

Frequent and Heavy Alcohol use Among Undergraduate Students: Associated Factors and Possible Consequences

Uso Frequente e Pesado de Álcool entre Estudantes de Graduação: Fatores Associados e Possíveis Consequências

Uso Frecuente y Excesivo de Alcohol entre Estudiantes de Pregrado: Factores Asociados y Posibles Consecuencias

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Resumo

Harmful alcohol use is a global public health issue, with university students considered the population with the highest pattern of abusive alcohol consumption. Therefore, the aim of this study was to measure the prevalence of frequent and heavy alcohol use and to assess the possible consequences of this consumption pattern among university students in southern Brazil. This was a cross-sectional study conducted in 2019 with 996 undergraduate students at a public university in southern Brazil. Heavy alcohol use was assessed through structured questions recommended by the World Health Organization, while suicide risk was evaluated using the suicide section of the MINI instrument. Frequent and heavy alcohol use were defined, respectively, as alcohol consumption on 6 to 19 days and on 20 or more days in the past 30 days. Poisson regression with robust variance adjustment was used to identify associated factors and possible consequences. The prevalence of frequent and heavy alcohol use was 26.5% and 3.6%, respectively. Illicit drug use and inconsistent condom use were possible consequences associated with both patterns of alcohol consumption, while moderate or severe suicide risk was associated only with heavy alcohol use. High alcohol consumption is common in the university context; however, it can have negative health consequences. Interventions aimed at conscious alcohol use may positively impact the well-being of the entire academic community.

Keywords: undergraduate students, alcohol consumption, mental health, prevalence, risk behaviors

Resumo

O uso nocivo de álcool é um problema de saúde pública em escala mundial, sendo os universitários considerados a população com maior padrão de consumo abusivo de álcool. Portanto, o objetivo desta pesquisa foi medir a prevalência do uso frequente e intenso de álcool e avaliar as possíveis consequências desse padrão de consumo entre estudantes universitários no sul do Brasil. Foi um estudo transversal realizado em 2019 com 996 estudantes de graduação em uma universidade pública no sul do Brasil. Foi avaliado o uso intenso de álcool através de perguntas estruturadas sugeridas pela Organização Mundial da Saúde, enquanto o risco de suicídio foi avaliado pela seção de suicídio do instrumento MINI. O uso frequente e intenso de álcool foi definido, respectivamente, como o uso de substâncias alcoólicas em 6 a 19 dias e em 20 dias ou mais nos últimos 30 dias. Foi utilizada a regressão de Poisson com ajuste de variância robusta para identificar fatores associados e possíveis consequências. A prevalência do uso frequente e intenso de álcool foi de 26,5% e 3,6%, respectivamente. O uso de drogas ilícitas e o uso inconsistente de preservativos foram possíveis consequências associadas a ambos os padrões de consumo de álcool, enquanto o risco de suicídio moderado ou severo foi associado apenas ao uso intenso de álcool. O consumo elevado de álcool é comum no contexto universitário; no entanto, pode ter consequências negativas para a saúde. Intervenções voltadas para o uso consciente do álcool podem impactar o bem-estar de toda a comunidade acadêmica.

Palavras-chave: estudantes de graduação, consumo de álcool, saúde mental, prevalência, comportamentos de risco

Resumen

El consumo nocivo de alcohol es un problema de salud pública a escala mundial, siendo los universitarios considerados la población con el mayor patrón de consumo abusivo de alcohol. Por lo tanto, el objetivo de esta investigación fue medir la prevalencia del consumo frecuente e intenso de alcohol y evaluar las posibles consecuencias de este patrón de consumo entre estudiantes universitarios del sur de Brasil. Se trató de un estudio transversal realizado en 2019 con 996 estudiantes de pregrado de una universidad pública en el sur de Brasil. Se evaluó el consumo intenso de alcohol a través de preguntas estructuradas sugeridas por la Organización Mundial de la Salud, mientras que el riesgo de suicidio se evaluó mediante la sección de suicidio del instrumento MINI. El consumo frecuente e intenso de alcohol se definió, respectivamente, como el uso de sustancias alcohólicas en 6 a 19 días y en 20 o más días durante los últimos 30 días. Se utilizó regresión de Poisson con ajuste de varianza robusta para identificar factores asociados y posibles consecuencias. La prevalencia del consumo frecuente e intenso de alcohol fue de 26,5% y 3,6%, respectivamente. El consumo de drogas ilícitas y el uso inconsistente de preservativos fueron posibles consecuencias asociadas a ambos patrones de consumo de alcohol, mientras que el riesgo moderado o severo de suicidio se asoció únicamente con el consumo intenso de alcohol. El consumo elevado de alcohol es común en el contexto universitario; sin embargo, puede tener consecuencias negativas para la salud. Intervenciones orientadas al consumo consciente de alcohol pueden impactar el bienestar de toda la comunidad académica.

Palabras clave: estudiantes de pregrado, consumo de alcohol, salud mental, prevalencia, comportamientos de riesgo

Introduction

The harmful use of alcohol is a worldwide public health problem. It is estimated that about 283 million people suffer from alcohol-related disorders, which is more frequent among men (World Health Organization, 2018). In Brazil, an increase in the prevalence of abusive alcohol consumption was identified, rising from 13.1% in 2013 to 17.1% in 2019 (Silva et al., 2022). Alcohol use can contribute to the onset of physical illnesses such as digestive disorders, cardiovascular diseases, infectious diseases, cancer, and other health conditions. In addition, up to 28% of alcohol-attributable deaths are the result of injuries such as traffic accidents, self-injury, and interpersonal violence (World Health Organization, 2018).

Studies indicate that university students are considered the population with the highest pattern of abusive alcohol consumption (Delmondes et al., 2022). Brazilian epidemiological studies conducted between 1999 and 2011 had already reported a high prevalence of this consumption, ranging from 66.3% to 91.9% (De Barros & Costa, 2019). A Brazilian study conducted in 2021 found that alcohol was the most commonly used drug among this population, with a prevalence of 46.1% for abusive consumption of this substance (Terra Junior et al., 2021).

The use of alcohol in the university population can have other negative consequences, such as an increase in the frequency of risky sexual behavior and negative academic outcomes (sleep, absence, delays, early departure from classes) (Sousa et al., 2023). In addition, the frequent use of alcohol has been reported as a risk factor for the consumption of other drugs, including illicit substances that, associated with alcohol, can harm physical and mental health (Colomer-Pérez et al., 2019).

The university environment facilitates alcohol consumption, both due to peer influence and because it is a legal substance that is easily accessible and widely promoted (Araujo, Vieira & Mascarenhas, 2018). This culture can make it difficult to identify severe cases, which can have consequences in the short, medium, and long term, making it difficult to develop preventive strategies and to recognize the consequences related to this consumption. Therefore, the

aims of this study were: (a) to measure the prevalence of alcohol use, from experimentation to last-month frequency of use among undergraduate students of a public university in southern Brazil; (b) identify the characteristics associated with frequent or heavy use of these substances; and (c) evaluate possible consequences related to this consumption pattern.

Methods

Design

This study is part of the research consortium “Health and Wellness of Undergraduate Students (SABES-Grad)” (Demenech et al., 2021) and aimed to assess undergraduates’ physical and mental health, as well as their social and academic well-being. It was a cross-sectional study conducted at the Federal University of Rio Grande (FURG), a public institution in southern Brazil with nearly 9,000 undergraduate students.

Participants

Individuals aged 18 years or older regularly enrolled in any on-site undergraduate course in 2019 were considered eligible for the survey. Subjects with physical and/or cognitive impairments that prevent answering the questionnaire, as well as those who had dropped out of their courses at the time of data collection were considered ineligible.

Sample size calculation

A single-stage clustered systematic sampling strategy, based on the list of classes offered at the university in 2019, was adopted to compose the sample. A class was conceptually defined as a group of people enrolled in the same subject. Considering that the sample unit used in this investigation was the classes, the design effect (deff) was calculated and used as a parameter for sample size calculation (deff = 1.5; parameters: intraclass correlation coefficient = 0.02, conglomerate average size = 20 (Secretaria Nacional de Políticas sobre Drogas, 2010).

Two sample size calculations were conducted for the SABES-Grad project, one to estimate descriptive characteristics and the other to assess associated factors sufficiently. Descriptive sample size calculation indicated that was necessary to sample at least 847 undergraduates (parameters: expected prevalence of 15% (risk of suicide - basis used for the sample calculation of the study as a whole), with a margin of error of 3 percentage points, power of 80 %, 5% significance level, plus 10% for possible losses and refusals and 1.5 deff). The associated factors sample size calculation indicated that it was necessary to sample 1,089 individuals (parameters: 1:3 exposed/unexposed ratio, 2.0 prevalence ratio, 80% power, 5% significance level, plus 10% for possible losses and refusals, 15% for confounding control, and 1.5 deff). More information regarding sample size calculation can be observed elsewhere (Demenech et al., 2021).

Sampling

The average class size is approximately 20 students. Thus, it would be necessary to sample 55 classes ($1,089 \div 20$). Nevertheless, considering the possibility of having students enrolled in two or more of the sampled classes, or aged under 18 years old, five more (10%) classes

were added to the sampling process. Therefore, 60 classes were systematically drawn from the university system through a previously calculated selection interval.

Variables and instruments

A self-administered and confidential questionnaire was used for data collection, filled out individually by research participants. Alcohol consumption was measured using structured questions as recommended by the World Health Organization on students' drug-use surveys (World Health Organization, 1980). First, a question regarding lifetime alcohol experimentation is presented, followed by last-year (12 months prior to the survey), and last-month (30 days prior to the survey) alcohol use. For those who reported last-month alcohol use, the number of days when alcoholic beverages were used was asked (ranging from zero to 30 days). The main outcomes of this study were the frequent (6 to 19 days) and heavy (20 days or more) use of alcohol in the last 30 days (World Health Organization, 1980).

The independent variable investigated were sex (male/ female), age (18-24/ 25-31/ 32 years or more), skin color (white/ black, brown or yellow), sexual orientation (heterosexual/ homosexual, bisexual or other non-heterosexual orientation), family per capita income (quintiles), academic migration (city of the university or neighbor cities/ same state city/ other states city), living status (live with family/ live alone/ live with friends and/or peers), relationship status (in a relationship/ single), religious practice (never/ annually/ monthly/ weekly or daily), undergraduate course desired when entering the university (no/yes), and satisfaction with the current course (totally satisfied or satisfied/ medium/ unsatisfied or not at all satisfied).

As possible consequences related to frequent and heavy alcohol use, suicide risk, last-month illicit drug use, and inconsistent condom use were assessed. The Mini International Neuropsychiatric Interview – suicide section (adapted for self-administered use) was used to measure suicide risk. Participants with a score of 6 or higher in this instrument were classified with moderate or severe suicide risk (Amorim, 2000). Last-month illicit drug use was evaluated following the same procedures as for alcohol use (considered as the use of marijuana, inhalants, cocaine, crack cocaine, ecstasy, and/or LSD at least once in the last 30 days). Finally, those who reported having had at least one sexual intercourse (either with a fixed or non-fixed partner) without condoms were classified as having inconsistent condom use.

Procedures

Fieldwork was carried out between September and November 2019. The professors in charge of selected classes were contacted to schedule data collection. Class visits followed a protocol, starting with the presentation of the research aims and confidentiality measures. Students were informed that their participation was voluntary, and those who agreed to participate signed an informed consent form. Finished questionnaires were further deposited in a sealed urn in order to increase the confidentiality and reliability of the answers.

Each class was visited at least twice. After these two attempts, classes with more than ten losses were visited once more. Subjects who were not found in any visits, or who refused to participate, were considered as losses.

Data were double-entered by different professionals using Epidata 3.1. software.

Statistical analysis

First, univariate analyses were conducted in order to calculate the prevalence of lifetime, last-year, last-month, frequent, and heavy alcohol use, and to describe the sample according to the independent variables. Afterwards, crude and adjusted associated factors analyses related to frequent and heavy (in aggregate, that is, alcohol use in 6 days or more in the last 30 days) were performed using Poisson regression with robust variance adjustment (Barros & Hirakata, 2003), using a two-level hierarchical model of analysis (Victora et al., 1997). Variables were selected using the backward method, keeping those with a p-value ≤ 0.2 to control for confounding factors.

Lastly, possible consequences related to frequent (6 to 19 days) and heavy (20 days or more) use of alcohol in the last 30 days (separately) were evaluated. For each classification, probabilities of respondents present moderate or severe suicide risk, last-month illicit drugs use, and inconsistent condom use were calculated using Poisson regression with robust variance adjustment. These analyses were controlled for both associated factors (p-value < 0.05) and confounder variables (p-value ≤ 0.2) identified in the associated-factors regression model. Results of all regression outcomes were presented in Prevalence Ratios (PR), 95% confidence intervals (95% CI), and p-values. Statistical procedures were performed using STATA 13 IC software, and all estimates were calculated considering a significance level of 5% for two-tailed tests.

Ethical aspects

Data collection professionals received training to deliver mental health support during the questionnaire's application (if necessary). Furthermore, psychologists worked on-call during all fieldwork shifts to support the research team, providing free and comprehensive psychological care for severe cases. The contacts of those responsible for the research and the University's Psychological Care Center (CAP/FURG) were also made available so that participants could have free access to psychosocial support after their participation. The study was approved by the Research Ethics Committee.

Results

Sixty classes were included, comprising 1,169 eligible enrollments. At the end of fieldwork, 996 undergraduates participated, corresponding to a response rate of 85.2% (12.3% were not found, and 2.5% refused to participate). The sample was composed mainly of female respondents (63.9%), aged between 18 and 24 years (69.7%), with white skin color (73.6%), identified as heterosexual (77.8%) (Table 1). Family per capita income ranged from \$0 to \$8,000, with a median of \$240 of U.S. dollars (IQR \$133.90 – \$400).

Table 1

Description Of The Sociodemographic And Academic Characteristics Of Undergraduate Students (n = 996)

Variable	n	%
Sex (N=994)		
Female	635	63.9
Male	359	36.1
Age (N=995)		
18-24 years	694	69.7
25-31 years	173	17.4
32 years or more	128	12.9
Skin color (N=994)		
White	732	73.6
Black, brown, yellow, or other	262	26.4
Sexual orientation (N=988)		
Heterosexual	769	77.8
Homosexual/bisexual/pansexual or other	219	22.2
Family Income (quintiles) (N=836)		
1st quintile (0 – 125 U.S. dollars, poorest)	170	20.3
2nd quintile (126 – 200 U.S. dollars)	214	25.6
3rd quintile (201 – 300 U.S. dollars)	148	17.7
4th quintile (301 – 466 U.S. dollars)	138	16.5
5th quintile (467 – 8,000 U.S. dollars, richest)	166	19.9
Academic Migration (N=935)		
University city and neighboring cities	519	55.5
Another city in the same state	181	19.4
Another city from another state	235	25.1
Living situation (N=941)		
Live with the family	625	66.4
Live alone	150	15.9
Live with friends or peers	166	17.7
Relationship situation (N=995)		
In a relationship	570	57.3
Single	425	42.7
Religious practice (N=991)		
Never	417	42.0
Annually	227	22.9
Monthly	177	17.9
Weekly/daily	170	17.2
Study in the desired course (N=992)		
No	243	24.5
Yes	749	75.5
Satisfaction with current course (N=993)		
Dissatisfied/a little satisfied	87	8.8
Moderately satisfied	376	37.9
Very/totally unsatisfied	530	53.3
Lifetime alcohol use (N=991)		
No	37	7.3

Variable	n	%
Yes	954	96.3
Last-year alcohol use (N=986)		
No	116	11.8
Yes	870	88.2
Last-month alcohol use (N=981)		
No	251	25.6
Yes	730	74.4
Frequent alcohol use (N=974)		
No	716	73.5
Yes	258	26.5
Heavy alcohol use (N=974)		
No	939	96.4

Note. Data collected in Rio Grande, RS, Brazil, 2019.

Nearly half of the participants (44.5%) migrated from other cities to study at the university, 34.6% were living alone or with friends/peers, 42.7% were single, and 42.0% reported never attending religious ceremonies. Three in every four undergraduates were in the desired course before university admission, and 53.3% reported being very or totally satisfied with their current undergraduate course. The prevalence of lifetime, last-year, and last-month alcohol use was 96.3%, 88.2%, and 74.4%, respectively. Frequent alcohol use was reported by 26.5% (95% CI 23.7%-29.3%), and heavy alcohol use by 3.6% (95% CI 2.4%-4.8%) of the participants (Table 1).

Table 2 presents the distribution of frequent or heavy alcohol use (in aggregate) according to the independent variables of the study, as well as the results of the crude and adjusted associated factors analyses. The proportion of frequent or heavy alcohol use was higher among those who lived with friends or peers (38.2%), those identified as homosexual, bisexual, or other non-heterosexual orientation (35.9%), the richer (35.6%), and the single (34.5%). On the other hand, lower prevalence of this outcome was observed among those aged 32 years or older (15.0%), with weekly or daily religious practice (17.0%), the poorer (19.6%), and among those in a relationship (20.5%).

Table 2

Crude And Adjusted Prevalence Ratios Of Frequent Or Heavy Alcohol Use According To Independent Variables

Level	Variable	%	Crude PR (95% CI)	Adjusted PR (95% CI)
Sex			0.002	0.006
	Female	23.2	1	1
	Male	32.4	1.39 (1.13-1.72)	1.38 (1.10-1.74)
1st Age			0.016	0.152
	18-24 years	28.6	1.91 (1.22-2.97)	1.64 (0.99-2.71)
	25-31 years	26.3	1.75 (1.07-2.88)	1.51 (0.86-2.65)
	32 years or more	15.0	1	1

Level	Variable	%	Crude	Adjusted
			PR (95% CI)	PR (95% CI)
1st	Skin Color		0.065	0.111
	White	28.1	1	1
	Black, brown, yellow, or other	22.1	0.78 (0.60-1.02)	0.78 (0.58-1.06)
	Sexual Orientation		<0.001	0.035
	Heterosexual	23.6	1	1
	Homosexual/bisexual/pansexual or other	35.9	1.52 (1.22-1.89)	1.31 (1.02-1.67)
	Family Income (quintiles)		0.021	0.027
	1st quintile (poorest)	19.6	1	1
	2nd quintile	25.2	1.29 (0.87-1.89)	1.26 (0.86-1.87)
	3rd quintile	28.8	1.46 (0.98-2.18)	1.49 (1.00-2.12)
	4th quintile	25.4	1.29 (0.85-1.97)	1.12 (0.72-1.74)
	5th quintile (richest)	35.6	1.81 (1.25-2.62)	1.71 (1.18-2.47)
	Academic Migration		0.034	0.124
	University city and neighboring cities	23.2	1	1
Another city in the same state	31.3	1.35 (1.03-1.77)	1.31 (0.99-1.74)	
Another city from another state	30.4	1.31 (1.02-1.69)	1.23 (0.93-1.61)	
2nd	Living situation		<0.001	0.006
	Live with the family	21.3	1	1
	Live alone	32.2	1.51 (1.14-2.00)	1.66 (1.16-2.39)
	Live with friends or peers	38.2	1.79 (1.40-2.30)	1.79 (1.22-2.63)
	Relationship Situation		<0.001	0.001
	In a relationship	20.5	1	1
	Single	34.5	1.68 (1.36-2.08)	1.55 (1.20-2.01)
	Religious practice		0.035	0.705
	Never	29.4	1	1
	Annually	27.6	0.94 (0.72-1.22)	0.96 (0.72-1.28)
	Monthly	28.0	0.95 (0.72-1.26)	1.06 (0.77-1.44)
	Weekly/daily	17.0	0.58 (0.40-0.84)	0.80 (0.52-1.23)
	Study in the desired course		0.130	0.010
	No	30.1	1.20 (0.95-1.51)	1.41 (1.08-1.84)
Yes	25.2	1	1	
Satisfaction with current course		0.945	0.273	
Dissatisfied/a little satisfied	26.2	1.01 (0.68-1.48)	0.73 (0.42-1.27)	
Moderately satisfied	27.1	1.04 (0.83-1.30)	1.12 (0.88-1.42)	
Very/totally unsatisfied	26.1	1	1	

Note. PR = prevalence ratios; 95% CI = 95% confidence intervals.

In the crude analysis (Table 2), it was identified that only the variables “course desired prior university admission” and “satisfaction with current undergraduate course” were not associated with frequent or heavy alcohol use. However, after adjusted analysis, it was observed that independent associated factors were: being male (PR=1.38; 95% CI 1.10-1.74), being homosexual, bisexual or other non-heterosexual orientation PR=1.31; 95% CI 1.02-1.62), higher family per capita income (PR=1.71; 95% CI 1.18-2.47), living alone (PR=1.66; 95% CI 1.16-2.39) or with friends/peers (PR=1.79; IC 95% 1.22-2.63), and being studying in a course that was not what was desired prior university admission (PR=1.41; 95% CI 1.08-1.84).

Table 3 describes the analyses regarding possible consequences of both frequent and heavy alcohol use (separately). The probability of last-month illicit drug use was higher among both those with frequent (PR=2.56; 95% CI 1.91-3.43) and heavy (PR=3.09; 95% CI 1.96-4.87) alcohol use, with a slight increase in the effect measure. A similar pattern was observed regarding inconsistent condom use, but with lower effect measures (frequent use PR=1.19; 95% CI 1.06-1.14; heavy use PR=1.30; 95 % CI 1.03-1.64). Lastly, moderate or severe suicide risk was not significantly higher among those with frequent alcohol use. However, the probability of a participant with heavy alcohol use being at moderate or severe suicide risk was almost three times higher (PR=2.94; 95% CI 1.49-5.81) than those without this pattern of alcohol use.

Table 3

Consequences Of Frequent And Heavy Alcohol Use Among Undergraduate Students: Adjusted Prevalence Ratios Autor

Possible consequences	%	Frequent use of alcohol*	Heavy use of alcohol*
Moderate or severe suicide risk	15.7	1.16 (0.79-1.70)	2.94 (1.49-5.81)
Last-month illicit drug use	21.6	2.56 (1.91-3.43)	3.09 (1.96-4.87)
Inconsistent use of condoms in the year	70.2	1.19 (1.06-1.34)	1.30 (1.03-1.64)

Note. % = prevalence of the consequences in the sample; *Adjusted for variables with association $p < 0.2$ in the analysis of associated factors.

Discussion

The prevalence of alcohol use found in this sample can be considered high (3 out of 4 students used alcohol in the last month), being approximately twice as high as the prevalence reported by the Brazilian population in the same year (43.1%) (Bastos et al., 2019); however, these proportions are similar to those found in other national and international surveys among university students (Colomer-Pérez et al, 2019). The high prevalence of alcohol use in this population can be considered a marker of the culture of alcohol use within the university environment.

Males were 38% more likely to have frequent or heavy alcohol use than females. This result is in line with the literature, which indicates that men are culturally more stimulated to consume alcoholic beverages (Hughes et al., 2016), which can occur from childhood in the family context, or through the lifestyle stimulated in advertisements (Monteiro, 2016). Despite this finding, it is worth highlighting as a counterpoint that the difference in alcohol consumption between both sexes has been decreasing over time (Machado et al., 2017; Miramontes et al., 2021).

Respondents with non-heterosexual sexual identities were also more likely to have frequent or heavy alcohol use, which is in line with the literature on the subject (Coulter et al., 2014; Hughes et al., 2016; Fish & Exten, 2020). Sexual minorities have unique characteristics that can predispose them to harmful use of alcohol. This subgroup faces unique stressors (not present among non-stigmatized populations), chronic, and socially established (Coulter et al., 2014; Hughes et al., 2016; Zollweg et al., 2023). Furthermore, norms about drinking are influenced by the rules and values of the social group. Identification and affiliation with

LGBTQIA+ communities have been associated with increased tolerance of harmful drinking (Cochran et al., 2015). Furthermore, sexual minorities are at higher risk of experiencing abuse, violence, and other types of victimization (Drabble et al., 2013; Hughes et al., 2010), stressors that are linked to negative consequences, such as the harmful use of alcohol.

The study population had a better economic situation than the general Brazilian population, and a higher family income was associated with frequent or heavy alcohol use. A similar result was identified in other investigations on the subject (Collins, 2016; Barros & Costa, 2019), although one research points to opposite results (Dorji et al., 2020). This is a subgroup whose leisure and social activities are often related to alcohol use, such as parties and private celebrations (Kushnir & Cunningham, 2014), common in both public and private institutions (Secretaria Nacional de Políticas sobre Drogas, 2010). It is plausible that students with better financial conditions participate in a greater number of events due to their financial conditions, thus consuming alcohol more frequently.

The probability of frequent or heavy use of alcohol was significantly higher among single students and those living alone or with friends/peers. Some possible explanations for this association are related to the social context of these students. For example, American college students who live in frat houses or who live alone, who are not married, who have a lifestyle where they spend a lot of time with friends, or attending parties, have higher rates of heavy alcohol consumption than those who live with their families (Cross et al., 2009). These students also have a higher normative perception about alcohol consumption, and also reported about twice as many hours of partying in a normal week, when compared to those who do not live in these places (Page & O'Hegarty, 2006). In Brazil, drug use in the university population may be related to a more intense social life, access to drugs, or characteristics of family experiences, which would facilitate acceptance of consumption. Moreover, not living with family was identified as a risk factor for illicit drug use among Brazilian students (Fernandes et al., 2017) as well as among Canadian students (Chai et al., 2023).

Being in a course other than the desired prior university admission was identified as a risk factor for frequent or heavy use of alcohol, while the degree of satisfaction with graduation was not. Participants who are taking unwanted courses may be more likely to use alcohol frequently or excessively, depending on the relationship they establish with the training period. Thus, these individuals can create greater indifference and less commitment to academic activities, living the "university lifestyle" more intensely, which, in general, is followed by the use of alcohol and other substances (Crawford & Novak, 2006).

The use of illicit drugs in the last month was identified as one of the possible consequences of frequent and heavy use of alcohol, which is in line with the literature (Raposo et al., 2017; Miramontes et al., 2021). In addition, our study found that the likelihood of inconsistent condom use in the past month was greater among those with frequent and heavy alcohol use. Alcohol use can lead to a lower perception of risk concerning both the use of illicit drugs (Yeomans-Maldonado & Patrick, 2015) and unsafe sexual activity (Vagenas et al., 2013). Thus, it is plausible that students who use alcohol more frequently also have a greater number of opportunities to use illegal substances and to have sexual intercourse under the influence of alcohol, increasing the risk of both behaviors.

Students who reported heavy alcohol use had a threefold higher probability of being at moderate or severe suicide risk. This result is important because it draws a line between

the degree of severity of involvement with this substance and the possible consequences of its use. As highlighted above, alcohol consumption is widespread within the university context; therefore, the frequent use of alcohol (in six days or more in the last 30 days) can be observed among individuals who have adequate mental and physical health and just experience the university social experience intensely. Even so, this environment has a greater tolerance for pathological levels of alcohol consumption (Crawford & Novak, 2006), which can cause students to develop significant harmful behaviors. This increased risk of suicide among those who reported heavy use of alcohol may be a reflection of substance use as a coping strategy through avoidance (Levin et al., 2012), that is, the use of alcohol as a way to numb oneself from problems. On the other hand, heavy alcohol use can exert effects on mental health, through the aggravation of symptoms such as lack of motivation, worthlessness, and hopelessness, creating space or intensifying suicidal thoughts (Watts, 2008). This type of use can also cause academic, social, and even laboral losses, which can lead to aggravation of problems in all these life dimensions, generating a cyclical movement of suffering (Archie et al., 2012; Bellos et al., 2013). Finally, alcohol can also be used as an auxiliary tool for suicide attempts, where alcohol use helps to reduce the fears and guilt involved in the act of suicide (Borges et al., 2017). Individuals who reported heavy alcohol use may be those who have also used it for previous suicide attempts, one of the markers of current suicide risk.

The results of this study must be interpreted in light of its limitations and strengths. First, as this is a cross-sectional study, it is not possible to establish temporality and causality. Findings on associated factors and possible consequences reflect the statistical results of a previously elaborated theoretical model, but they may be subject to reverse causality bias. In addition, the prevalence of alcohol use and, above all, illicit drugs, may have been underestimated, as they may reflect stigmatized behavior, subject to a false response bias. However, this is a study with a large and representative sample, including the diversity of a public university. Finally, the use of multivariate analysis strategies with concomitant control for the effects of multiple variables allowed for more robust and accurate results.

The prevalence of alcohol use in this sample was high, especially when compared to the general population. Frequent or heavy use of this type of substance was significantly associated with being male, with a non-heterosexual sexual identity, having better economic conditions, living alone or with peers, being single, and taking an unwanted course prior to university admission. Furthermore, illicit drug use in the last month and inconsistent use were identified as possible consequences of both frequent and heavy alcohol use. Moderate and severe suicide risk was only associated with the heavy use of alcoholic beverages.

Alcohol use is widespread in the academic context, being part of the socially established university lifestyle. In this study, however, it was observed that the more frequent use of these substances can lead to negative outcomes, such as an increased risk of suicide. Thus, it is recommended to strengthen student assistance services capable of identifying cases of harmful use of alcohol and developing interventions to promote and prevent the use of these substances. Through comprehensive activities about conscientious alcohol consumption, it is expected that the burden of psychological distress and the proportion of individuals with risky behavior and at risk for suicide may also be reduced.

Final Considerations

Based on the findings of this study, it can be concluded that frequent and heavy alcohol use among undergraduate students is associated with multiple individual and contextual factors, as well as concerning outcomes, such as an increased risk of suicide. These results highlight the need for institutional strategies aimed at the early identification and prevention of harmful alcohol use within the university environment. The implementation of educational initiatives and psychosocial support actions may contribute to reducing risk behaviors and promoting mental health among students.

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Conflict of Interests

The authors report no conflict of interest.

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