≤ 10	173	155	89.6	
>10	151	140	92.7	
Mother's education level				0.81
Graduated at college	444	407	91.7	
Did not graduate	194	176	90.7	

n, number of students; c, number of cases (users). *It was considered user the student who reported being using or having used alcohol.

Table 1: Prevalence of alcohol consumption among university students according to sociodemographic characteristics.

Variable	Alcohol consumption			Statistics
	n	c*	%	χ ² p
Agriculture Sciences Center	60	57	95.0	0.001
Humanities, Law and Languages Sciences Center	236	223	94.5	
Education Sciences Center	81	73	90.1	
Health Sciences Center	98	88	89.8	
Natural Sciences Center	128	111	86.7	
Technology Center	50	43	86.0	

n, number of students; c, number of cases (users). * It was considered user the student who reported being using or having used alcohol.

Table 2: Prevalence of alcohol consumption among university students according to teaching center of Federal University of Piauí.

Variable	Gender				Overall		Statistics p
	Female		Male		n	%	
	n	%	n	%			
Reasons that lead to alcohol use							
Due to own curiosity	150	65.8	124	46.8	274	55.6	0.0006
Due to influence of friends	43	18.9	76	28.7	119	24.1	
Due to influence of family	15	6.6	25	9.4	40	8.1	
To release tensions	14	6.1	17	6.4	31	6.3	
To feel adult	4	1.8	13	4.9	17	3.4	
Due to unawareness of the damages of alcohol to health	2	0.9	10	3.8	12	2.4	
Total	228	100.0	265	100.0	493	100.0	
Age (years) in which started drinking alcoholic beverages							
<16	60	25.6	104	41.6	164	33.9	0.0003
≤ 16	174	74.4	146	58.4	320	66.1	
Total	234	100.0	250	100.0	484	100.0	
Frequency of alcohol use (during the month preceding the study)							
1-5	112	83.0	130	72.2	242	76.8	0.07
6-19	16	11.9	38	21.1	54	17.1	
≥ 20	7	5.2	12	6.7	19	6.0	
Total	135	100.0	180	100.0	315	100.0	
Drinks consumed more frequently							
Beer	100	49.8	186	71.8	286	62.2	0.0001
Wine	66	32.8	27	10.4	93	20.2	
Distilled Drink	24	11.9	25	9.7	49	10.7	
Rum	11	5.5	21	8.1	32	7.0	
Total	201	100.0	259	100.0	460	100.0	
Alcohol consumption (g)							
≤15 (women) or up to ≥ 30 (men)	37	21.6	33	17.2	70	19.3	0.11
16-30 (women) or 31-60 (men)	44	25.7	40	20.8	84	23.1	
31-45 (women) or 61-90 (men)	28	16.4	25	13.0	53	14.6	
>45 (women) or >90 (men)	62	36.3	94	49.0	156	43.0	
Total	171	100.0	192	100.0	363	100.0	

Table 3: Characteristics of alcohol consumption among university students according to gender.

The prevalence of positive CAGE test among the genders was 54.8% in male group and 54.4% in the female group. The positive CAGE test had a positive association with age (p=0.02) and with Health Sciences Center of the Federal University of Piauí (p=0.002) (Table 4).

Discussion

The prevalence of consume alcoholic beverage was too high among students from the Federal University of Piauí (91.1%). It was higher than that found to university students from Creta, Greece (77.2%) [8], medical students from Botucatu-Sao Paulo, Brazil (50%) [9] and also that found in Jequié-Bahia, Brazil (63.2%) [10].

Besides, our estimates were higher than that found in the general population in 107 Brazilian cities, as observed by Galduroz et al., [11] who found a prevalence of 74.6% alcohol users. Together, the above mentioned numbers turn our attention to the public health problem that alcoholic drinks represent at both the university environment and the society in general.

The ratio of students who declared drinking alcohol over those who declared to be non-users was significantly higher among male students (92.8%) than among female students (89.7%) (p=0.0001). Worldwide, the difference of standards of drugs use between male and female has been evaluated [12,13]. Men drink more alcoholic

beverages, whereas women use more benzodiazepines, stimulants, opiates and barbiturates, amphetamines and analgesics [12]. However, women are getting close to men's alcoholic threshold [13].

Being a man is a risk factor to consume alcohol beverages [3,12]. In our study, 92.8% of male students consumed alcohol. This rate was higher than that found in Brazil (Jequié-Bahia) [10] and in Greece [8], whose prevalence rates were 71% and 77%, respectively.

Moreover, gender differences are important to explain not just the etiology but also the consequences of alcohol use [14]. A study with students from North America observed that absence to school, falls, forgetfulness, unprotected sexual relationships and fights were consequences of excessive use of alcohol [15]. Also, Brandao et al., [16] observed that 17.7% of male students skipped class after using alcohol.

Pedrosa et al., [17] assessed the impact of advertisement over the alcohol use. Men exposed to advertisement showed a prevalence of alcohol abuse 2.9 times higher than those who did not watch them. Furthermore, men whose relatives were affected by alcoholic problems had 1.1 times more chance of excessive use of alcohol than those who did not. The higher incidence of male drinkers is a social problem whose reasons can be found at home and in the society.

The relationship between parental socioeconomic status and alcoholic habits of students is poorly understood [18]. We observed no positive association between family income and alcohol consumption among students investigated, just like that found in Slovakia [18]. Nevertheless, regarding those variables, other studies identified a higher risk of excessive drinking among university students whose families had high family income [9,14,19]. Likewise, among public school students from first and second degrees of high school in Florianópolis, SC, Brazil, the high socioeconomic status was associated with an a risk of alcohol use two times higher than low socioeconomic status [20].

In this study, there was also no association found between alcohol habits and students whose mothers had gone to college. The same was observed among medical students from Rio de Janeiro, whose prevalence of alcohol use was about 20% higher among students with college-educated parents [19].

Variable	n	CAGE Positive		Statistic X ² p
		c*	%	
Gender				0.99
Female	349	190	54.4	
Male	305	167	54.8	
Age Group (years)				0.02
16-19	164	95	57.9	
20-24	381	215	56.4	
25-57	109	47	43.1	
Teaching center of Federal University of Piauí				0.002
Agriculture Sciences Center	60	34	56.7	
Humanities, Law and Languages Sciences Center	236	127	53.8	
Education Sciences Center	81	40	49.4	
Health Sciences Center	98	71	72.4	
Natural Sciences Center	128	58	45.3	
Technology Center	50	26	52.0	

n, number of students; c, number of cases (users). * It was considered user the student who reported being using or having used alcohol.

Table 4: Prevalence of alcohol abuse (CAGE-positive) in university students, according to CAGE questionnaire.

The influence of family was also observed in a study performed in Slovakia, which assessed the influence of the parents, together. They found that academics whose parents had the same educational level, either high or low, were more likely to be involved in drinking problems than those students whose parents had distinct education degree, one parent having a higher and the other one, a lower education (regardless of whether the mother or the father had the higher education) [18].

Concerning to graduation areas, we did not find similar results on literature. Law and Languages Sciences Center had the second highest prevalence of alcohol users. However on Stempliuk's [14] and Andrade's [21] studies, this center had the highest prevalence. Health Sciences Center had the fourth highest prevalence of alcohol users but, Kerr-Correa et al., [12] observed that the highest prevalence of alcohol consumers was found at this latter Center.

Literature lacks data about the prevalence of alcohol consumers in graduation areas because studies carried out to analyze this prevalence hardly focus on this. The major studies used to associate alcohol consumption with the courses of students (medicine, engineer, administration, etc.), as done in a study that enrolled students from Cartagena. The latter found that there was a higher prevalence of heavy alcohol use among economic, administration and engineering areas [22].

Furthermore, when asked about the reasons that lead them to use alcohol, 55.6% started it due to their curiosity, a higher ratio than that found with medical students from Unesp-SP, of whom 17% initiated the alcoholic habits due this reason. They also found a surprising statistic: 60% of students enrolled in the latter survey did not know how to explain the reasons for starting drinking [12].

There are a lot of reasons that encouraged students to start alcoholic practice, such as to facilitate sexual activities [3,23] or for fun and social reasons [2,16], or due to the exposition to alcohol advertisements [17]. We also identified students who referred drinking to release tensions, to feel adult or due to unawareness of the damages of alcohol to health.

People who share places with other students have a large piece of responsibility on students' behavior. Friends and colleagues were those who offered the first dose of alcohol to the majority of respondents in the Federal University of Alagoas [17]. Living together with friends and with a person who use drugs was also highlighted by a study carried out in an Italian university as a risk factor to (licit and illicit) drug use [13]. Supporting those findings, about influence of friends, this was the second justification reported by students to drinking alcohol in our sample.

The third reason appointed by college students as responsible for the alcoholic habits was the influence of family. The family is decisive for the initiation of alcohol use, and the university is a factor that increases the possibility of maintaining this practice. Some families are tolerant about the act of drinking, especially the members of the immediate family (parents and siblings), which contributes for teenagers to consume alcohol [2].

On the other hand, the family can play a role in protecting students from alcohol use. Accommodation is an important risk factor for heavy drinking episodes, alcohol drunkenness and drinking problems among university students. Leaving parents' home often coincides with an increase in heavy alcohol use. It happens because some parents do not tolerate negative alcohol-related behaviors, elucidating how much the family has an effect on college students [18].

We observed that 66.1% of students initiated the alcoholic habit

before sixteen years old. Studies worldwide have supported this, as follows: Italian university students tried alcoholic beverages for the first time at the average age of 15.4 ± 2.6 years old [13]; UK college students had started this habit at high school in 46% of the sample and 13% began after entering university [24]; whereas in Greece, students reported having started drinking at 13 years old [8]. Also, Brazilian students at PUC (Pontificia Universidade Catolica)-Sao Paulo, Brazil (18.80%) declared having started alcohol use at 14 years old [25].

Together, those statistics warn that university by itself is not the main responsible for the alcohol use by students. Although the university is not the starting point for the alcohol consumption, it is a factor that magnifies it, determinedly maintaining this practice, given the respondents' age characteristic [16]. Supporting this, in Cartagena it was found that 46% of college students enrolled in the study consumed alcohol at bars localized around the campus of the university [22].

The influence of college is clearly observed in medical students from a private university at Curitiba, where 45.2% of drinkers started the consumption after entering university, probably because during the first year social events like parties, sports competition and happy hours are important to socialize with the veterans [26]. In another Brazilian city, Botucatu, SP, Brazil, students from the State University of Sao Paulo (Unesp) were also evaluated, and 16.4% of them tried on drugs after entering the university [9].

We found a prevalence of 33.2% (27.1% males vs 27.8% females) of students as heavy drinkers. It was less than that found in students from Slovakia (77.0% of males and 52.1% of females were heavy episodic drinkers) [18]. However, it is important to highlight that, among those studies; there was not a standard on the definition of "heavy drinkers."

Regarding the type of alcoholic beverage, we observed that 62.2% of our sample preferred beer, followed by wine (20.2%), distilled drinks (10.7%) and rum (7.0%). The beer appears as the most popular drink among university students in many surveys [26,27]. Still concerning the type of drink, although men often drink more beer than women, women drink wine and distilled beverages in a higher ratio, as found among students from Alagoas, Brazil [17].

The beer was also reported as the most consumed alcoholic beverage (57.6%) among university students who study in the Health Sciences Center of public universities of Maceio-AL, Brazil. There was also a positive correlation between the most consumed types of drinks and how much the publicity exposes them to those university students [17].

The CAGE questionnaire used to assess the alcohol abuse showed numbers more alarming than the high prevalence of alcohol use in this sample. The statistics of alcohol abuse found were higher among the general population studied than in the gender groups or in all others found in the literature.

We have found 54.58% of the students with positive CAGE test, evidencing alcohol-abuse behavior. Meanwhile, in Rio de Janeiro-RJ, Brazil, 19.8% of the medical students were identified with this behavior [18] and 13.4% in Jequeia-BA, Brazil. Positive CAGE scores are higher than those found in Turkey (20%) [27] and Peru (13.7%) [28].

Also, alcohol abuse (positive CAGE test) has been estimated at 54.8% of males and 54.4% of females. However, a survey that evaluated drinking problems in students from Slovakia found lower numbers: 32.3% of males and 14.3% of females.

The university represents an environment that facilitates the use of alcohol. However, it is not the only reason that leads the students to

consume alcohol beverages. The student's behavior is a consequence of factors that encompass from the immediate family to the society (rules of conduct, pressures, advertising, etc.). The higher prevalence of alcoholic use was alarming and claims the attention of governments.

The CAGE questionnaire showed that the lack of attention on these members of society allowed that alcoholic habits had become a social problem due to the large number of students that scored positive CAGE test, hence, alcohol abusers. However, the CAGE questionnaire has a very limited positive predictive value. So, the corresponding prevalence of alcohol abuse figures should be interpreted carefully.

Likewise most surveys on drug use held in developing countries, this is a cross-sectional study, of limited geographic range, to determine prevalence and association between use and demographic factors. Additionally, this study has limitations because data were obtained in 2007 and the information may be considered outdated, but it should be highlighted that alcohol use by college students of higher education institutions of Teresina city does not seem to have changed in recent years and that no other similar study was conducted with this population. Further research has to be conducted in less developed countries using more sophisticated designs to evaluate the alcohol use all over this country.

The establishment of behaviors such as consumption of alcohol and illicit drugs is considered a complex phenomenon. The family plays a key role in contributing to discourage the use of alcohol by teenagers or their use at home. Moreover, there is a need for sectoral and institutional public policies to discourage, contain and contribute to reducing the consumption of alcohol and other drugs. The planning of effective policies requires a debate involving representatives of the scientific community, health workers, the media and public managers, business representatives and education, health, communication, law, social sciences and communication professionals.

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