Comparison of alcohol consumption in university students before and during the initial months of the pandemic

Comparação do consumo de álcool em universitários antes e durante os meses iniciais da pandemia

Comparación del consumo de alcohol en estudiantes universitarios antes y duante los meses iniciales de la pandemia

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Abstract
Introduction: Researchers diverge in relation to the possible impact of the SARS-CoV-2 pandemic on the pattern of alcohol consumption among university students. The objective of this study was to compare the pattern of alcohol use among university students, one week before and three months after the beginning of the social isolation. Method: Quantitative and longitudinal study, with data collection carried out in two moments: in person on 9th, 10th and 11th of March, 2020; and online, between the months of June and July, 2020. The instruments used were sociodemographic questionnaire and the Alcohol Use Disorders Identification Test (AUDIT). Results: 165 students answered before the pandemic and 100, among this sample, answered during the pandemic, being these students the final sample of the study. Results showed reduction in the total AUDIT score between the two moments: before, the median score was 5.9 (standard deviation = 4.96) and during the pandemic, it was 2.7 (standard deviation = 3.64). There was a significant worsening in the "mental/emotional health", which was associated with the decrease of AUDIT score ($p < 0.001$). Conclusion: The pattern of alcohol use showed reduction in the second moment compared to the first one. In addition, the worsening of mental health during the beginning of social isolation was associated with the change in the pattern of alcohol consumption. It is suggested that more research should be carried out as a way to monitor possible changes in mental health and in the pattern of alcohol use in this population.
Keywords: University students; SARS-CoV-2; Alcohol.

Resumo
Introdução: Os pesquisadores divergem em relação ao possível impacto da pandemia de SARS-CoV-2 no padrão de consumo de álcool entre universitários. O objetivo deste estudo foi comparar o padrão de uso de álcool entre universitários, uma semana antes e três meses após o início do isolamento social. Método: Estudo quantitativo e longitudinal, com coleta de dados realizada em dois momentos: presencial nos dias 9, 10 e 11 de março de 2020; e online, entre os meses de junho e julho de 2020. Os instrumentos utilizados foram questionário sociodemográfico e o Alcohol Use Disorders Identification Test (AUDIT). Resultados: 165 alunos responderam antes da pandemia e 100,

desta amostra, responderam durante a pandemia, sendo estes alunos a amostra final do estudo. Os resultados mostraram redução no escore total do AUDIT entre os dois momentos: antes, o escore mediano era de 5,9 (desvio padrão = 4,96) e durante a pandemia foi de 2,7 (desvio padrão = 3,64). Houve piora significativa na "saúde mental/emocional", que se associou à diminuição do escore AUDIT (p < 0,001). Conclusão: O padrão de uso de álcool apresentou redução no segundo momento em relação ao primeiro. Além disso, a piora da saúde mental durante o início do isolamento social foi associada à mudança no padrão de consumo de álcool. Sugere-se que mais pesquisas sejam realizadas como forma de monitorar possíveis alterações na saúde mental e no padrão de uso de álcool nessa população.
Palavras-chave: Estudantes universitários; SARS-CoV-2; Álcool.

Resumen
Introducción: Los investigadores divergen en relación al posible impacto de la pandemia por SARS-CoV-2 en el patrón de consumo de alcohol entre los estudiantes universitarios. El objetivo de este estudio fue comparar el patrón de consumo de alcohol entre estudiantes universitarios, una semana antes y tres meses después del inicio del aislamiento social. Método: Estudio cuantitativo y longitudinal, con recolección de datos realizada en dos momentos: presencial los días 9, 10 y 11 de marzo de 2020; y en línea, entre los meses de junio y julio de 2020. Los instrumentos utilizados fueron el cuestionario sociodemográfico y el Test de Identificación de Trastornos por Consumo de Alcohol (AUDIT). Resultados: 165 estudiantes respondieron antes de la pandemia y 100, dentro de esta muestra, respondieron durante la pandemia, siendo estos estudiantes la muestra final del estudio. Los resultados mostraron una reducción en el puntaje total del AUDIT entre los dos momentos: antes, el puntaje mediano fue de 5,9 (desviación estándar = 4,96) y durante la pandemia fue de 2,7 (desviación estándar = 3,64). Hubo un empeoramiento significativo en la "salud mental/emocional", que se asoció con la disminución de la puntuación AUDIT (p < 0,001). Conclusión: El patrón de consumo de alcohol mostró reducción en el segundo momento con respecto al primero. Además, el empeoramiento de la salud mental durante el inicio del aislamiento social se asoció con el cambio en el patrón de consumo de alcohol. Se sugiere realizar más investigaciones como forma de monitorear posibles cambios en la salud mental y en el patrón de consumo de alcohol en esta población.
Palabras clave: Estudiantes universitarios; SARS-CoV-2; Alcohol.

1. Introduction

The SARS-CoV-2 pandemic has impacted the lives of university students with the interruption of presential activities (Hanafy et al., 2021; Mahdy, 2020; Rohmani & Andriani, 2021; Unesco, 2020), leading to the transition of curricula to the remote modality and causing most university students to return to the family nucleus of origin (Charles et al., 2021; White et al., 2020). This imposed a new reality for students from Brazilian Higher Education Institutions (IFEs, acronym in portuguese), who suffered the consequences of the pandemic more intensely than other groups in society, with expressive concern regarding to academic training and the ability to enter in the labor market. In addition, government measures accentuated the difficulties of Brazilian universities, cutting down funds for education and science, which will very likely reverberate in a decrease in the support offered to the students (Carvalho et al., 2020; Santos et al., 2021).

The consequences of these changes have raised the concern of many researchers about the medium and long-term impact of the pandemic on the mental health of university students. Before the pandemic, approximately 20% of university students had some mental disorder, usually untreated (Auerbach et al., 2016) and the increase in stress, anxiety and depression, triggered by a pandemic of this magnitude, may be one of the factors with the greatest impact on the development or potentiation of already existing mental disorders (Batra et al.,2021). Several researchers from different countries studied the mental health problems of university students after the beginning of the pandemic and they found similar conclusions: an increase in stress, post-traumatic stress, anxiety, depression and sleep problems, among other conditions (Clabaugh et al., 2021; Chow et al.,2021; Copeland et al., 2021; Da Silva et al., 2021; Fu et al., 2021; Fruehwirth et al., 2021; Hoyt et al., 2021; Kaurani et al., 2020; Kim et al., 2021; Lederer et al., 2021; Simegn et al., 2021; Yu et al., 2021).

Another point that has drawn attention is the use of alcoholic beverages by university students (Boschuetz et al.,2020), since this population commonly consume more alcohol than the general population, including individuals of the same age group who are not at university (Heradstveit et al.,2021; Martin et al.,2020). In Brazil, the last major study conducted in the 27 Brazilian

capitals revealed that 86% of university students reported a lifetime alcohol use and 25% reported excessive alcohol consumption in the last 30 days (Andrade et al.,2010).

According to the World Health Organization (WHO), alcohol is the most widely used psychoactive substance in the world, with a significant growth in its consumption in recent decades. It exponentially affects the Central Nervous System (CNS), which can lead to dependence and cause negative behavioral consequences, psychological, social and economic damage (World Health Organization, 2018). In the case of university students, the abusive and frequent use of alcohol is also related to worse academic performance, low concentration, reduced study hours, excessive absences in classes, constant delays, drowsiness during activities in the classroom, noncompliance with academic requirements and cognitive impairment (Bamberger et al., 2018).

Since the beginning of the SARS-CoV-2 pandemic, researches with university students suggest a change in the pattern and frequency of use of alcoholic beverages, either for a decrease (Bonar et al., 2021; Bollen et al. 2021; Busse et al., 2021; Fruehwirth et al., 2021; Jaffe et al., 2021; Ryerson et al., 2021) or for an increase of consumption (Jackson et al., 2021; White et al., 2020; Lechner et al., 2020, Lechner et al., 2021). Such differences may occur due to the characteristics related to the exact location and period of data collection, since the pandemic brought a dynamic quarantine experienced in different ways, depending on the management of local policy and health.

Thus, this study objective is to describe the alcohol use pattern of Brazilian university students before and after the beginning of the isolation, adding information to contribute to the literature to a better understanding on the pattern of alcohol consumption among university students "before" and "during" the initial months of the SARS-CoV-2 pandemic.

2. Methodology

It is a quantitative and longitudinal study with data collection performed in two moments (Bordalo et al., 2006). The first moment, before the pandemic, called "before" in this paper, was assessed in person on 2020 March 9th, 10th and 11th. The second moment, called "during", was carried out through an online form, between June and July of 2020.

Ethical considerations

The first moment of the study was approved by the Research Ethics Committee (CEP) of the University, CAAE 10409919.3.0000.5505. The second one was also approved by the CEP under CAAE 10409919.3.0000.5505. The study followed the recommendations of Resolution No. 466/2012 on research involving human beings (Brazil, 2012).

Participants

The sample selection was by convenience and according to the students' acceptance to participate in the research. The inclusion criteria to participate in this study were: students over 18 years of age, of both sexes and who responded to the two assessments. According to the 2020 admission report, the female gender (66.47%) is predominant at the campus (UNIFESP, 2020). The first phase included 165 students and, from these sample, 100 responded to the online form, being the final sample of the study. The students were from four different courses: physical education, social work, physiotherapy and occupational therapy.

Instruments

For data collection, a self-administered questionnaire composed of two instruments was used:

Questionnaire of Sociodemographic Characterization of Students. This questionnaire presents questions addressing the following aspects: age, gender, course, period, course year, entry year, marital status, if they have children, who they live

with, if they work or if they have an internship, tobacco, illicit drug and alcohol use, physical activity, mental and emotional health, as well as other issues that aim to corroborate the sociodemographic and economic characterization of students.

Alcohol Use Disorders Identification Test (AUDIT). This instrument was developed by the World Health Organization (Babor *et al.*, 2001, Higgins-Biddle & Babor, 2018) and composed of ten questions related to the characterization of alcohol use pattern, its consequences and symptoms of dependence. In this study, it was used a Brazilian validated version of AUDIT (Lima *et al.*, 1999). This instrument should be answered considering the last twelve months and according to response options that vary within a scale of 0 to 4. Considering that the AUDIT is a retroactive questionnaire and, given the need to capture the impact of the pandemic in the first three months of social isolation, it was necessary to adapt the test questions by delimiting the specific time of the pandemic in the "during" moment of the assessment. Thus, phrases such as "how often have you consumed 6 or more doses of alcoholic beverages on a single occasion in the last 12 months" were adapted to "how often have you consumed 6 or more doses of alcoholic beverages on a single occasion in the last "two months". The AUDIT total score is obtained from the sum of the answers and classified according to the risk zones or the pattern of alcohol use (Babor *et al.*, 2001; Dimeff *et al.*, 2002). The total AUDIT score ranges from 0-40, being: 0 to 7 points (Zone I) indicates low risk use; between 8 and 15 points (Zone II) characterizes the use pattern as risky; between 16 and 19 points (Zone III) refers to harmful use; and between 20 and 40 (Zone IV) indicates probable dependence.

Procedures

In order to carry out the data collection of the first phase, authorization was requested from the board and professors of the university. After agreement, a brief explanation was given to the students in the classrooms about the research objectives and the confidentiality of the information provided. Those who agreed to participate and signed the Free and Informed Consent Term (TCLE, acronym in Portuguese) and responded to the study instruments. The second phase of data collection was carried out by inviting the respondents of the first phase, via email and by phone (WhatsApp). After acceptance through the TCLE, a link was provided to access the online questionnaires, similar to the questionnaire built in the presential stage, with adaptations to the pandemic moment.

Data analysis

The data collected were analyzed using the statistical program R Core Team (2020). A descriptive analysis of the data was carried out in relation to the "before" and "during" assessments of the pandemic. To assess the normality of numerical variables, we used the Shapiro-Wilk normality test. Considering that the data did not present normal distribution, non-parametric tests were applied for subsequent analyses. To verify whether there was a change in the classification and in the AUDIT score between the two assessment moments, the Wilcoxon test was used. To study the effect of changing the alcohol pattern during the pandemic, according to the variables of interest (sociodemographic and economic data), the differences between the "before" and "during" pandemic assessments were calculated. Thus, to compare the variables of interest, the Mann-Whitney and Krukal-Wallis tests were used. In all hypothesis tests, a significance level of 0.05 was adopted.

3. Results

Table 1 presents the demographic data of the students participating in the study. The sample was predominantly composed of female students 71%, white 67%, single 96%, without children 98%, who declared themselves to be "religious" (that is, who adopt some type of religion) 54%, mean age of 21.96 years (Standard Deviation (SD) = 4.07).

Table 1 - Sociodemographic and academics characterization of students.

	N	%
Gender		
Male	21	21%
Female	71	71%
Self-reported color		
White	67	67%
Brown and black	33	33%
Marital status		
Single	96	96%
Committed	2	2%
Others	2	2%
Sons		
No	98	98%
Yes	2	2%
Religiosity		
No	46	46%
Yes	54	54%
Age - mean (SD)	21.96 (4.07)	

Source: Authors (2023).

Table 2 presents the change in the AUDIT mean score between the two moments according to each variable of interest. The results indicated that only the variable "mental/emotional health" was related to the AUDIT variation when comparing the two moments ($p < 0.001$). The data suggest that individuals who experienced worsening mental health during social isolation had a greater reduction in AUDIT mean score.

Table 2 - Descriptive measures and comparisons of the variable "AUDIT difference" before versus during the SARS-CoV-2 pandemic, according to each variable of interest (N = 100).

Variables	AUDIT difference "before" and "during"		p-*value*
	Mean (DP)	**Median (IIQ)**	
Gender			0.777
Male	3.34 (5.08)	2 (0-6)	
Feminine	3.14 (3.86)	3 (0-6)	
Color			0.084
White	3.54 (3.94)	3 (1-6)	
Brown and black	2.52 (4.73)	1 (0-4)	
Religiosity			0.068
No	4 (4.46)	3.5 (1-6)	
Yes	2.52 (3.93)	2 (0-4)	
Moving house during the pandemic			0.233
No	2.5 (3.45)	1.5 (0-5)	
To family home	3.83 (4.77)	3 (1-6)	
Left the family home†	2	2 (2-2)	
Changes in income during the pandemic			0.773
Kept	3.16 (4.23)	2 (0-6)	
Decreased	2.94 (4.77)	2 (0.5-4)	
Increased	3.67 (3.81)	4 (0-6)	
Physical health in the pandemic			0.235
Bad	4.06 (4.48)	4 (0.5-7)	
Average to good	3.04 (4.18)	2 (0-5)	

Emotional/mental health in the pandemic		< 0.001*
Bad	4.1 (3.99)	4 (1-6)
Good	1.95 (4.26)	1 (0-3)
Felt lonely during the pandemic		0.066
Never to rarely	2.28 (3.96)	1 (0-4)
Sometimes to often	3.63 (4.3)	3 (1-6)

Note: * = evidence of statistical difference ($p < 0.05$). Source: Authors (2023).

Table 3 shows the comparison of items and the total score of the AUDIT questionnaire "before" and "during" the SARS-CoV-2 pandemic (see mean and SD on Table 4). The students significantly reduced the frequency of alcohol use, the number of doses usually consumed, the high frequency of consumption, stopped doing activities due to alcohol use, the feeling of guilt after drinking, the number of blackouts (memory lapses), and the concern of others about consumption. In this sample, most students were in low-risk consumption at the two moments, with a mean consumption of less than eight points in the AUDIT.

Table 3 - Comparison of questions and total score of the AUDIT questionnaire before and during the SARS-CoV-2 pandemic among university students (N = 100).

AUDIT	"Before"		"During"	
	Average (DP)	**Median (IIQ)**	**Average (DP)**	**Median (IIQ)**
How often do you consume alcoholic beverages?	1.62 (0.9)	2 (1-2)	1.2 (1.04)	1(0-2)*
How many drinks containing alcohol do you consume on a typical day when you are drinking?	1.25 (1.11)	1 (0-2)	0.56 (0.91)	0 (0-1)*
How often have you consumed 6 or more doses of alcoholic beverages on a single occasion in the last 12 months?	1.03 (0.92)	1 (0-2)	0.46 (0.88)	0 (0-1)*
How often during the last 12 months did you find that you couldn't stop drinking once you started?	0.22 (0.56)	0 (0-0)	0.13 (0.49)	0 (0-0)
How many times during the last 12 months did you fail to do something that was expected of you due to your use of alcoholic beverages?	0.29 (0.52)	0 (0-1)	0.08 (0.31)	0 (0-0)*
How many times during the past 12 months have you needed a first dose in the morning to feel better after a binge?	0.02 (0.14)	0 (0-0)	0.01 (0.1)	0 (0-0)
How many times during the last 12 months did you feel guilty or remorseful after drinking?	0.55 (0.66)	0 (0-1)	0.11 (0.49)	0 (0-0)*
How many times during the last 12 months have you been unable to remember what happened the night before because you had been drinking?	0.46 (0.64)	0 (0-1)	0.03 (0.17)	0 (0-0)*
Have you or anyone ever been hurt by your drinking?	0.2 (0.78)	0 (0-0)	0.08 (0.39)	0 (0-0)
Has a relative, friend, doctor or other health care professional expressed concern about your drinking or suggested that you stop drinking?	0.26 (0.88)	0 (0-0)	0.04 (0.28)	0 (0-0)*
AUDIT total score	5.9 (4.96)	5.5 (1.25-8)	2.7 (3.64)	2 (0-4)*

Note: SD = standard deviation; IIQ = Interquartile range; * = Evidence of statistical difference ($p < 0.05$). Source: Authors (2023).

4. Discussion

The main objective of this study was to compare the pattern of alcohol use among university students at a Brazilian federal university, one week before and three months after the beginning of social isolation adopted as a measure to contain the pandemic by SARS-CoV-2. In our sample, some AUDIT questions showed significant differences between the two moments of evaluation. The students reduced the frequency of alcohol use, the number of doses usually consumed, the frequency of consumption, stopped doing activities due to alcohol use, the feeling of guilt after drinking, the number of blackouts (memory lapses), and the concern of others about consumption. This result is similar to other studies showing reduction in alcohol use at the beginning of social isolation (Bonar et al., 2021; Bollen et al., 2021; Fruehwirth et al., 2021; Graupensperger et al., 2021; Jaffe et al., 2021; Ryerson et al., 2021). However, studies investigating the period between 6 to 12 months after the beginning of the pandemic, observed an increase in alcohol consumption among students (Charles et al., 2021 Lechner et al., 2020; Lechner et al., 2021).

These data suggest that there may be a difference related to the pattern of alcohol consumption depending on the social, personal, family and situational dynamics that students are involved. Thus, depending on the moment in which data collection took place during the pandemic, it shows different trends in alcohol consumption in this population (Killgore et al., 2021). One hypothesis may be related to the fact that during the beginning of social isolation, with the sudden closing of bars, restaurants, shops, schools and universities, the availability of alcohol was smaller, so alcohol consumption tended to decrease. Over the months, it can be assumed that the greater access to information about the virus, the implementation of protection/prevention measures and the greater adaptation to the changes resulting from the pandemic generated a drinking behavior similar to the moment before the pandemic. Or, yet the increase in psycho-emotional difficulties and mental disorders caused by prolonged isolation can affect the (late) increase in consumption (Killgore et al., 2021; Salerno et al., 2021).

Among the factors evaluated in this study, only the mental/emotional health status was significantly related to the difference in the AUDIT between the two moments. From this data, individuals whose mental health worsened during social isolation showed decrease in alcohol use. This finding is not consistent with the result of most studies carried out in other countries in the same period, which found that the increase in anxiety, stress and depression was associated to an increase in alcohol use among university students (Lechner et al., 2020; Chow et al., 2021; Fruehwirt et al., 2021; Salerno et al., 2021, Schepis et al., 2021; Su et al., 2021). Moreover, the predominance of female students in this study sample may be a factor biasing the result as alcohol consumption is higher among male than women (Tassiane et al., 2021) and male students abuse of alcohol three times more than females (Pedrosa et al., 2011).

It is a consensus that the complexity of the challenges imposed by the SARS-CoV-2 pandemic still does not allow a projection of the real repercussions on the daily lives of university students (Gavurova et al., 2020; Tang et al., 2020). One of the significant changes in the population of this study was the return to the family nucleus of origin during the pandemic period. While in the period before the pandemic 37% of them lived with family members, in the initial months of social isolation, 89% were in this condition. Although the present study did not detect significance in this variable in relation to the changes on the pattern of alcohol consumption, parental supervision was identified in studies prior to the pandemic as one of the most important protective factors for risky alcohol use in this population (Evans-Polce et al., 2017; Simons-Morton, 2016). Studies carried out at the beginning of the pandemic found that students who returned to the family home after the closing of the university campus had a significant reduction in alcohol use, in relation to students who already resided with their parents (Ryerson et al., 2021; Su et al., 2022; White et al., 2020).

Some important limitations of the present study must be pointed out and need to be taken into account: the sample was composed expressively and mostly by female as already mentioned above; the sample saze is small and specific from a University campus and the way in which social isolation took place in Brazil. The second phase of the study was at the beginning of the

pandemic in the country, a moment characterized by greater adherence of the population to social isolation, with only essential services functioning, which may have limited the purchase and consumption of alcoholic beverages. In addition, the University was in the process of analyzing the transition from presential activities to remote classes. This process lasted four months until the online classes started. This long period of uncertainty generated significant distress and insecurity among students, with the rapid advance of the pandemic and a significant increase in the number of deaths, which may have interfered in mental health.

Thus, the change in alcohol consumption pattern during the initial phase of the pandemic may be related to the specific characteristics of the sample, the sampling process and the national scenario related to the pandemic at that time. On the other hand, this study evaluated the pattern of alcohol use in a non-retrospective way, which reduces underestimation and the possibility of memory bias, strengthening the results.

More comprehensive research should be carried out with the young adults, especially university students, for a short, medium, and long-term period, in order to establish strategies that allow a rapid screening of alcohol consumption, and the use of interventions focused on minimizing the harmful use of alcohol and contributing to the perspective of protecting mental health at the end of the SARS-CoV-2 pandemic.

5. Conclusion

The pattern of alcohol use among university students showed changes when comparing two weeks before and three months after the beginning of the SARS-CoV-2 pandemic. During the beginning of the SARS-CoV-2 pandemic, it was detected a decrease in the AUDIT score compared to the pre-pandemic one. In addition, the worsening of mental health during the beginning of social isolation was associated with the changes in AUDIT score.

Authors suggest that future research should investigate the pos-pandemic impact on mental health among university students. Moreover, is also necessary the monitoring of alcohol use during the return to presential classes. This consumption should be evaluated especially in its association with mental health, as most students returned to live outside the family nucleus of origin in their.

References

Andrade A, Duarte P, Oliveira L. (2010) *I national survey on the use of alcohol, tobacco and other drugs among university students in 27 Brazilian capitals*. Brasilia: SENAD.

Auerbach, R. P., Alonso, J., Axinn, W. G., Cuijpers, P., Ebert, D. D., Green, J. G., Hwang, I., Kessler, R. C., Liu, H., Mortier, P., Nock, M. K., Pinder-Amaker, S., Sampson, N. A., Aguilar-Gaxiola, S., Al-Hamzawi, A., Andrade, L. H., Benjet, C., Caldas-de-Almeida, J. M., Demyttenaere, K., Florescu, S., Babor, F. T. *et al.* (2021) *The alcohol use disorders identification test*: guidelines for use in primary care. (2a ed.), WHO.

Bamberger, P. A., Koopmann, J., Wang, M., Larimer, M., Nahum-Shani, I., Geisner, I., & Bacharach, S. B. (2018). Does college alcohol consumption impact employment upon graduation? Findings from a prospective study. *The Journal of applied psychology*, *103*(1), 111–121. https://doi.org/10.1037/apl0000244

Batra, K., Sharma, M., Batra, R., Singh, T. P., & Schvaneveldt, N. (2021). Assessing the Psychological Impact of COVID-19 among College Students: An Evidence of Countries. *Healthcare (Basel, Switzerland)*, *9*(2), 222. https://doi.org/10.3390/healthcare9020222

Bollen, Z., Pabst, A., Creupelandt, C., Fontesse, S., Lannoy, S., Pinon, N., & Maurage, P. (2021). Prior drinking motives predict alcohol consumption during the COVID-19 lockdown: A cross-sectional online survey among Belgian college students. *Addictive behaviors*, *115*, 106772. https://doi.org/10.1016/j.addbeh.2020.106772

Bonar, E. E., Parks, M. J., Gunlicks-Stoessel, M., Lyden, G. R., Mehus, C. J., Morrell, N., & Patrick, M. E. (2021). Binge drinking before and after a COVID-19 campus closure among first-year college students. *Addictive behaviors*, *118*, 106879. https://doi.org/10.1016/j.addbeh.2021.106879

Bordalo, Alípio Augusto. (2006). Estudo transversal e/ou longitudinal. *Revista Paraense de Medicina*, *20*(4), 5. http://scielo.iec.gov.br/scielo.php?script=sci_arttext&pid=S0101-59072006000400001&lng=pt&tlng=pt

Boschuetz, N., Cheng, S., Mei, L., & Loy, V. M. (2020). Changes in Alcohol Use Patterns in the United States During COVID-19 Pandemic. *WMJ: official publication of the State Medical Society of Wisconsin*, *119*(3), 171–176.

Brazil. Ministry of Health. Ordinance No. 454 of March 20, 2020. http://www.planalto.gov.br/ccivil_03/portaria/prt454-20-ms.htm.

Brazil. National Health Council: R*esolution No. 466/2012 on research involving human beings*. 2012. http://conselho.saude.gov.br/resolucoes/2012/Reso466.pdf. Access on: 12 May. 2018

Bruffaerts, R. (2016). Mental disorders among college students in the World Health Organization World Mental Health Surveys. *Psychological medicine*, *46*(14), 2955–2970. https://doi.org/10.1017/S0033291716001665

Busse, H., Buck, C., Stock, C., Zeeb, H., Pischke, C. R., Fialho, P., Wendt, C., & Helmer, S. M. (2021). Engagement in Health Risk Behaviours before and during the COVID-19 Pandemic in German University Students: Results of a Cross-Sectional Study. *International journal of environmental research and public health*, *18*(4), 1410. https://doi.org/10.3390/ijerph18041410

Carvalho, R., Carvalho, R., Zagni, R.M., (2020). Em guerras e sem armas: A pandemia mundial e o desmonte das ciências no Brasil. *Revista Interdisciplinar de sociologia e direito, 22* (2), 106-129.

Charles, N. E., Strong, S. J., Burns, L. C., Bullerjahn, M. R., & Serafine, K. M. (2021). Increased mood disorder symptoms, perceived stress, and alcohol use among college students during the COVID-19 pandemic. *Psychiatry research*, *296*, 113706. https://doi.org/10.1016/j.psychres.2021.113706

Chow, M., Poon, S., Lui, K. L., Chan, C., & Lam, W. (2021). Alcohol Consumption and Depression Among University Students and Their Perception of Alcohol Use. *East Asian archives of psychiatry: official journal of the Hong Kong College of Psychiatrists, 31*(4), 87–96. https://doi.org/10.12809/eaap20108

Clabaugh, A., Duque, J. F., & Fields, L. J. (2021). Academic Stress and Emotional Well-Being in United States College Students Following Onset of the COVID-19 Pandemic. *Frontiers in psychology*, *12*, 628787. https://doi.org/10.3389/fpsyg.2021.628787

Copeland, W. E., McGinnis, E., Bai, Y., Adams, Z., Nardone, H., Devadanam, V., Rettew, J., & Hudziak, J. J. (2021). Impact of COVID-19 Pandemic on College Student Mental Health and Wellness. *Journal of the American Academy of Child and Adolescent Psychiatry*, *60*(1), 134–141.e2. https://doi.org/10.1016/j.jaac.2020.08.466

Da Silva Júnior, A. E., Lima Macena, M., de Oliveira, A. D. S., Praxedes, D. R. S., de Oliveira Maranhão Pureza, I. R., & Bueno, N. B. (2020). Racial Differences in Generalized Anxiety Disorder During the COVID-19 Pandemic among Brazilian University Students: a National Survey. *J Racial Ethn Health Disparities, 21,* 1-9. 10.1007/s40615-021-01107-3

Dimeff, L. A. *et al.* (2002). *Alcoolismo entre estudantes universitários*: Uma abordagem de redução de danos. São Paulo: Editora da Unesp.

Evans-Polce, R. J., Maggs, J. L., Staff, J., & Lanza, S. T. (2017). The Age-Varying Association of Student Status with Excessive Alcohol Use: Ages 18 to 30 Years. *Alcoholism, clinical and experimental research*, *41*(2), 407-413. https://doi.org/10.1111/acer.13294

Fruehwirth, J. C., Biswas, S., & Perreira, K. M. (2021). The Covid-19 pandemic and mental health of first-year college students: Examining the effect of Covid-19 stressors using longitudinal data. *PloS one*, *16*(3), e0247999. https://doi.org/10.1371/journal.pone.0247999

Fruehwirth, J. C., Gorman, B. L., & Perreira, K. M. (2021). The Effect of Social and Stress-Related Factors on Alcohol Use Among College Students During the Covid-19 Pandemic. *The Journal of adolescent health official publication of the Society for Adolescent Medicine*, *69*(4), 557–565. https://doi.org/10.1016/j.jadohealth.2021.06.016

Fu, W., Yan, S., Zong, Q., Anderson-Luxford, D., Song, X., Lv, Z., & Lv, C. (2021). Mental health of college students during the COVID-19 epidemic in China. *Journal of affective disorders*, *280*(Pt A), 7–10. https://doi.org/10.1016/j.jad.2020.11.032

Gavurova, B., Ivankova, V., & Rigelsky, M. (2020). Relationships between Perceived Stress, Depression and Alcohol Use Disorders in University Students during the COVID-19 Pandemic: A Socio-Economic Dimension. *International journal of environmental research and public health*, *17*(23), 8853. https://doi.org/10.3390/ijerph17238853

Graupensperger, S., Jaffe, A. E., Fleming, C., Kilmer, J. R., Lee, C. M., & Larimer, M. E. (2021). Changes in college student alcohol use during the COVID-19 pandemic: Are perceived drinking norms still relevant? *Emerging adulthood (Print),* 9(5), 531–540. https://doi.org/10.1177/2167696820986742

Hanafy, S. M., Jumaa, M. I., & Arafa, M. A. (2021). Um estudo comparativo de aprendizado online em resposta à pandemia da doença de coronavírus 2019 versus aprendizado convencional. *Med saudita. J.,* 42, 324-331. 10.15537/smj.2021.42.3.20200741.

Heradstveit, O., Skogen, J. C., Brunborg, G. S., Lønning, K. J., & Sivertsen, B. (2021). Alcohol-related problems among college and university students in Norway: extent of the problem. *Scandinavian journal of public health*, *49*(4), 402–410. https://doi.org/10.1177/1403494819863515

Higgins-Biddle, J. C., & Babor, T. F. (2018). A review of the Alcohol Use Disorders Identification Test (AUDIT), AUDIT-C, and USAUDIT for screening in the United States: Past issues and future directions. *The American journal of drug and alcohol abuse*, *44*(6), 578–586. https://doi.org/10.1080/00952990.2018.1456545

Hoyt, L. T., Cohen, A. K., Dull, B., Maker Castro, E., & Yazdani, N. (2021). "Constant Stress Has Become the New Normal": Stress and Anxiety Inequalities Among U.S. College Students in the Time of COVID-19. *The Journal of adolescent health: official publication of the Society for Adolescent Medicine*, *68*(2), 270–276. https://doi.org/10.1016/j.jadohealth.2020.10.030

Jackson, K. M., Merrill, J. E., Stevens, A. K., Hayes, K. L., & White, H. R. (2021). Changes in Alcohol Use and Drinking Context due to the COVID-19 Pandemic: A Multimethod Study of College Student Drinkers. *Alcoholism, clinical and experimental research*, *45*(4), 752–764. https://doi.org/10.1111/acer.14574

Jaffe, A. E., Kumar, S. A., Ramirez, J. J., & DiLillo, D. (2021). Is the COVID-19 Pandemic a High-Risk Period for College Student Alcohol Use? A Comparison of Three Spring Semesters. *Alcoholism, clinical and experimental research*, *45*(4), 854–863. https://doi.org/10.1111/acer.14572

Kaurani, P., Batra, K., & Rathore-Hooja, H. (2020). Psychological impact of COVID-19 lockdown (Phase 2) among Indian general population: A cross-sectional analysis. *Int. J. Sci. Res., 9,* 51-56. 10.36106/ijsr/2439876.

Killgore, W., Cloonan, S. A., Taylor, E. C., Lucas, D. A., & Dailey, N. S. (2021). Alcohol dependence during COVID-19 lockdowns. *Psychiatry research*, *296*, 113676. https://doi.org/10.1016/j.psychres.2020.113676

Kim, I. H., Jeong, Y. W., & Park, H. K. (2021). Korean University Students' Problematic Alcohol use, Depression, and Non-Suicidal Self-Injury During COVID-19 Lockdown. *Chronic stress (Thousand Oaks, Calif.)*, *5*, 24705470211053042. https://doi.org/10.1177/24705470211053042

Lechner, W. V., Laurene, K. R., Patel, S., Anderson, M., Grega, C., & Kenne, D. R. (2020). Changes in alcohol use as a function of psychological distress and social support following COVID-19 related University closings. *Addictive behaviors*, *110*, 106527. https://doi.org/10.1016/j.addbeh.2020.106527

Lechner, W. V., Sidhu, N. K., Jin, J. T., Kittaneh, A. A., Laurene, K. R., & Kenne, D. R. (2021). Increases in Risky Drinking During the COVID-19 Pandemic Assessed via Longitudinal Cohort Design: Associations With Racial Tensions, Financial Distress, Psychological Distress and Virus-Related Fears. *Alcohol and alcoholism (Oxford, Oxfordshire)*, *56*(6), 702–707. https://doi.org/10.1093/alcalc/agab019

Lederer, A. M., Hoban, M.T., Lipson, S.K., Zhou, S., & Eisenberg. D. (2020). More Than Inconvenienced: The Unique Needs of U.S. College Students During the COVID-19 Pandemic. *Health Educ Behav, 48*(1), 14-19. 10.1177/1090198120969372

Lima, T. C. *et al.* (1999). Concurrent and construct validity of the AUDIT in a urban Brazilian sample. *Alcohol & Alcoholism, 40*(6), 584-589.

Mahdy M. (2020). The Impact of COVID-19 Pandemic on the Academic Performance of Veterinary Medical Students. *Frontiers in veterinary science*, *7*, 594261. https://doi.org/10.3389/fvets.2020.594261

Martin, K. P., Benca-Bachman, C. E., & Palmer, R. (2020). Risk for alcohol use/misuse among entering college students: The role of personality and stress. *Addictive behaviors reports*, *13*, 100330. https://doi.org/10.1016/j.abrep.2020.100330

Rohmani, N., & Andriani, R. (2021). Correlation between academic self-efficacy and burnout originating from distance learning among nursing students in Indonesia during the coronavirus disease 2019 pandemic. *Journal of educational evaluation for health professions*, *18*, 9. https://doi.org/10.3352/jeehp.2021.18.9

Ryerson, N. C., Wilson, O., Pena, A., Duffy, M., & Bopp, M. (2021). What happens when the party moves home? The effect of the COVID-19 pandemic on U.S. college student alcohol consumption as a function of legal drinking status using longitudinal data. *Translational behavioral medicine*, *11*(3), 772–774. https://doi.org/10.1093/tbm/ibab006

Salerno, J. P., Shrader, C. H., Algarin, A. B., Lee, J. Y., & Fish, J. N. (2021). Changes in alcohol use since the onset of COVID-19 are associated with psychological distress among sexual and gender minority university students in the U.S. *Drug and alcohol dependence*, *221*, 108594. https://doi.org/10.1016/j.drugalcdep.2021.108594

Santos, C. C. B; Abrantes, P. P. M; & Zonta, R. (2021). Limitações orçamentárias: desafios à assistência estudantil da UnB em tempos de pandemia. *Cadernos Cajuína, 6*(3). https://cadernoscajuina.pro.br/revistas/index.php/cadcajuina/article/view/503

Schepis, T. S., De Nadai, A. S., Bravo, A. J., Looby, A., Villarosa-Hurlocker, M. C., Earleywine, M., & Stimulant Norms and Prevalence (SNAP) Study Team (2021). Alcohol use, cannabis use, and psychopathology symptoms among college students before and after COVID-19. *Journal of psychiatric research*, *142*, 73–79. https://doi.org/10.1016/j.jpsychires.2021.07.040

Simegn, W., Dagnew, B., Yeshaw, Y., Yitayih, S., Woldegerima, B., & Dagne, H. (2021). Depression, anxiety, stress and their associated factors among Ethiopian University students during an early stage of COVID-19 pandemic: An online-based cross-sectional survey. *PloSone*, *16*(5), e0251670. https://doi.org/10.1371/journal.pone.0251670

Simons-Morton, B., Haynie, D., Liu, D., Chaurasia, A., Li, K., & Hingson, R. (2016). The Effect of Residence, School Status, Work Status, and Social Influence on the Prevalence of Alcohol Use Among Emerging Adults. *Journal of studies on alcohol and drugs*, *77*(1), 121–132. https://doi.org/10.15288/jsad.2016.77.121

Su, J., Conroy, I., Trevino, A., Zheng, Y., & Kuo, S. I. (2022). COVID-19 Related Stressors, Parent-Child Relationship, and Alcohol Use and Mental Health Profiles Among White and Hispanic/Latinx First-Year College Students. *Child psychiatry and human development*, 1–10. https://doi.org/10.1007/s10578-022-01337-4

Tang, W., Hu, T., Hu, B., Jin, C., Wang, G., Xie, C., Chen, S., & Xu, J. (2020). Prevalence and correlates of PTSD and depressive symptoms one month after the outbreak of the COVID-19 epidemic in a sample of home-quarantined Chinese university students. *Journal of affective disorders*, *274*, 1–7. https://doi.org/10.1016/j.jad.2020.05.009

Unesco [United Nations Educational, Scientific and Cultural Organisation] (2020). *COVID-19 Educational disruption and response*. Unesco. http://www.iiep.unesco.org/en/covid-19-educational-disruption-and-response-13363

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. *International journal of environmental research and public health*, *17*(5), 1729. https://doi.org/10.3390/ijerph17051729

White, H. R., Stevens, A. K., Hayes, K., & Jackson, K. M. (2020). Changes in Alcohol Consumption Among College Students Due to COVID-19: Effects of Campus Closure and Residential Change. *Journal of studies on alcohol and drugs*, *81*(6), 725–730. https://doi.org/10.15288/jsad.2020.81.725

World Health Organization (WHO). (2018). *Global status report on alcohol and health 2018*. World Health Organization.

Yu, M., Tian, F., Cui, Q., & Wu, H. (2021). Prevalence and its associated factors of depressive symptoms among Chinese college students during the COVID-19 pandemic. *BMC psychiatry*, *21*(1), 66. https://doi.org/10.1186/s12888-021-03066-9