Original Article

Alcohol consumption between students*

Mariana Salles Motta Rodrigues de Barros[1]
Luciana Scarlazzari Costa[2]

The aim of this study is to evaluate the profile of alcohol consumption among students of a Brazilian university. Regarding alcohol consumption, 76.6% are in the low risk of dependence and 23.4% in the risk/ harmful use. Students who used tobacco and illicit drugs presented potentially high risks of alcohol consumption (PR =3.69, 95% CI: 2.01 to 6.79; PR =2.44, 95% CI: 1.32 to 4.50, respectively). The students presented a low risk of alcohol dependence, however, scores consumption showed different when a comparison is made with sociodemographic characteristics and lifestyle habits.

Descriptors: Alcohol Drinking; Alcoholism; Students; Psychotropic Drugs; Substance-Related Disorders.

Corresponding author:
Mariana Salles Motta Rodrigues de Barros
E-mail: marianasbiomed@gmail.com
https://orcid.org/0000-0001-5331-7026

Perfil do consumo de álcool entre estudantes universitários

O objetivo foi avaliar o perfil de consumo de bebidas alcoólicas entre estudantes de uma universidade brasileira. Quanto ao consumo de álcool, 76,6% foram classificados com baixo risco e 23,4% de risco/uso abusivo. Os estudantes que faziam uso de tabaco e drogas ilícitas apresentaram riscos potencialmente elevados de consumo de álcool (RP_{bruta}=3,69, IC95%: 2,01 – 6,79; RP_{bruta}=2,44, IC95%: 1,32 – 4,50, respectivamente). Os estudantes apresentaram baixo risco de dependência, no entanto, os escores se mostraram diferenciados quando avaliado com características sociodemográficas e hábitos de vida.

Descritores: Consumo de Bebidas Alcoólicas; Alcoolismo; Estudantes; Psicotrópicos; Transtornos Relacionados ao Uso de Substâncias.

Perfil del consumo de alcohol entre estudiantes universitarios

El estudio tiene por objetivo evaluar el perfil de consumo de bebidas alcohólicas entre los estudiantes de una universidad brasileña. En relación con el patrón de consumo de alcohol, el 76,6% fue clasificado con bajo riesgo y el 23,4% en el riesgo/ abuso. Los estudiantes que hacían uso de tabaco y drogas ilícitas presentaron riesgos potencialmente elevados de consumo de alcohol (RP_{bruta}= 3,69; IC del 95%: 2,01 a la 6,79; RP_{bruta} = 2.44, IC del 95%: 1.32 a la 4.50, respectivamente). Los estudiantes presentaron bajo riesgo de dependencia del alcohol, sin embargo, las puntuaciones de consumo se mostraron diferenciado cuando se evaluó con características sociodemográficas y hábitos vida.

Descriptores: Consumo de Bebidas Alcohólicas; Alcoholismo; Estudiantes; Psicotrópicos; Trastornos Relacionados con Sustancias.

Introduction

Alcohol is a psychotropic substance that acts on the central nervous system causing change in behavior and potential dependence on its consumers[1]. In Brazil, this substance has been of great cultural acceptance in all social classes, and has ample commercial availability among young people[2].

Brazilian epidemiological studies have estimated high prevalence rates of alcohol consumption, ranging from 66.3% to 91.9%, moreover abusive alcohol consumption is a serious public health problem in the country[3-7].

When it comes to young people, alcohol is the drug most consumed by them in Brazil, followed by tobacco, marijuana and stimulants; besides an important factor in the adoption of risk behaviors[8]. According to the Brazilian Center for Information on Psychotropic Drugs (CEBRID)[1], 73.2% of young people between 18 and 24 years of age have ever used alcoholic beverages and 15.5% have symptoms of dependence.

Researches involving the behavior of college students about psychoactive substances have already been done in universities inter and nationally. In Brazil, several studies in this area have already been carried out with college students[3-12]. Most of them are concerned with the study of consumption among health students, such as Biological Sciences, Medicine, Odontology, Nursing, because they are the future opinion makers about health in society. In these studies there is a concern to know not only the prevalence of consumption, but also the possible factors associated with this prevalence.

Associated factors with alcohol consumption among students are those socioeconomic, behavioral and family relationship. Among these, we can highlight income,

schooling, age, gender, skin color, religion, stress, group pressure, practice of sports, work, living away from the family, residence in areas with few leisure activities, poor dialogue with the family, mental problems, risk behavior, among others factors[2,11-12].

In Rio de Janeiro, studies involving the use of drugs or tobacco[13-14], and alcohol[15-16] are observed among college students. These studies demonstrate concern and relevance to the topic of alcohol and drugs in the university context, thus allowing studies to be conducted within this theme in order to increase knowledge about it. Thus, the objective of this study is to know the profile of alcohol consumption and related factors among college students in a public university in the city of Rio de Janeiro, according to sociodemographic characteristics and habits of life.

Methods

The study was observational, cross-sectional with quantitative approach. From May to October 2013, 124 college students from the Biomedicine, Biological Sciences and Natural Sciences courses of the Federal University of the State of Rio de Janeiro (UNIRIO) participated. The project was approved on 02/07/2013, CAAE: 03530412.3.0000.5285 by the Research Ethics Committee of the Federal University of the State of Rio de Janeiro.

The sample size was initially evaluated by the sample estimate, with a total of 102 students, considering an expected proportion of 0.40 alcoholic beverages, with a 95% confidence interval, a total size of 0.20 and a percentage of losses around 10%. The total sample was divided according to the proportion of each course in the total number of students currently enrolled in the four courses (40% of students in Biomedicine, 40% in bachelor's degree in Biology, 8% in Natural Sciences and 9% in college degree in Biology). Thus, the students from the four courses who accepted to participate in the research were included.

The research was carried out with the students in the intervals between classes from May to October 2013. At this time, only the age of the student was evaluated, so for students under the age of eighteen, the written informed consent form was previously sent for the parents/guardians. Subsequently, to the eligible participants a questionnaire with four parts was used. (1) sociodemographic information on alcohol consumption (2) Alcohol Use Disorder Identification Test- AUDIT, (3) CAGE - Cut-down, Annoyed, Guilty and Eye-opener and on mental disorders (4) SQR-20 - Self Reporting Questionnaire. All questionnaires were self-reported.

To collect the sociodemographic characteristics and lifestyle habits, a specific questionnaire was used for the research. It presents questions about date of birth, sex, skin color, schooling, course, period, academic year, marital status, religion, habitation, among others; and questions about alcohol use, smoking, use of other drugs, and sexual behavior. In order to obtain the social class variable, the questionnaire of the Brazilian Economic Classification Criterion was used[17], where the population is differentiated into strata, by their domiciliary characteristics, such as the presence of items and the quantity of them at home.

The AUDIT (*Alcohol Use Disorder Identification Test*) is a questionnaire developed by WHO that tracks the problematic use of alcoholic beverages[18]. It was adapted for the Brazilian population with good psychometric qualities and used in several studies[19-20].

The AUDIT is composed of ten questions, with scored answers. The score varies from 0 to 40 points, and according to this score it is possible to identify four different patterns of consumption: low risk, which has a score of 0 to 7; use of risk, consumption pattern that increases the risk of negative consequences for those consuming and for those around them, from 8 to 15; harmful use, which can lead to physical and mental losses of 16 to 19; and likely dependence, 20 or more points, which is that persistent consumption despite the behavioral, cognitive and physiological consequences of repeated alcohol use[18].

In the evaluation of the present study, the cut-off point ≥ 8 was considered for the AUDIT score, characterized as problematic drinking of alcohol (hazardous, harmful use and possible dependence)[18].

In the statistical analysis, the qualitative variables were presented by means of percentages and the quantitative ones by means of descriptive statistics (mean, median, standard deviation, minimum and maximum). The alcohol consumption pattern, that is, each AUDIT item was described for the courses evaluated and also for the total sample. A chi-square test was performed to verify if the consumption pattern differs in relation to the courses. In addition, the pattern of alcohol consumption was analyzed in two ways.

At first, to evaluate the relationship between the consumption score and sociodemographic variables and lifestyle habits. The score was categorized, obtaining cut-off points for low risk or abstinent (<8 points) and problematic drinking (≥8 points). The prevalence ratio (PR) and its respective confidence interval (CI) were used as a risk measure. In a second moment, the consumption score was evaluated as a quantitative variable and its description was analyzed through descriptive statistics; the relationship with the sociodemographic variables

and life habits was performed by comparing means. The Wilcoxon non-parametric test was used.

Graphical features such as Box-Plot were also used. All sociodemographic variables were presented as qualitative variables. For comparison purposes, quantitative variables such as age and income were categorized into two groups, according to the median values. For the variable income the Brazilian minimum wage was used for the year 2013, whose value was $ 678.00 reais.

In all analyzes, a 5% α was considered and these were performed in R software version 3.0.2.

Results

The total sample was 124 students enrolled in the following courses: bachelor's degree in biology (n = 46) and college degree in biology (n = 13 diurnal and 4 nocturnal), Biomedicine (n = 51) and Natural Sciences (n = 10). Data from 22 students were collected more than the number initially proposed (n = 102).

The students were characterized by the female sex, whites, single, living with the parents, religious, mostly Catholic. The mean age of the college students interviewed was 21.3 years (standard deviation= 2.2 years) and the average family income was $7,375.00 reais (standard deviation= $ 6,285.90 reais). Most are from the Biomedicine course and belong to social class C. The years 2010 and 2013 were the periods with the highest percentages of incoming students (Table 1).

Regarding lifestyle habits, it was observed that the majority was nonsmoker and did not use illicit drug, despite the cases alcoholism in the family. Only 15% reported driving under the influence of alcohol and 26% had sex without a condom after drinking alcohol (Table 1). The mean age at which they started consuming alcohol was 15.2 years (standard deviation = 5 years); most of them reported that they had not habit of trying alcoholic beverages after advertising campaigns and that they had also witnessed campaigns against alcohol use.

Table 1 - Description of the students according to sociodemographic variables and life habits. Rio de Janeiro, RJ, Brazil, December 2013

Characteristic	Category	n	%
Sex	Female	95	76.6
Skin color	White	94	75.8
Marital status	Single	122	98.4
Religion	Yes	83	66.9
Habitation	With parents	93	75.0
Economic class	A	1	0.8
	B	23	18.5
	C	59	47.6
	D	34	27.4
	E	7	5.7
Course	Biomedicine	51	41.1
	Bac. D. Biology	46	37.1
	College D. Biology	17	13.7
	Natural Sciences	10	8.1
Year of entry	2005 |–| 2009	31	25.0
	2010 |–| 2013	93	75.0
Tobacco use	Yes	41	25.0
	No	93	75.0

Table 1 continues on next page...

Characteristic	Category	n	%
Illicit drugs use	Yes	22	17.7
	No	102	82.3
Alcoholism in family	Yes	64	51.6
	No	60	48.4
Alcohol use after adverstising campaign in favor	Yes	35	28.2
	No	89	71.8
Saw campaigns against alcohol	Yes	87	70.2
	No	37	29.8
Know alcohol effects	Yes	124	100.0
	No	-	-
Drove with alcohol effects	Yes	15	12.1
	No	109	87.9
Know the STD´s*	Yes	124	100.0
	No	-	-
Unsafe sex after drinking	Yes	26	21.0
	No	98	79.0
Total		124	100

*STDs - Sexually Transmitted Diseases

As for the frequency of alcohol consumption, 124 participants reported that 42.7% reported consuming 2 to 4 times a month, 26.6% once a month or less, 9.7% two to three times a week, and 0.8% four or more times per week; 20.2% answered that they never consume drinks that contain alcohol (data not shown in Tables). Thus, the prevalence of alcohol consumption was 79.8% in the present sample.

According to the AUDIT classification, 76.6% (95%CI: 69.0% - 84.0%) of the students were classified as low risk consumers (≤ 8). while 23.4% (95%CI: 16.0% - 31.0%) were classified as problematic drinkers.

The variables associated with alcohol consumption were the use of tobacco (cigarettes) and illicit drugs (Table 2). The prevalence of abusive use for smokers was almost 4 times that of nonsmokers (95%CI: 2.01 - 6.79), while the prevalence of abusers who used illicit drugs was almost 3 times the prevalence of those who did not use (95%CI: 1.32 - 4.50). The other variables were not associated with statistically significant values with alcohol consumption.

Table 2 - AUDIT[*], sociodemographic factors and life habits. Rio de Janeiro, RJ, Brazil, December 2013

Variables	Categories	AUDIT[*] (n/%)		PR[†] (CI95%)
		< 8	≥ 8	
		95 (%)	29 (%)	
Sex	Male vs female	19 (20.0)	10 (34.5)	1.72 (0.91 – 3.28)
Skin color	White vs not white	72 (75.8)	22 (75.9)	1.00 (0.48 – 2.11)
Religion	No vs yes	30 (31.6)	11 (37.9)	1.24 (0.65 – 2.37)
Habitation	Without parents vs with parents	23 (24.2)	8 (27.6)	1.14 (0.56 – 2.31)
Economic class	A+B vs C+D+E	17 (17.9)	7 (24.1)	1.33 (0.64 – 2.74)
Course	Biomedicine vs others	37 (38.9)	14 (48.3)	1.34 (0.71 – 2.52)

Table 2 continues on next page...

Variables	Categories	AUDIT[*] (n/%)		PR[†] (CI95%)
		< 8	≥ 8	
		95 (%)	29 (%)	
Year of entry	2005 to 2009 vs 2010 to 2013	23 (24.2)	8 (27.6)	1.14 (0.56 – 2.31)
Tobacco use	Yes vs no	15 (15.8)	16 (55.2)	3.69 (2.01 – 6.79)
Illicit drugs use	Yes vs no	12 (12.6)	10 (34.5)	2.44 (1.32 – 4.50)
Alcoholism in family	Yes vs no	48 (50.5)	16 (55.2)	1.15 (0.61 – 2.19)
Drank after ads.	Yes vs no	28 (29.5)	7 (24.1)	0.81 (0.38 – 1.72)
Saw campaigns against alcohol	Yes vs no	67 (70.5)	20 (69.0)	0.95 (0.48 – 1.88)
Drove with alcohol effects	Yes vs no	10 (10.5)	5 (17.2)	1.51 (0.68 – 3.36)
Unsafe sex after drinking	Yes vs no	17 (17.9)	9 (31.0)	1.70 (0.88 – 3.27)

[*]AUDIT: *Alcohol Use Disorder Identification Test*; [†]PR: Prevalence Ratio

Table 3 - Comparison of AUDIT[*] scores according to sociodemographic characteristics and life habits. Rio de Janeiro, RJ, Brazil, December 2013

Characteristic	Category	AUDIT[*] score		p_value
		Mean (sd)	Median (min-max)	
Sex	Female	4.4 (4.1)	4.0 (0.0 – 18.0)	0.030
	Male	6.6 (5.0)	6.0 (0.0 – 19.0)	
Skin color	White	4.8 (4.3)	4.0 (0.0 – 19.0)	0.570
	Nonwhite	5.4 (4.7)	4.0 (0.0 – 18.0)	
Marital status	Single	5.0 (4.4)	4.0 (0.0 – 19.0)	0.100
	Not single	0.5 (0.7)	0.5 (0.0 – 1.0)	
Religion	Yes	4.7 (4.5)	4.0 (0.0 – 19.0)	0.216
	No	5.4 (4.2)	5.0 (0.0 – 18.0)	
Habitation	With parents	4.7 (4.5)	4.0 (0.0 – 19.0)	0.211
	Without parents	5.6 (4.3)	5.0 (0.0 – 18.0)	
Economic class	A+B	6.0 (4.9)	5.0 (0.0 – 18.0)	0.205
	C+D+E	4.7 (4.3)	4.0 (0.0 – 19.0)	
Course	Biomedicine	5.0 (4.9)	4.0 (0.0 – 19.0)	0.868
	Sciences	4.9 (4.1)	4.0 (0.0 – 18.0)	
Year of entry	2005 |–| 2009	4.7 (4.2)	4.0 (0.0 – 14.0)	0.803
	2010 |–| 2013	5.0 (4.5)	4.0 (0.0 – 19.0)	
Income[†]	< 7.3 MW[‡]	3.7 (4.2)	2.5 (0.0 – 18.0)	0.006
	≥ 7.3 MW[‡]	5.6 (4.4)	5.0 (0.0 – 19.0)	
Tobacco use	Yes	8.3 (4.7)	8.0 (0.0 – 18.0)	<0.001
	No	3.7 (3.7)	3.0 (0.0 – 19.0)	
Illicit drugs use	Yes	8.0 (4.6)	7.0 (1.0 – 18.0)	< 0.001
	No	4.7 (4.1)	3.5 (0.0 – 19.0)	
Alcoholism in family	Yes	4.8 (4.6)	4.0 (0.0 – 18.0)	0.587
	No	5.0 (4.3)	4.0 (0.0 – 19.0)	

Table 3 continues on next page...

| Characteristic	Category	AUDIT* score		p_value
		Mean (sd)	Median (min-max)	
Drank after ads.	Yes	5.7 (5.0)	5.0 (0.0 – 19.0)	0.350
	No	4.7 (4.2)	4.0 (0.0 – 18.0)	
Saw campaigns against alcohol	Yes	5.1 (4.6)	4.0 (0.0 – 19.0)	0.399
	No	4.3 (4.1)	3.0 (0.0 – 18.0)	
Drove with alcohol effects	Yes	7.2 (4.5)	7.0 (1.0 – 19.0)	0.001
	No	4.6 (4.3)	4.0 (0.0 – 18.0)	
Unsafe sex after drinking	Yes	7.3 (4.8)	6.0 (1.0 – 19.0)	< 0.001
	No	4.2 (4.1)	3.0 (0.0 – 18.0)	
Total score		4.9 (4.4)	4.0 (0.0 – 19.0)	

*AUDIT: *Alcohol Use Disorder Identification Test*; †Income in minimum wage; ‡MW= $678.00 reais for the year 2013 in Brazil.

In the comparison of AUDIT scores and sociodemographic characteristics, statistically significant differences were observed for the variables: male sex (p= 0.03) and income ≥ R$ 5000.00 (p= 0.006) (Table 3).

When compare AUDIT scores and life habits, statistically significant differences were observed for: illicit drug use (p <0.001) and tobacco/cigarette use (p <0.001). Differences were also observed for drunk driving (p = 0.001) and having sex without condoms (p <0.001) (Table 3).

The problematic drinking of alcohol is greater among students who have habits such as: use of illegal drugs, cigarettes, had sex without condoms and drive after alcohol use. Furthermore, the risk of problematic drinking of alcohol increased considerably among those who used substances and had a risk behavior. The illustration of these habits and behaviors is in Figure 1.
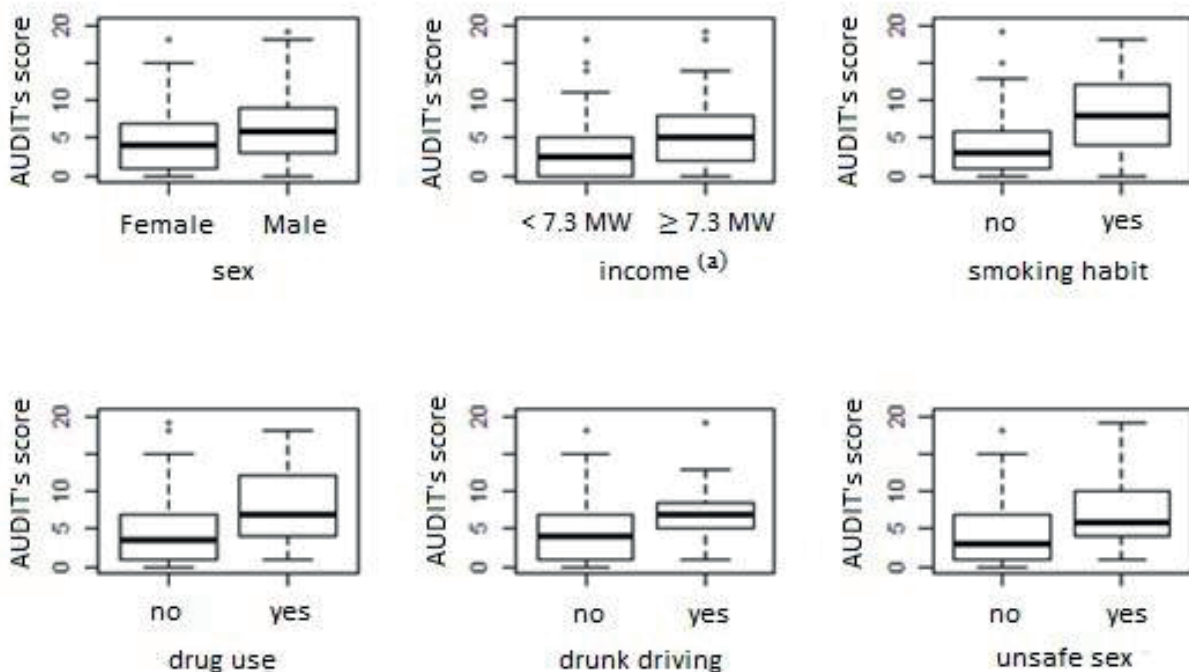
(a) Income in the minimum wage (MW = $ 678 reais) for the year 2013 in Brazil

Figure 1 - Distribution of AUDIT scores according to sociodemographic characteristics and life habits. Rio de Janeiro, RJ, Brazil, December 2013

Discussion

Students were characterized by being women, situations that are very close to the real proportion of women in the courses studied – Biomedicine, Biology and Natural Sciences. The sample was initially stratified considering the proportion of students in the three courses studied, which was maintained after the data collection - Biomedicine (41.1%), Biology (50.8%) and Natural Sciences (8.1%).

The prevalence of alcohol consumption among students in the present sample was high, 79.8% (95%CI: 72% - 87%), which corroborates alcohol consumption in the Brazilian population (86.2%)[20] and also to that found in studies carried out with university students[3,5,7,21], despite methodological differences to estimate consumption. Regarding the periodicity of consumption, 68.8% of the students reported that they drink monthly (2 to 4 times a month). The average age at which students started drinking was 15 years, even with the prohibition on underage drinking in the country. This shows that the habit of drinking pre-entered college, but after admission this consumption may have become more intense and frequent[22], due to greater opportunities for interaction and socialization among young people. such as at college parties and in the an illusion of admiration and accepted by the new group[23-24].

Despite the high prevalence of alcohol consumption, alcohol use was harmful to 23.4% of total sample, while the use of low risk was 76.6%; these proportions were maintained in the three courses studied. The value for abusive consumption corroborates that found among nursing students (20.5%)[25], who used the same methodology for this outcome and a similar sample with regard to the percentage of women. On the other hand, national studies with university students, but with another methodology for the outcome. obtained a lower prevalence of abusive use (8.7% and 14.3%, respectively)[7,11].

Alcohol abuse was associated with tobacco use, with a higher prevalence of risk among smokers (PR=3.69). Despite the methodological differences, this relationship is corroborated by the literature, which indicates a higher prevalence of alcohol consumption among smokers[13,26]. The prevalence of cigarette smoking was 25%, this figure is similar to that of the Biological Sciences students of São Paulo (22.8%)[4], but it is lower than the values found in previous studies (40% to 65%)[7].

The use of illicit drugs (marijuana, crack, cocaine, hallucinogens, ecstasy and inhalants), although with a lower prevalence of consumption among students (17.7%), was also associated with alcohol consumption,

presented higher prevalence of abusive use those who used these drugs (PR=2.44). The percentage of students with problematic alcohol drinking (AUDIT) was also significantly higher for illicit drug users, according to Silveira et al.[26], alcohol users tend to come in contact with other drugs. This may reflect a natural progression of onset in lighter substances, such as alcohol, moving to heavier ones in order to achieve new sensations; or individuals make multiple use of substances as a means of control, to increase the pleasant effects or decrease the unpleasant effects of the other drug[27-28]. In the study by Andrade et al. (2010)[20], most college students began to use illicit drugs out of curiosity, and kept this habit in order to forget the day-to-day problems followed by those who used to control the effect of other substances.

In this study, the prevalence of alcohol abuse was not different when evaluated according to sex. However, when the AUDIT scores were observed, there was higher consumption among males, a situation that reflects this trend of higher consumption among males due to biological and cultural conditions[7,11, 21].

In the college students of the present study, income seems to allow greater access to alcohol consumption, thus implying higher consumption levels among students with higher income (R$≥5000). This relationship was described in previous studies, either by direct association, in the same way as the present study. That is, individuals with higher income consume more beverages by greater purchasing power, and in other studies as inverse, which individuals with less income households consume more, probably to supply the lack of leisure activities[11-12].

Students who had sex without condom and drove after drinking had problematic levels of alcohol consumption (AUDIT). Despite this, all students reported that they knew the effects of alcohol and also sexually transmitted diseases. Habits such as drinking and driving or drinking and practicing unsafe sex are considered high-risk behaviors, as they can have serious and undesirable consequences, such as traffic accidents and sexually transmitted diseases[21,26]. These behaviors deserve attention both by managers. through the establishment or intensification of alcohol and drug prevention programs, and by the family that plays a key role in guiding these young people.

Regarding the limitations of the study, this is a cross-sectional study that evaluates alcohol consumption among students of a university in Rio de Janeiro, and therefore it was not designed to verify possible causal relationships between risk and outcome factors, nor for model the independent effect of factors on alcohol consumption. However, findings on associations

presented here serve as a starting point for future studies. Another limitation is due to the fact that the sample was non-probabilistic, since it was chosen to collect the data in the classroom, due to the ease of access to the students. Considering this horizon, the results should not be generalized to the reality of university students, but to those with the same sample profile found here.

Future studies with university students deserve to be conducted by evaluating other aspects not addressed in the present study, such as assessment of quality of life, family structure, lifestyle and behavioral evaluation, aiming to broaden the range of factors that may be related to alcohol consumption among students. These studies should be planned with a probabilistic sample and in order to take into account stratified analyzes and multiple analyzes.

Conclusion

Although the prevalence of alcoholic beverages consumption was high, the prevalence of abusive consumption was low among college students in Biological Sciences and Nature and Biomedicine. Students should be guided about life habits such as illicit drug use, smoking, unprotected sex, and drinking and driving, as these behaviors are often related to the consumption of alcoholic beverages among students. It is also of great value that guidelines are emphasized for male students with better socioeconomic status.

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