



## Factors associated with heavy episodic drinking among college students

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**Objective:** to identify the prevalence and factors associated with heavy episodic drinking among college students.

**Methodology:** cross-sectional study developed at a public university in southern Brazil. Data were collected using a questionnaire for sociodemographic, academic, and lifestyle characterization, the Alcohol, Smoking, and Substance Involvement Screening Test, and the Alcohol Use Disorders Identification Test. Data were analyzed using descriptive and inferential statistics. **Results:** the prevalence of heavy episodic drinking was 43.3%, and the following were associated: not living with the family (ORaj:0.68), having enough money to meet the needs (ORaj:1.43), tobacco (ORaj:5.65) and amphetamine (ORaj:6.24) use in the past three months, and being male (ORaj:1.49). **Conclusion:** episodic heavy drinking affected about half of the respondents and was associated with sociodemographic aspects and living conditions, especially the use of psychoactive substances.

**Descriptors:** Students; Alcohol Drinking in College; Alcoholic Beverages; Mental Health.

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## Fatores associados ao consumo excessivo episódico de álcool entre universitários

**Objetivo:** identificar a prevalência e os fatores associados ao consumo excessivo episódico de álcool entre os universitários. **Metodologia:** estudo transversal desenvolvido em uma universidade pública do Sul do Brasil. Os dados foram coletados por um questionário de caracterização sociodemográfica, acadêmica e de hábitos de vida, o *Alcohol, Smoking and Substance Involvement Screening Test* e o *Alcohol Use Disorders Identification Test*. Os dados foram analisados por meio de estatística descritiva e inferencial. **Resultados:** a prevalência de consumo excessivo episódico foi de 43,3% e foram associados: No residir com a família ( $OR_{aj}:0,68$ ), possuir dinheiro suficiente para suprir as necessidades ( $OR_{aj}:1,43$ ), consumo de tabaco ( $OR_{aj}:5,65$ ) e anfetaminas ( $OR_{aj}:6,24$ ) nos três últimos meses e pertencer ao sexo masculino ( $OR_{aj}:1,49$ ). **Conclusão:** o consumo excessivo episódico atingiu cerca de metade dos investigados, e foram associados a ele os aspectos sociodemográficos e as condições de vida, sobretudo, o uso de substâncias psicoativas.

**Descritores:** Estudantes; Consumo de Álcool na Faculdade; Bebidas Alcoólicas; Saúde Mental.

## Factores asociados al consumo episódico excesivo de alcohol entre estudiantes universitarios

**Objetivo:** identificar la prevalencia y los factores asociados al consumo episódico excesivo de alcohol entre los universitarios. **Metodología:** estudio transversal desarrollado en una universidad pública del sur de Brasil. Los datos fueron recolectados por medio de un cuestionario de caracterización sociodemográfica, académica y de estilo de vida, el *Alcohol, Smoking and Substance Involvement Screening Test* e o *Alcohol Use Disorders Identification Test*. Los datos se analizaron mediante estadística descriptiva e inferencial. **Resultados:** la prevalencia de consumo episódico excesivo de alcohol fue del 43,3% y se asociaron con: no vivir con la familia ( $OR_{aj}:0,68$ ), tener suficiente dinero para cubrir las necesidades ( $OR_{aj}:1,43$ ), consumo de tabaco ( $OR_{aj}:5,65$ ) y anfetaminas ( $OR_{aj}:6,24$ ) en los últimos tres meses y ser varón ( $OR_{aj}:1,49$ ). **Conclusión:** el sobreconsumo episódico alcanzó a cerca de la mitad de los encuestados, y a ellas se asociaron los aspectos sociodemográficos y condiciones de vida, especialmente el consumo de sustancias psicoactivas.

**Descritores:** Estudiantes; Consumo de Alcohol en la Universidad; Bebidas Alcohólicas; Salud Mental.

## Introduction

Episodic binge drinking among college students is a serious problem evidenced today and has been widely studied around the world<sup>(1-3)</sup>. The year and month prevalence of alcohol consumption among college students is higher than in the general population<sup>(4)</sup>. Thus, progressive and abusive consumption may trigger negative consequences for the health of these college students, either in the immediate, intermediate, or long-term, such as alcohol dependence in adulthood<sup>(5)</sup>.

Studies developed in Ukraine<sup>(2)</sup>, the United States<sup>(6)</sup>, Germany<sup>(7)</sup>, and Ecuador<sup>(8)</sup> showed that half of college students had already presented an episode of heavy drinking, i.e., the consumption of five or more doses ingested on a single occasion, and 10% reported consuming 10 or more doses of alcohol on a single occasion. In Brazil, one in four college students consumed alcohol in an episodic heavy drinking pattern, defined as drinking more than four doses for females and at least five doses for males in the past 30 days<sup>(4)</sup>.

Episodic heavy drinking is considered one of the main causes of death among college students and is related to low academic performance (failure and dropout), unprotected sexual intercourse, unwanted pregnancy, sexually transmitted infections, involvement in episodes of verbal, sexual or physical violence, traffic accidents and experimentation with other types of drugs<sup>(9)</sup>.

A university environment is a place that exposes students to numerous vulnerable behaviors, as well as to the development of disorders associated with mental health and the consumption of alcohol and other drugs<sup>(9-10)</sup>. This context deserves attention from family members and institutional managers since many young people begin to present a new lifestyle when leaving their homes/families, which can negatively influence their academic performance, mental health, and the health-disease process<sup>(10)</sup>.

Although alcohol consumption among college students is the subject of research, there are still controversies about the factors associated with heavy episodic drinking, which need to be elucidated by studies to understand this phenomenon in this population. This will be relevant to advance this area of knowledge and also produce evidence to support policies and actions aimed at addressing this reality within universities. Thus, this study aimed to identify the prevalence and factors associated with episodic heavy drinking among college students.

## Methodology

The cross-sectional study developed in a public university, in a city in the South Region of Brazil. The population was composed of 978 undergraduate students. Based on this number, we calculated the

sample size, considering a confidence level of 95% and a maximum error of 5%, which resulted in a minimum number of 277 participants.

The eligibility criteria were: being regularly enrolled in the institution in 2018 and 2019, being over 18 years of age, and not being away from academic activities at the time of collection.

Data collection occurred between the months of November 2018 and May 2019, by a team composed of previously trained teachers and Nursing students. The research team invited the potential participants to the classroom, clarifying about the research objective. After signing the Free and Informed Consent Form, the questionnaire was provided in an envelope, and upon completion, the students deposited the envelope in a sealed urn.

A three-stage questionnaire was used: characterization of participants, Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST)<sup>(11)</sup>, and Alcohol Use Disorders Identification Test (AUDIT - C)<sup>(12)</sup>.

The first stage contained variables of sociodemographic characterization: gender, age, marital status, who lives with, and occupation; academic characterization: grade and course period, living in student housing, receiving research and/or extension scholarships, and satisfaction with the course; and living conditions: physical activity practice, having enough money for necessities, satisfaction with leisure time, being a victim of violence, self-reported use of antidepressants, depression, anxiety, and irritability.

To investigate the consumption of alcohol and other drugs, we used the ASSIST, an instrument developed by the World Health Organization that aims to identify the use of psychoactive substances in nine classes: tobacco, alcohol, marijuana, cocaine/crack, stimulants, sedatives, inhalants, hallucinogens, and opiates, consisting of eight questions. And the short version of the AUDIT-C, an instrument made up of three items referring to the quantity, frequency, and consumption in the episodic excessive pattern, with the answers ranging from zero to four and the final score from zero to 12 points: the classification of the sum varies according to sex (male sex: score of zero to three - low risk; between four and five points - moderate risk; between six and seven points - high risk and from eight to 12 points - severe risk) and for (female sex: score of zero to two - low risk; between three and five points - moderate risk; between six and seven points - high risk and between eight to 12 points - severe risk)<sup>(12)</sup>.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 20.0. In descriptive statistics, mean, standard deviation, minimum and maximum were used for continuous variables, and absolute and relative frequencies for categorical variables.

In inferential statistics, the dependent variable was the risk of episodic binge drinking (AUDIT-C  $\geq$  06 points) and the independent variables were the characterization variables and the ASSIST dimensions. Univariate associations were initially proceeded by employing the Wald Chi-square test. The associated factors were verified by a multiple logistic regression model, whose order of entry was determined by ordering the variables by significance score. The variables that remained in the model were those with statistical significance ( $p < 0.05$ ) and the adjustment variables, considered potential confounders: age group, grade attended, and full-time study.

This study was approved by the Research Ethics Committee, under opinion No 2.856.922.

## Results

A total of 819 college students participated in the study, with a mean age of 20.6 years, ranging from 18 to 36 years. There was a predominance of females (53.7%), single (93.9%), and living with other students (40.0%). As for their jobs, 74.7% said they did not have any employment relationship. Only 11.8% received some assistance from the university, such as scientific initiation or extension scholarships, or lived in student housing.

Regarding lifestyle habits, 52.6% reported no physical activity. When asked about their leisure time, 41.9% mentioned they were satisfied and 31.2% had

enough money for their needs. Most of them studied full-time (87.5%) and had no dependent subjects (67.4%). However, 49.9% had already thought of quitting the course and 52.1% were dissatisfied with their course. Regarding the signs and symptoms related to the academic environment, 81.0% indicated anxiety, 72.9% irritability, and 26.6% depression. In addition, 11.8% reported using antidepressants, and 26.1% reported being victims of violence.

Regarding the consumption of psychoactive substances in their lives, 51.0% had tried tobacco, 87.1% alcohol, 39.2% marijuana, 15.0% sedatives/hypnotics, 14.9% amphetamines, and ecstasy, 14.4% hallucinogens, 12.7% inhalants, and 7.3% cocaine/crack.

Table 1 shows the results obtained according to the risk of episodic excessive consumption of alcohol, which showed a significant association with the age range of 18 to 20 years, female gender, not living with the family, having enough money, and not being satisfied with leisure time, not having suffered violence, not practicing physical activity.

As observed in Table 2 the use of tobacco, marijuana and cocaine/crack, amphetamines, inhalants, and hallucinogens in the last three months, showed higher odds of episodic binge drinking.

Table 3 shows the factors associated with the risk of episodic binge drinking.

Table 1 - Characterization of college students regarding the risk of episodic heavy drinking (n=819). Bandeirantes, PR, Brazil, 2021

Variables	Excessive episodic alcohol consumption		p-value	Odds Ratio (IC95%)
	Low Risk	High Risk		
	n(%)	n(%)		
Age group				
18 to 20 years	273(59.6)	185(40.4)	0.05	1
$\geq$ 21 years	191(52.9)	170(47.1)		1.31 (0.99 – 1.73)
Gender				
Female	277(63.0)	163(37.0)	<b>&lt;0.01</b>	1
Male	187(49.3)	192(50.7)		1.74 (1.32 – 2.30)
Marital status				
Single	455(56.5)	351(43.5)	0.34	1
Married/ Living consensually	9(69.2)	4(30.8)		0.57 (0.17 – 1.88)
Resides with family				
No	289(52.3)	264(47.7)	<b>&lt;0.01</b>	1
Yes	175(65.8)	91(34.2)		0.56 (0.42 – 0.77)
Receives assistance from the university				
No	378(56.7)	289(43.3)	0.98	1
Yes	86(56.6)	66(43.4)		1.00 (0.70 – 1.43)
Have enough money				
No	344(60.1)	228(39.9)	<b>0.02</b>	1
Yes	120(48.6)	127(51.4)		1.59 (1.18 – 2.15)

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Variables	Excessive episodic alcohol consumption		p-value	Odds Ratio (IC95%)
	Low Risk	High Risk		
	n(%)	n(%)		
Satisfied with leisure time				
No	374(58.6)	264(41.4)	0.03	1
Yes	90(49.7)	91(50.3)		1.43 (1.02 – 1.99)
Full-time studies				
No	65(63.7)	37(36.3)	0.12	1
Yes	399(55.6)	318(44.4)		1.40 (0.91 – 2.15)
Suffered some kind of violence				
No	413(58.0)	299(42.0)	0.04	1
Yes	51(47.7)	56(52.3)		1.51 (1.00 – 2.28)
Makes use of antidepressants				
Yes	55(56.7)	42(43.3)	0.99	1
No	409(56.6)	313(43.4)		1.00 (0.65 – 1.53)
Depression				
Yes	126(57.8)	92(42.2)	0.69	1
No	338(56.2)	263(43.8)		1.06 (0.77 – 1.45)
Anxiety				
Yes	371(56.0)	292(44.0)	0.40	1
No	93(59.6)	63(40.4)		0.86 (0.60 – 1.22)
Irritability				
Yes	332(55.6)	265(44.4)	0.32	1
No	132(59.5)	90(40.05)		0.85 (0.62 – 1.16)
Physical activity				
No	260(60.3)	171(39.7)	0.02	1
Yes	204(52.6)	184(47.4)		1.37 (1.03 – 1.81)
Satisfaction with the course				
Nothing, little, and more or less	201(56.6)	154(43.4)	0.98	1
Satisfied and very	263(56.7)	201(43.3)		0.99 (0.75 – 1.31)

Table 2 - Use of psychoactive substances in the last three months regarding the risk of episodic heavy drinking among college students (n=819). Bandeirantes, PR, Brazil, 2021

Variables	Excessive episodic alcohol consumption		p-value	Odds Ratio (IC95%)
	Low Risk	High Risk		
	n(%)	n(%)		
Tobacco consumption in the last three months				
No	363(74.2)	126(25.8)	<0.01	1
Yes	101(30.6)	229(69.4)		6.53 (4.79 - 8.90)
Marijuana use in the last three months				
No	371(65.0)	200(35.0)	<0.01	1
Yes	93(37.5)	155(62.5)		3.09 (2.26 - 4.21)
Cocaine/crack use in the last three months				
No	460(57.8)	336(42.2)	<0.01	1
Yes	4(17.4)	19(82.6)		6.50 (2.19 - 19.20)
Amphetamine consumption in the last three months				
No	452(60.8)	292(39.2)	<0.01	1
Yes	12(16.0)	63(84.0)		8.13 (4.31 - 15.33)
Intake of inhalants in the last three months				
No	456(59.2)	314(40.8)	<0.01	1
Yes	8(16.3)	41(83.7)		7.44 (3.44 - 16.09)

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Variables	Excessive episodic alcohol consumption		p-value	Odds Ratio (IC95%)
	Low Risk	High Risk		
	n(%)	n(%)		
Sedative consumption in the last three months				
No	428(57.5)	316(42.5)	0.11	1
Yes	36(48.0)	39(52.0)		1.46 (0.91 - 2.36)
Hallucinogenic consumption in the last three months				
No	445(59.1)	308(40.9)	<b>&lt;0.01</b>	1
Yes	19(28.8)	47(71.2)		3.57 (2.05 - 6.20)
Opioid use in the last three months				
No	462(56.6)	354(43.4)	0.72	1
Yes	2(66.7)	1(33.3)		0.65 (0.59 - 7.22)

Table 3 - Factors associated with the risk of binge drinking among college students (n=819). Bandeirantes, PR, Brazil, 2021

Multiple models	p-value	Odds RatioGross (IC95%)	p-value	Odds RatioAdjusted* (IC95%)
Resides with family	<b>0.03</b>	0.68 (0.77 - 0.97)	<b>0.03</b>	0.68 (0.77 - 0.97)
Enough money	<b>0.04</b>	1.43 (1.00 - 2.03)	<b>0.04</b>	1.43 (1.00 - 2.03)
Tobacco consumption in the last three months	<b>&lt;0.01</b>	5.65 (4.04 - 7.87)	<b>&lt;0.01</b>	5.65 (4.04 - 7.87)
Amphetamine consumption in the last three months	<b>&lt;0.01</b>	6.24 (2.75 - 14.16)	<b>&lt;0.01</b>	6.24 (2.75 - 14.16)
Sex	<b>0.01</b>	1.49 (1.07 - 2.07)	<b>0.01</b>	1.49 (1.07 - 2.07)

\*Adjusted by age group, grade, and study full-time

It was identified that male students who had used tobacco and amphetamines in the past three months had increased odds of episodic binge drinking. On the other hand, the odds were reduced for those who resided with family.

## Discussion

Factors associated with heavy episodic drinking were not living with a family, having enough money to meet needs, smoking and using amphetamines in the past three months, and being male. Furthermore, the results indicated that 43.3% of students presented high-risk or severe alcohol consumption. Thus, it is evident that alcohol is the most consumed substance in this population when compared to other types of drugs. Alcohol consumption is considered a serious public health problem and there is a significant increase in consumption among college students, either in a harmful way or excessive consumption<sup>(2-3)</sup>.

Studies have shown that most students have occasional alcohol consumption<sup>(2-13)</sup> and episodic heavy drinking<sup>(4,7,14)</sup>. In a study developed with students from a public university in São Paulo State, it was evidenced that 25% of the students drink heavily<sup>(15)</sup>.

This abusive consumption by college students may be associated with easy access to alcohol and because it is a socially accepted drug, with a deficit of public policies aimed at restricting sales, as well as harm

reduction actions, health promotion, and prevention for these students<sup>(16)</sup>.

When observing the lifetime use of psychoactive substances, it is noted that there was a higher self-report of alcohol, tobacco, and marijuana followed by sedatives and amphetamines, corroborating studies developed with college students in Norway<sup>(7)</sup> and Brazil<sup>(15)</sup>. It is known that alcohol and tobacco are the most consumed substances among the population over 15 years of age<sup>(2)</sup> and marijuana is among the illicit substances. A study developed in Norway showed that alcohol, tobacco, and marijuana consumption are the main causes of premature death among college students in Europe<sup>(7)</sup>.

The consumption of illicit drugs marijuana, inhalants, and cocaine has been presenting a higher prevalence in recent years among college students<sup>(15)</sup>, and it is estimated that alcohol is a mediator for the experimentation of tobacco and other types of drugs<sup>(3)</sup>.

A study developed with college students from Kosovo showed that marijuana is the most commonly used illicit drug, and the experimentation/first contact occurs in the first year of graduation and the use of other substances such as amphetamines, cocaine, ecstasy, inhalants, steroids, and opiates occurs during graduation<sup>(17)</sup>. Thus, it adds the fundamental importance that the university has for the development of actions aimed at the prevention and health promotion of students who are entering the university (freshmen).

College students are susceptible to mental illness due to the demands placed upon them, as this is a time when there is greater exposure to frustration, irritability, anxiety, loss of a sense of humor, and others<sup>(10)</sup>. Due to this mental illness and the pressure exerted in face of academic demands, there is a greater predisposition to consume alcohol and other drugs as a way to escape from the problems associated with personal and academic life<sup>(1)</sup>. It is also noteworthy that the development of risk behavior associated with alcohol consumption may also have the intention of inclusion and socialization in the academic universe<sup>(2)</sup>.

Therefore, episodic binge drinking is directly related to students' negative mental health perceptions, since the greater the anxiety, depression, and depressed mood, the greater the search for alcohol consumption<sup>(10)</sup>.

It has also been observed that the age group 18 to 20 years old is a risk factor for excessive alcohol consumption among university students, thus, in a case-control study developed in France with young people between 18 and 25 years old it was found that excessive alcohol consumption among this age group is a risk factor for alcohol dependence in adulthood, as well as exposes these young people to greater vulnerability behavior<sup>(18)</sup>.

In Spain, a study found that episodic heavy drinking among college students is directly related to early alcohol experimentation, smoking, cannabis use, and low physical activity<sup>(19)</sup>.

When analyzing the consumption between sexes, it is noted that abusive consumption was more observed in the male population, however, in recent years there has been a tendency to equalize the abusive consumption behavior between genders<sup>(20)</sup>. However, when analyzing the pattern of alcohol consumption between genders, males have a higher episodic consumption when compared to females<sup>(2,18)</sup>.

Another aspect observed was that alcohol abuse has a higher relationship among students who do not live with family members/guardians. This factor favors abusive consumption, considering that when the university student does not have a guardian nearby, has the possibility to have their lifestyle, often making the excessive consumption of alcohol daily, being an aggravating factor for the development of chemical dependence, and thus develop problems associated with academic responsibilities<sup>(20)</sup>.

It is also found that having sufficient financial resources while at university is a factor that increases the chances of alcohol consumption. It is noteworthy that many students tend to consume alcoholic beverages with a lower economic value and often these beverages have lower quality and higher alcohol content, causing a high risk of dependence<sup>(21)</sup>.

Another factor identified was the habit of not practicing physical activity. It is known that this factor significantly influences lower academic performance. It is also noted that this behavior may be related to out-of-class work since most respondents study full-time; however, at the end of the teaching activities they need to study at home for tests, papers, and seminars, contributing to a worsening in the quality of life<sup>(22)</sup>. And, thus, the leisure activities of these university students are often restricted to meetings with their peers in which the consumption of alcohol and other drugs occurs.

Students who do not engage in physical activity and leisure activities are more likely to present episodic heavy drinking, considering that alcohol consumption is often used as a form of socialization. Thus, a sedentary lifestyle is a risk factor for alcohol and tobacco consumption<sup>(22)</sup>. In this sense, it is necessary to incorporate into the academic environment extension actions or subjects in the curricula focused on the practice of physical activity and culture, as these measures help improve the lifestyle of students, encourage the adoption of healthy practices, as well as the reduction of alcohol and other drugs<sup>(23)</sup>.

As for violence, it is observed that those who have suffered some type of violence in the university context tend to have more abusive alcohol consumption. A study indicates that alcohol consumption is configured as a triggering factor for violent situations, both in the perception of the aggressor and the victim<sup>(16)</sup>. A study developed with 450 college students showed that 27.3% had already suffered some type of violence in the last year, males were indicated as the main aggressors (62.6%) and the most reported violence was verbal abuse (65.0%), pushing (23.6%) and slapping (18.7%)<sup>(24)</sup>.

Authors<sup>(16)</sup> pointed out that drug use and abuse lead to social breakdown, violence, and crimes, and it is urgent to reflect and implement public policies aimed at social justice and the elimination of inequity.

The present study reached the proposed objective, but, the cross-sectional design used presents itself as a limitation since this method does not allow us to verify the cause-effect of the results and represents a specific population. Therefore, it is suggested that new investigations be carried out with this population to follow the development of these factors in the academic universe.

## Conclusion

Alcohol abuse was present in almost half of the investigated college students, and the associated factors were being male, not living with the family, having enough money to meet their needs, and tobacco and amphetamines use in the last three months.

In this context, it is necessary to increase policies and programs by university managers, which aim to discuss this issue and, thus, implement objective prevention actions. It is denoted that it is necessary to involve the different actors, that is, the university management, academics, teachers, family members, and society.

## References

1. Busto Miramontes A, Moure-Rodríguez L, Mallah N, Díaz-Geada A, Corral M, Cadaveira F, et al. Alcohol Consumption among Freshman College Students in Spain: Individual and Pooled Analyses of Three Cross-Sectional Surveys (2005, 2012 and 2016). *Int J Environ Res Public Health*. 2021 Mar 4;18(5):2548. <https://doi.org/10.3390/ijerph18052548>
2. Zadarko-Domaradzka M, Barabasz Z, Sobolewski M, Nizioł-Babiarz E, Penar-Zadarko B, Szybisty A, et al. Alcohol Consumption and Risky Drinking Patterns among College Students from Selected Countries of the Carpathian Euroregion. *Biomed Res Int*. 2018 Dec;2018:6084541. <https://doi.org/10.1155/2018/6084541>
3. Delgado-Lobete L, Montes-Montes R, Vila-Paz A, Cruz-Valiño JM, Gándara-Gafo B, Talavera-Valverde MA, et al. Individual and Environmental Factors Associated with Tobacco Smoking, Alcohol Abuse and Illegal Drug Consumption in University Students: A Mediating Analysis. *Int J Environ Res Public Health*. 2020 Apr;17(9):3019. <https://doi.org/10.3390/ijerph17093019>
4. Bedendo A, Andrade ALM, Opaleye ES, Noto AR. Binge drinking: a pattern associated with a risk of problems of alcohol use among university students. *Rev. Latino-Am. Enfermagem*. 2017 Sep; 25:e2925. <https://doi.org/10.1590/1518-8345.1891.2925>
5. Martins JG, Guimarães MO, Jorge KO, Silva CJP, Ferreira RC, Pordeus IA, et al. Binge drinking, alcohol outlet density and associated factors: a multilevel analysis among adolescents in Belo Horizonte, Minas Gerais State, Brazil. *Cad Saude Publica*. 2019 Dec 20;36(1):e00052119. <https://doi.org/10.1590/0102-311X00052119>
6. Lee CM, Rhew IC, Patrick ME, Fairlie AM, Cronce JM, Larimer ME, et al. Learning From Experience? The Influence of Positive and Negative Alcohol-Related Consequences on Next-Day Alcohol Expectancies and Use Among College Drinkers. *J Stud Alcohol Drugs*. 2018 May;79(3):465-73. <https://doi.org/10.15288/jsad.2018.79.465>
7. Heradstveit O, Skogen JC, Brunborg GS, Lønning KJ, Sivertsen B. Alcohol-related problems among college and university students in Norway: extent of the problem. *Scand J Public Health*. 2021 Jun;49(4):402-10. <https://doi.org/10.1177/1403494819863515>
8. López V, Paladines B, Vaca S, Cacho R, Fernández-Montalvo J, Ruisoto P. Psychometric properties and factor structure of an Ecuadorian version of the Alcohol Use Disorders Identification Test (AUDIT) in college students. *PLoS One*. 2019 Jul 10;14(7):e0219618. <https://doi.org/10.1371/journal.pone.0219618>
9. Zanetti ACG, Cumsille F, Mann R. The association between the use of alcohol, marijuana and cocaine and the sociodemographic characteristics of university students of Ribeirão Preto, Brazil. *Texto Contexto Enferm*. 2019;28(spe):e110. <https://doi.org/10.1590/1980-265x-tce-cicad-1-10>
10. Kenney SR, DiGiuseppi GT, Meisel MK, Balestrieri SG, Barnett NP. Poor mental health, peer drinking norms, and alcohol risk in a social network of first-year college students. *Addict Behav*. 2018 Sep;84:151-9. <https://doi.org/10.1016/j.addbeh.2018.04.012>
11. Henrique IF, De Micheli D, Lacerda RB, Lacerda LA, Formigoni ML. Validation of the Brazilian version of Alcohol, Smoking and Substance Involvement Screening Test (ASSIST). *Rev Assoc Med Bras (1992)*. 2004 Apr-Jun;50(2):199-206. <https://doi.org/10.1590/s0104-42302004000200039>
12. Bradley KA, DeBenedetti AF, Volk RJ, Williams EC, Frank D, Kivlahan DR. AUDIT-C as a brief screen for alcohol misuse in primary care. *Alcohol Clin Exp Res*. 2007;31(7):1208-17. <https://doi.org/10.1111/j.1530-0277.2007.00403.x>
13. Oh SS, Ju YJ, Jang SI, Park EC. Self-reported campus alcohol policy and college alcohol consumption: a multilevel analysis of 4592 Korean students from 82 colleges. *Subst Abuse Treat Prev Policy*. 2020 Feb 1;15(1):9. <https://doi.org/10.1186/s13011-020-0255-9>
14. Moreira MTF, Lima AMN, Tavares MJ, Barroso T. Níveis de consumo de álcool em meio universitário discente na região norte de Portugal. *Cogitare Enferm*. 2020;25:e74457. <https://doi.org/10.5380/ce.v25i0.74457>
15. Souza J, Hamilton H, Wright MGM. Academic performance and consumption of alcohol, marijuana, and cocaine among undergraduate students from Ribeirão Preto – Brazil. *Texto Contexto Enferm*. 2019;28(spe):e315. <https://doi.org/10.1590/1980-265x-tce-cicad-3-15>
16. Camargo ECP, Gonçalves JS, Felipe AOB, Fava SMCL, Zago MMF, Dázio EMR. Drug use and abuse among university students and their interface with public policies. *SMAD, Rev Eletrônica Saúde Mental Álcool Drog*. 2019 Dec;15(4):1-9. <https://doi.org/10.11606/issn.1806-6976.smad.2019.000364>
17. Gazibara T, Milic M, Parlic M, Stevanovic J, Ladic D, Maric G, et al. Illicit drug use and academia



in North Kosovo: Prevalence, patterns, predictors and health-related quality of life. *PLoS One*. 2018 Jul 16;13(7):e0199921. <https://doi.org/10.1371/journal.pone.0199921>

18. Tavoracci MP, Berthon Q, Cerasuolo D, Dechelotte P, Ladner J, Baguet A. Does binge drinking between the age of 18 and 25 years predict alcohol dependence in adulthood? A retrospective case-control study in France. *BMJ Open*. 2019 May 5;9(5):e026375. <https://doi.org/10.1136/bmjopen-2018-026375>

19. Herrero-Montes M, Alonso-Blanco C, Paz-Zulueta M, Sarabia-Cobo C, Ruiz-Azcona L, Parás-Bravo P. Binge Drinking in Spanish University Students: Associated Factors and Repercussions: A Preliminary Study. *Int J Environ Res Public Health*. 2019 Nov 30;16(23):4822. <https://doi.org/10.3390/ijerph16234822>

20. Silva FJGD Junior, Monteiro CFS. Alcohol and other drug use, and mental distress in the women's universe. *Rev Bras Enferm*. 2020;73(1):e20180268. <https://doi.org/10.1590/0034-7167-2018-0268>

21. Terry-McElrath YM, Patrick ME. U.S. adolescent alcohol use by race/ethnicity: Consumption and perceived need to reduce/stop use. *J Ethn Subst Abuse*. 2020 Jan-Mar;19(1):3-27. <https://doi.org/10.1080/15332640.2018.1433094>

22. Van Reen E, Roane BM, Barker DH, McGeary JE, Borsari B, Carskadon MA. Current Alcohol Use is Associated with Sleep Patterns in First-Year College Students. *Sleep*. 2016 Jun 1;39(6):1321-6. <https://doi.org/10.5665/sleep.5862>

23. Guimarães FS, Flores TR, Murray J, Bertoldi AD. Fatores sociodemográficos e estilo de vida relacionados aos comportamentos violentos em universitários. *Ciênc Saúde Coletiva*. 2021;26(08):3311-22. <https://doi.org/10.1590/1413-81232021268.09212020>

24. Masthi NRR, Manasa AR. An exploratory study on violence among the college students in Urban Bengaluru, Karnataka, India. *Indian J Public Health*. 2019 Oct-Dec;63(4):380-2. [https://doi.org/10.4103/ijph.IJPH\\_230\\_18](https://doi.org/10.4103/ijph.IJPH_230_18)

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