



The Increased Alcohol and Marijuana Use Associated with the Quality of Life and Psychosocial Aspects: a Study During the Covid-19 Pandemic in a Brazilian University Community

Andrea Donatti Gallassi^{1,2} · Eduardo Yoshio Nakano³ ·
Kleverson Gomes de Miranda¹ · Josenaide Engracia dos Santos^{4,5} ·
Daniela da Silva Rodrigues⁴ · Flávia Mazitelli de Oliveira⁴

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Abstract

The primary practice adopted to reduce Covid-19 contamination is social distancing (SD). SD had significant consequences on alcohol/drug use, quality of life, and psychosocial aspects. In the university community specifically, SD produces a collective traumatic event with changes in the work routine by the suspension of presence. This study aims to identify and analyze the associations of increased alcohol and marijuana consumption on the quality of life and psychosocial aspects of the university community (students, professors, and technical and administrative staff) at a Brazilian public university during SD due to Covid-19 pandemic. This descriptive and cross-sectional study used an online questionnaire to obtain information from 2790 university community participants. Data were analyzed using IBM SPSS Statistics version 22. The analysis included descriptive associations performed using Spearman's correlation coefficient and $p < 0.05$ was taken as statistically significant. The participants' majority was 62% female, 95.4% students, 73% were 17–25 years old, 33.4% had income between 1 and 3 minimum wage, and 48% of the university community “totally adhered to SD.” The increased alcohol consumption during SD was associated with a worsening in quality of life ($p = 0.001$), health satisfaction ($p = 0.015$), the meaning of life ($p = 0.040$), ability to concentrate ($p = 0.001$), satisfaction with yourself ($p = 0.029$), and frequency of negative feelings ($p = 0.001$); in contrast, increased alcohol use improved satisfaction with peer support ($p = 0.042$), as well as increased marijuana use improved satisfaction with sex life ($p < 0.001$). The increased alcohol use was higher in women (30.5%) than in men (26.7%) and was negatively associated with more quality of life and psychosocial aspects among women than men. Students were the segment that presented the highest frequency of associations with increased alcohol and/or marijuana use in the three domains analyzed. This study innovated by associating increased alcohol and/or marijuana use with worsening quality of life and psychosocial aspects rather than evaluating them apart. Future studies must identify whether this association between increased alcohol use, mainly, and the worsening quality of life and psychosocial aspects during the SD period is maintained or improved with the return to face-to-face activities at the university, with

Extended author information available on the last page of the article

particular attention to women and students. Psychologists and other mental health professionals should be called upon to develop interventions to meet emerging mental health needs.

Keywords Covid-19 · Social distancing · Alcohol use · Marijuana use · Quality of life · Psychosocial aspects · University community

The new coronavirus disease (Covid-19) pandemic, which began in March 2020, quickly spread worldwide, forcing authorities to determine different containment actions to prevent contagion (Chams et al., 2020). Initially, with the absence of a vaccine and effective drugs, non-pharmacological measures, such as hand hygiene, masks, social distancing (SD), and disinfection of environments, were indicated as the best conduct. However, preventive measures were not standardized, resulting in different epidemiological scenarios spread worldwide (Houvèssou et al., 2021).

In February 2020, Brazil declared Covid-19 a national public health emergency, and the first case was identified at the end of the same month. In the following months, the country registered one of the highest increases in the contamination rate in the world. The Ministry of Health forwarded a few guidelines and actions; in April 2020, the Federal Supreme Court determined that the states had autonomy and competence to implement SD procedures (De Souza et al., 2020) after a lawsuit that required the independence of the federative entities of Brazil, as provided in the Federal Constitution.

The Brazilian Federal District (DF) followed the complete recommendations of the World Health Organization, decreeing the SD on March 11, 2020. The SD consists of restricting community interaction that may include infected but not yet identified and therefore not isolated persons; in common sense, SD is confused with social isolation, which refers to the separation of infected people from uninfected ones to reduce the risk of disease transmission (Aquino et al., 2020; Bezerra et al., 2020).

The SD impacted in an unprecedented way the activities in the entire education network, including universities. The *Universidade de Brasília* (UnB), located in the DF, which is the largest and leading university in the Central-West region (among five) of Brazil, public, and is the fifth public university with the largest number of students and one of the ten most relevant concerning research and scientific publications in the country, suspended the academic calendar, directly impacting more than 53,000 people who are part of the university community composed of students, professors, and technical and administrative staff. The academic calendar retakes only on August 17, 2020, with all activities in an online format (UnB, 2020).

The SD produces a collective traumatic event in contexts where social coexistence is inherent to the activities developed, as in university communities. The way of functioning of academic activities, the social relationships, and the dynamics of work has undergone profound changes by the suspension of presence (Charles et al., 2021; Copeland et al., 2021; Eleftheriou et al., 2021; Holm-Hadulla et al., 2021; Mukhtar, 2020; Son et al., 2020; Wang et al., 2020).

The main consequences observed due to SD were related to mental health and use of alcohol and other drugs, and their impact on quality of life (Been et al., 2021; UNODC, 2020). Several studies reported the increasing occurrence of mental health disorders such as stress, depression, and anxiety during SD (Bhattacharjee & Acharya, 2020; Hossain et al., 2020; Huang & Zhao, 2020). The scientific literature also reveals that alcohol and other drug use during SD may be related to the incidence of these mental health disorders

(Gavurova et al., 2020; Martínez-Vélez et al., 2021), as well as negatively impacting the quality of life—defined as an individual's perception of his/her position in life in the context of the culture in which he/she lives and regarding his/her goals, expectations, standards, and concerns (World Health Organization, 1995).

A Brazilian cross-sectional community-based online survey identified a high prevalence of depression, anxiety, and impaired quality of life during the first wave of the Covid-19 pandemic (Vitorino et al., 2021); the same results were also identified in Portugal, showing that the mental health and quality of life of the Portuguese population were also impaired during the Covid-19 pandemic, mainly affecting women, low educated individuals, and older persons (Vieira & Meirinhos, 2021). Alcohol and other drug use and their impact on quality of life during the SD period was observed in a study carried out in Italy; more than half of the cohort reported reduced quality of life during Covid-19 SD, and the analysis showed a negative correlation between perceived quality of life and reported craving (Martinotti et al., 2020). Also, among those with substance use disorders, stress, negative mood, and craving could expose them to relapse and dropout from treatment (Panlilio et al., 2019). A systematic review identified the most common sociodemographic characteristics associated with mental distress, such as female gender, younger age group (≤ 40 years), presence of chronic/psychiatric illnesses, unemployment, student status, and frequent exposure to social media/news concerning (Xiong et al., 2020).

Considering the impacts caused by the abrupt disruption of routine at UnB, characterized by constant social contact and the typical daily life of a university community, additional challenges were identified. When the activities at the university returned to the online modality after being suspended, the socioeconomic barriers became evident, revealing the different existing contexts. This unfavorable situation of anguish and uncertainty may trigger worrying behaviors, such as increased use of alcohol and other drugs, impacting the quality of life and psychosocial aspects of the university community that needs to be understood.

In this sense, this study aims to identify and analyze the association of increased alcohol and marijuana consumption on the quality of life and psychosocial aspects of students, professors, and technical and administrative staff at a Brazilian public university during SD due to the Covid-19 pandemic.

Method

Pre-post Design

This is a descriptive and cross-sectional study carried out on a sample weighted by post-stratification by gender (female and male) and segment (students, professors, and technical and administrative staff) of the UnB community, which is representative of both (gender and segment). Students (undergraduate and graduate), professors, and technical and administrative staff of the UnB who were older than 18 years old were eligible to participate in the study.

Setting, Approach, and Procedures

The UnB has 53,657 people distributed across four campuses, including 47,672 students, 3198 technical and administrative workers, and 2787 professors (DPO, 2017). The creation

of the UnB between 1956 and 1967 is contemporaneous with the construction of Brasília, the new DF. The idea of building a university in the new capital of the country was justified by the argument that the center of power should have on the cultural level, the equivalent of what was displayed on the architectural or urban level; the university would correspond to the innovative challenge that the city of Brasília represented in the Brazilian urban scenario (Bomeny, 2016). In recent years, the university has been facing an exponential increase in mental health disorders, suicide attempts, and suicide deaths—which was severely aggravated by the Covid-19 pandemic—motivating the university's higher administration to establish in 2019 the Directorate of Health Care for the University Community (DASU), aimed at carrying out health promotion actions, studies, and intervention on mental health and use of alcohol and other drugs in the university community.

The data collection took place entirely online from March 1 to May 1, 2021, when SD was in full force as one of the primary measures to face the pandemic adopted in Brazil. The UnB had all its face-to-face activities, including classes, suspended and conducted remotely. The personal database of all university community was obtained (name, gender, e-mail, telephone, institutional affiliation, and position) and everyone received by e-mail the link to access the questionnaire, which should be answered online through the Google Form Platform upon acceptance of the Informed Consent Form. In addition, the research was widely disseminated through the university's social medias and by the students and professors of the research team, encouraging the participation of the university community.

The questionnaire was composed of 57 questions divided into four sections: (1) sociodemographic data (gender, segment—students, professors, and technical and administrative staff—age, income, race, whom you live?, marital status, and children), (2) alcohol and other drug use, (3) quality of life, and (4) occupational roles. The questionnaire construction was based on instruments validated in Brazil, such as Alcohol, Cigarette, and Other Substance Use Screening Test (ASSIST) (Henrique et al., 2004), WHOQOL-Bref of the World Health Organization (WHO) (Fleck et al., 2000), and the Occupational Roles Identification List (Cordeiro et al., 2007), being used for this study only the data from Sects. 1, 2, and 3.

The alcohol and other drugs' section of the questionnaire was composed of questions about which drugs among the substances listed the participant had already used in his/her life; which drugs he/she had used in the last year (in the context of the pandemic); the frequency of consumption (never/1 or 2 times/monthly/weekly/daily or almost every day); the problems (health/social/legal/financial) due to consumption; the impediments to doing things due to consumption; and whether the consumption and the problems/impediments to doing things due to use during the pandemic had increased, decreased, or remained the same as before the pandemic. For the quality-of-life section, the WHOQOL-Bref instrument was used in its full version, which has response options on a Likert scale of intensity; only the verified period of "last two weeks" was replaced by "in the last year" (during the pandemic). As was done in the alcohol and other drugs section, questions were added to measure whether those feelings reported during the pandemic had increased, decreased, or remained the same as before the pandemic.

Variables and Data Analysis

The sociodemographic variables were categorized and represented in terms of frequencies and percentages.

The variables of interest were the increase (before and during the pandemic) in alcohol and marijuana use according to the parameters—frequency; health, social, legal, or

financial problems; impediments to doing things—used by ASSIST (Henrique et al., 2004). The parameters analyzed were (i) increased frequency of consumption; (ii) increased health, social, legal, or financial problems due to increased consumption; and (iii) increased impediments to doing things due to increased consumption. These parameters were associated with quality-of-life questions that comprise three of the five domains used by the WHOQOL-Bref instrument: general aspects (two questions), psychological domain (five questions), and social relations domain (three questions); therefore, the physical and environmental domains of the instrument were not used. The selected domains aimed to identify the impact of increased alcohol and marijuana consumption on the university community's quality of life and psychosocial aspects.

These associations were performed using Spearman's correlation coefficient, considering a significance level of 5% ($p < 0.05$). The analyses were performed considering the general public of UnB and disaggregated by segment (students, professors, and technical and administrative staff) and gender (female and male). Data were analyzed using IBM SPSS Statistics version 22.

The Research Ethics Committee of the *Universidade de Brasília* approved the study (certificate number: 33499820.0.0000.8093. Available to consult at <https://plataformabrasil.saude.gov.br/login.jsf>). All participants individually signed the online Informed Consent Form (ICF).

Results

The sample was composed of 2790 respondents from the university community. Students accounted for most of the responses (95.4%), and the female gender was higher (62%) in responses than the male gender. Regarding the age range, most participants (73%) were between 17 and 25 years old, the percentages of Whites were higher (51.9%) than Black/*Pardo* (Brazilians with varied ethnic ancestry), most declared to have income between 1 minimum wage (~US\$240.00) to 3 (33.4%), live with father and/or mother (65.2%), are single (81.2%), and have no children (89.2%; Table 1).

Adherence to Social Distancing

The estimate of percentage of the population who adhered to the SD was calculated from the sample of 2790 respondents, weighted by post-stratification by gender and segment (students, professors, and technical and administrative staff). In this case, the weight of each observation was the inverse of its selection probability. Overall, 48% of the university community totally adhered to SD, 44.6% partially adhered, and 7.5% did not adhere; 51% of the women and 46% of the men totally adhered. Regarding the segment, 61.1% of the technical and administrative staff, 47% of the students, and 70.7% of the professors reported that they totally adhere to SD.

Increase in Alcohol and Marijuana Use During the Pandemic

Alcohol use was reported by 66.9% of the university community in their lifetime. Among the users, 28.6% increased their consumption during the pandemic, 35.7% maintained the same pattern, and 35.7% decreased. When analyzed by gender, 67.6% of the males and 66.3% of the females had ever used alcohol. Among users, 26.7% of men and 30.5% of women increased consumption, 36.8% of men and 34.5% of women kept the same pattern, and 36.5% of men and 35.0% of women decreased.

Table 1 Sociodemographic data of the university community participants ($n = 2790$), 2021

	<i>N</i> (%)
Gender	
Female	1729 (62%)
Male	1061 (38%)
You are:	
Student	2662 (95.4%)
Technical and administrative	36 (1.3%)
Professor	92 (3.3%)
Age group	
17 to 25 years old	2,036 (73%)
26 to 34 years old	407 (14.6%)
35 to 67 years or older	347 (12.4%)
Income	
From 1 to 3 minimum wages ^(*)	934 (33.4%)
From 3 to 5 minimum wages	494 (17.7%)
From 5 to 10 minimum wages	598 (21.4%)
From 10 to 20 minimum wages	546 (19.6%)
More than 20 minimum wages	218 (7.8%)
Racial group	
White	1449 (51.9%)
Black (black and “pardo”)	1291 (46.2%)
Yellow/Asian	42 (1.5%)
Indigenous	8 (0.3%)
Whom do you live with?	
With my father and/or my mother	1818 (65.2%)
With my spouse	374 (13.4%)
With other family members or friends	235 (8.4%)
With my spouse and my father and/or mother	30 (1.1%)
Alone	202 (7.2%)
Another	131 (4.7%)
The relationship you are in	
Single	2266 (81.2%)
Married/spouse/stable union	487 (17.5%)
Widowed/divorced/separated	37 (1.3%)
Do you have children?	
No	2489 (89.2%)
Yes, I have 1 child	142 (5.1%)
Yes, I have 2 children	106 (3.8%)
Yes, I have 3 or more children	53 (1.9%)

*1 minimum wage is approx. US\$ 240.00

Regarding the segment, 66.3% of the students, 64.0% of the professors, and 75.4% of the technicians and administrative staff had already used alcohol once in their lifetime. Among the student users, 28.0% reported that their use increased, 33.8% maintained the same pattern, and 38.2% decreased. Among the professors, 29.9% increased their use, 41.0% kept the same pattern, and 29.1% decreased. Finally, 33.7% increased use, 52.0% kept the same pattern, and 14.3% decreased among the technical and administrative users.

The use of marijuana was reported by 36.4% of the university community in their lifetime. Among the users, 16.2% increased their consumption during the pandemic, 53.9% maintained the same pattern, and 29.9% decreased. Analyzing by gender, 37.9% of men and 34.9% of women had used marijuana once in their lifetime. Among users, 16.3% of men and 16.2% of women increased consumption in the pandemic; 56.6% of men and 51.1% of women maintained the same pattern, and 27.1% of men and 32.7% of women decreased.

Regarding the segment, 36.7% of the students, 32.9% of the professors, and 36.2% of the technicians and administrative staff have used marijuana once in their lifetime. Among the student users, 17.6% reported that their use increased during the pandemic, 49.3% maintained the same pattern, and 33.1% decreased. Among professor users, 8.0% reported that their use increased during the pandemic, 69.0% maintained the same pattern, and 23% reduced. Finally, 5.4% reported increased use among technical and administrative users during the pandemic, and 94.6% maintained the same pattern.

Increased Alcohol and Marijuana Use During the Pandemic and the Association with the Quality of life and Psychosocial Aspects

We specifically analyzed the responses regarding increased alcohol and marijuana use of 1892 (67.8%) participants who answered “yes” to the question: *Have you ever used any of the following substances in your life without a prescription? (tobacco products, alcoholic beverages, marijuana, cocaine, crack, amphetamines, ecstasy, inhalants, hypnotics, sedatives, hallucinogens, opioids, or others).*

The results were presented following the separation by domain proposed by the WHO-QOL-Bref—general aspects, psychological domain, and social relations domain—and the associations of the questions in each domain by segment and gender.

General Aspects (Table 2)

This analysis included questions about the general perceived quality of life and satisfaction with health.

It was observed that the increase in the frequency of alcohol use is associated with a decrease in the perception of quality of life and in the satisfaction with health among the university community in general ($p=0.001$; $p=0.015$, respectively), professors ($p=0.024$; $p=0.028$, respectively), students ($p=0.003$; $p=0.041$, respectively), and the female population ($p<0.001$; $p=0.010$, respectively).

Psychological Domain (Table 3)

This domain comprised questions about how much the participant enjoyed life, how meaningful life was, how much they could concentrate, satisfaction with physical appearance, satisfaction with oneself, and the frequency of negative feelings.

The data analysis observed that low life enjoyment is associated with increased alcohol use among professors ($p=0.028$) and marijuana use among technicians ($p=0.043$).

Table 2 General aspects of quality of life associated with increased frequency of alcohol and marijuana use by segment and gender ($n = 1892$), 2021

		Association between variation in the frequency of alcohol and marijuana consumption ³ and variation in overall QoL					
		General		Segment		Gender	
		($n = 1892$)	Technicians ($n = 25$)	Professors ($n = 59$)	Students ($n = 1808$)	Female ($n = 1170$)	Male ($n = 722$)
		Corr* (p)	Corr* (p)	Corr* (p)	Corr* (p)	Corr* (p)	Corr* (p)
QL ¹	Alcohol	-0.079 (0.001)	-0.302 (0.142)	-0.294 (0.024)	-0.070 (0.003)	-0.106 (< 0.001)	-0.032 (0.388)
	Marijuana	-0.008 (0.744)	-0.361 (0.077)	0.031 (0.814)	-0.006 (0.811)	-0.034 (0.242)	0.035 (0.344)
SH ²	Alcohol	-0.056 (0.015)	-0.316 (0.124)	-0.286 (0.028)	-0.048 (0.041)	-0.075 (0.010)	-0.021 (0.578)
	Marijuana	-0.010 (0.677)	0.000 (1.000)	0.210 (0.111)	-0.015 (0.524)	-0.025 (0.393)	0.015 (0.682)

* Spearman's correlation

¹ Responses to the question: Has your quality of life reported in the previous question (during the pandemic) compared to the period before the pandemic remained the same, improved, or worsened?

² Responses to the question: Has the satisfaction with your health reported in the previous question (during the pandemic) compared to the period before the pandemic remained the same, improved, or worsened?

³ Responses to the question: Did the consumption reported in the previous question (during the pandemic) remain the same, increase, or decrease compared to before the pandemic?

Low perceived meaning in life is associated with increased alcohol consumption in the general community ($p=0.040$) and the male population ($p=0.032$). Decreased ability to concentrate is associated with increased alcohol consumption in the general community ($p=0.001$), among technicians ($p=0.006$), students ($p=0.003$), and both genders (female: $p=0.017$; male: $p=0.040$). Dissatisfaction with oneself is associated with increased alcohol consumption in the general community ($p=0.029$), among professors ($p=0.034$), and among males ($p=0.027$). Finally, it was also found that the worsening frequency of negative feelings is associated with an increased frequency of alcohol use in the general community ($p=0.001$), among students ($p=0.007$), and among females ($p=0.004$).

Social Relations Domain (Table 4)

This domain comprised questions about how satisfied the participant was with their social relationships, sex life, and the support they received from friends.

The increased frequency of alcohol use among technicians is associated with lower satisfaction with their personal relationships ($p=0.005$), and among professors, it is associated with lower satisfaction with their sex lives ($p=0.023$). In contrast, increased frequency of marijuana use is associated with improved sex lives in the general community ($p<0.001$), among students ($p<0.001$), and both genders (female: $p=0.009$; male: $p=0.010$). Increased frequency of alcohol use is associated with improved satisfaction with support from friends in the general community ($p=0.042$) and among students ($p=0.017$).

Discussion

The sociodemographic data of this study reveal that the sample is characterized primarily by women (62%), students (95.4%), single (81.2%), and with an income of 1 to 3 minimum wages (33.4%). Only 7.5% of the university community did not adhere at all to the SD measures, indicating that the findings are quite representative of the impact of social withdrawal; the women (51%) and the professors (70.7%) “adhered totally” more to SD than men (46%) and the other two segments (61.1% of the technical and 47% of the students). Such data indicates that more affected groups were reached regarding, for example, the overburdening of women’s occupational roles, the limitations of access to health services, housing conditions, and technological equipment (computers and Internet), which are determining aspects of the quality of the experience during SD and carrying out online activities. A study with more than 45,000 Brazilian respondents pointed out decreased family income (55%), presence of feelings of sadness (40%) and anxiety (52%), and that 13.9% of people who sought health services did not get it, which reinforces the need to carefully observe the most vulnerable population groups in order to propose practical care actions (Almeida et al., 2021).

Regarding alcohol use in the university community in general, the percentages were the same (35.7%) between those who maintained the same consumption pattern as before the pandemic and those who decreased. The same was observed regarding the use of marijuana, in which the majority (53.9%) maintained the same pattern as before the pandemic. The percentage of women who increased their use of alcohol (30.5%) was higher than that of men (26.7%), whereas the percentage of women who decreased their use of marijuana (32.7%) was higher than that of men (27.1%). Among the segments, most professors and

Table 3 Psychological domain associated with increased frequency of alcohol and marijuana use by segment and gender ($n = 1892$), 2021

	Association between variation in the frequency of alcohol and marijuana consumption ⁶ and variation in the psychological domain						
	General		Segment		Gender		
	$(n = 1892)$	Technicians ($n = 25$)	Professors ($n = 59$)	Students ($n = 1808$)	Female ($n = 1170$)	Male ($n = 722$)	
	Corr* (p)	Corr* (p)	Corr* (p)	Corr* (p)	Corr* (p)	Corr* (p)	
Enjoyed life ¹	Alcohol	0.001 (0.949)	-0.277 (0.180)	-0.286 (0.028)	0.013 (0.594)	-0.012 (0.689)	0.022 (0.562)
	Marijuana	0.017 (0.455)	-0.408 (0.043)	0.210 (0.111)	0.019 (0.426)	0.003 (0.909)	0.040 (0.283)
Meaning of life ²	Alcohol	-0.047 (0.040)	-0.226 (0.277)	-0.192 (0.146)	-0.043 (0.069)	-0.024 (0.407)	-0.080 (0.032)
	Marijuana	0.020 (0.377)	-0.370 (0.069)	-0.090 (0.496)	0.025 (0.281)	0.012 (0.683)	0.031 (0.404)
Concentrate ³	Alcohol	-0.077 (0.001)	-0.534 (0.006)	-0.186 (0.159)	-0.070 (0.003)	-0.070 (0.017)	-0.076 (0.040)
	Marijuana	0.004 (0.869)	-0.088 (0.677)	-0.129 (0.330)	0.008 (0.749)	-0.015 (0.602)	0.026 (0.485)
Satisfaction with you ⁴	Alcohol	-0.050 (0.029)	-0.197 (0.346)	-0.276 (0.034)	-0.043 (0.069)	-0.026 (0.377)	-0.082 (0.027)
	Marijuana	0.022 (0.349)	-0.247 (0.234)	-0.031 (0.814)	0.025 (0.298)	0.048 (0.098)	-0.026 (0.479)
Negative feelings ⁵	Alcohol	-0.073 (0.001)	-0.395 (0.050)	-0.257 (0.049)	-0.063 (0.007)	-0.083 (0.004)	-0.045 (0.230)
	Marijuana	0.012 (0.597)	-0.354 (0.083)	-0.013 (0.921)	0.016 (0.507)	-0.027 (0.365)	0.066 (0.078)

* Spearman's correlation

¹ Answer to the question: How much did you enjoy the life reported in the previous question (during the pandemic) compared to the period before the pandemic remained the same, improved, or worsened?

² How much meaning your life has reported in the previous question (during the pandemic) compared to the period before the pandemic remained the same, improved, or worsened?

³ How much did you manage to concentrate reported in the previous question (during the pandemic) compared to the period before the pandemic remained the same, improved, or worsened?

⁴ Has the satisfaction with yourself reported in the previous question (during the pandemic) in comparison to the period before the pandemic remained the same, improved, or worsened?

⁵ Has the frequency of negative feelings reported in the previous question (during the pandemic) compared to the period before the pandemic remained the same, improved, or worsened?

⁶ Responses to the question: Did the consumption reported in the previous question (during the pandemic) remain the same, increase or decrease compared to the period before the pandemic?

Table 4 Social relationships' domain associated with increased frequency of alcohol and marijuana use by segment and gender ($n = 1892$), 2021
Association between the variation in the frequency of alcohol and marijuana consumption⁴ and the variation in the social relationships' domain

	General		Segment			Gender	
	($n = 1892$)	Corr* (p)	Technicians ($n = 25$)	Professors ($n = 59$)	Students ($n = 1808$)	Female ($n = 1170$)	Male ($n = 722$)
		Corr* (p)	Corr* (p)	Corr* (p)	Corr* (p)	Corr* (p)	Corr* (p)
Personal relationships ¹	Alcohol	-0.015 (0.522)	-0.546 (0.005)	-0.215 (0.102)	-0.003 (0.910)	-0.010 (0.733)	-0.023 (0.533)
	Marijuana	0.025 (0.286)	0.000 (1.000)	-0.016 (0.905)	0.026 (0.261)	0.038 (0.189)	0.001 (0.974)
Sex life ²	Alcohol	0.023 (0.318)	0.019 (0.928)	-0.295 (0.023)	0.032 (0.170)	0.050 (0.086)	-0.029 (0.431)
	Marijuana	0.082 (< 0.001)	-0.289 (0.162)	-0.037 (0.778)	0.087 (< 0.001)	0.076 (0.009)	0.096 (0.010)
Support from friends ³	Alcohol	0.047 (0.042)	-0.230 (0.270)	-0.151 (0.255)	0.056 (0.017)	0.041 (0.159)	0.060 (0.109)
	Marijuana	0.022 (0.346)	0.000 (1.000)	-0.078 (0.556)	0.024 (0.302)	0.027 (0.353)	0.010 (0.785)

* Spearman's correlation

¹ Answer to the question: Has the satisfaction with your relationships reported in the previous question (during the pandemic) in comparison to the period before the pandemic remained the same, improved, or worsened?² Has the satisfaction with your sex life reported in the previous question (during the pandemic) in comparison to the period before the pandemic remained the same, improved, or worsened?³ Has the satisfaction with the support you received from friends reported in the previous question (during the pandemic) compared to the period before the pandemic remained the same, improved, or worsened?⁴ Responses to the question: Did the consumption reported in the previous question (during the pandemic) remain the same, increase or decrease compared to the period before the pandemic?

technicians maintained the same pattern of alcohol consumption as before the pandemic (41.0% and 52.0%, respectively), as was the case with marijuana in the three segments analyzed. On the other hand, most students reduced their alcohol consumption (38.2%).

Among the major psychosocial impacts, the literature highlights a change in the pattern of alcohol and other drug consumption in this period of SD, which may increase vulnerability and exposure to risks (Been et al., 2021; Betzler et al., 2022; Charles et al., 2021; Gavurova et al., 2020; Palamar & Acosta, 2021; Rolland et al., 2020; UNODC, 2021). Regarding women, both younger (Graupensperger et al., 2021a) and in midlife (Lunnay et al., 2021), the literature has identified an increase in the pattern of alcohol consumption during the SD period. The studies suggest that the increased frequency of alcohol use is a gendered issue, with women feeling the effects of the pandemic in different and more pronounced ways relative to men (Giurge et al., 2021; Biddle et al., 2020). Previous studies have already shown that women typically consume alcohol to cope with loneliness and unhappiness, and to reduce stress (Miller et al., 2018; Meyer et al., 2019).

Even though the results of the present study have found lower percentages of alcohol use (66.7%) and higher of marijuana use (36.7%) among students in their lifetime when compared to the national survey (Brasil, 2010) conducted among Brazilian undergraduate students (88% and 18.2%, respectively), they were the only segment that showed a greater percentage of decrease in alcohol use during the SD period. A very similar result was found in a study with American university students, in which only 10% self-reported that they had increased their alcohol use frequency compared to before the pandemic, while nearly half reported decreasing their alcohol use (Graupensperger et al., 2021b). These data support the understanding of the use of alcohol and other drugs associated with moments of pleasure, celebration, and coexistence among peers, and when there are restrictions that impact the occurrence of such events, as is the case of the SD, substance use loses its importance and its sense of happening (Graupensperger et al., 2021a).

Among the university community in general, the increase in alcohol consumption was associated with a worsening in the quality of life and in the psychosocial aspects in six of the ten aspects evaluated in the three domains (quality of life in general, psychological, and social relationships). The literature almost unequivocally reports the impact of SD on the quality of life, substance use, mental health, and social relationships of populations in different countries and cultures. Considering specifically the university community, changes related to lack of academic support and adequate resources to support online learning, lack of interaction with peers, professors, and administrative technicians, stress, conflict in family dynamics during the pandemic, anxiety, and demotivation to attend classes have caused psychosocial impacts observed in several countries, especially considering undergraduate students as research subjects (Cao et al., 2020; Charles et al., 2021; Huckins et al., 2020; Jacobson et al., 2020; Liu et al., 2020; Wang et al., 2020; Copeland et al., 2021). The literature also indicates an elevation in feelings of loneliness, perceived stress, concern for one's own and family members' health, alcohol and other drug use, and mental health symptoms such as anxiety and depression during the SD period (Charles et al., 2021; Horigian et al., 2021; Son et al., 2020). Indeed, it can be suggested that the stress generated by the SD measures, the modification of academic activities, and the uncertainties generated by the pandemic, with a consequent increase in alcohol consumption and health problems (such as anxiety and depression), caused a worsening in the perception of the quality of life of the university community.

On the other hand, for the university community in general and among students, the results show an improvement in "support from friends" associated with the increase in alcohol consumption, likewise an improvement in "sex life" associated with the increase in marijuana use for the university community in general, among students, and male and female audience. This increase in alcohol use positively associated with social and

supportive contexts of friends can be understood as sporadic pleasurable and relaxing moments adopted by the university community to cope with the difficult period of SD; however, increased alcohol consumption can be understood as a risk, especially among the most vulnerable population, such as those with previous mental health disorders and substance use disorder (Bendau et al., 2022; Bhattacharjee, & Acharya, 2020). The improvement in “sex life” associated with marijuana use has been reported by the literature (Lynn et al., 2019; Sun & Eisenberg, 2017) that shows a greater frequency of sexual activity and satisfaction among users than non-users, although more studies are needed to understand the influence of marijuana on sexual function (Wiebe & Just, 2019).

Regarding the segment and gender, only the technicians and the male audience did not present a worsening in the aspects of quality of life associated with the increase in alcohol and/or marijuana consumption; the women, in turn, had a higher frequency of worsening in quality of life and psychosocial aspects associated with increased alcohol use compared to men. Several studies show statistical similarities between increased alcohol consumption among men and women—in this study, as previously discussed, the percentage of women who increased their use of alcohol was higher than that of men—but men used to have the highest rates (Andrade, Duarte & Oliveira, 2010; Fundação Oswaldo Cruz (Fiocruz), 2020; Martínez-Vélez et al., 2021; Tavalacci et al., 2016; Terra Junior et al., 2021:). A higher frequency of worsening in quality of life and psychosocial aspects associated with increased alcohol use among women agreeing with other studies (Barros et al., 2022; Eleftheriou et al., 2021; Herrera-Añazco et al., 2022; Johnson et al., 2020) and it may be associated with various dynamics linked to gender roles. With the dynamics of life restricted to homes, there has been an increase in domestic workload and family care, an increase in domestic violence (Brazilian Public Safety Forum, 2020), and a decrease in support network, as well as an increase in unemployment, which is higher among women than men in Brazil (IBGE, 2020). Another study also identified a rise in women’s workload during the pandemic due to the simultaneous care between work activity, home, and children (da Costa Lemos, de Oliveira Barbosa & Pinheiro Monzato, 2020), hindering the focus and the ability to concentrate only on the professional activity. Even women living alone showed signs of mental illness (Serafim et al., 2021). One hypothesis is that, in addition to the restricted support network at home, the concerns related to Covid-19 infection and the lack of prospects and uncertainties about the future would have caused more feelings of discomfort, distress, anxiety, and helplessness, mainly due to the greater involvement of women to instability in the labor market and increased unemployment among them (IBGE, 2020). In another study conducted with Brazilian college students that investigated the impact of gender and age on depressive symptom patterns, it indicated that younger and female students were significantly more likely to have depression (De Sá, Liebel, & Andrade, 2019), possibly due to a combination of biological and sociodemographic factors, as well as women’s specific gender roles and coping strategies related to cognitive, emotional, and behavioral tools to deal with stressful situations. It exposes the vulnerability of this population beyond the changes and burdens in the family and caregiving context, further amplifying the processes generated by gender inequality.

Students were the segment that presented the highest frequency of associations with increased alcohol and/or marijuana use in the three domains analyzed, and in two aspects—support from friends and sex life—these associations were positive for alcohol and for marijuana use, respectively, as previously discussed. These findings resemble those of other studies conducted with Chinese and American college students, which indicate increased levels of anxiety, depression, health concerns, and sleep routine problems during the SD period (Cao et al., 2020; Huang & Zhao, 2020; Liu et al., 2020; Son et al., 2020). In addition, the decrease in social connection, the disruption of the activities experienced daily at

university, the concern with one's learning in the online model, the worry regarding the time of training and insertion in the labor market, and the difficulty of establishing a new routine generate stress that may be related to the increase in alcohol and marijuana consumption (Barros et al., 2022). A study conducted by Chegg Organization (2021) evidenced that 76% of Brazilian undergraduate students had negative impacts on their mental health. It was the highest rate among the 21 countries evaluated in the research, including Japan, Canada, and the USA. Of these Brazilian students, 87% responded that there was an increase in stress and anxiety, only 21% sought help, and 17% said they had had suicidal thoughts during the SD period. Another study conducted in China (Wathelet et al., 2020) showed that 37% of the college students interviewed had depressive feelings and 8% reported suicidal thoughts; a percentage similar was found in the study conducted by Kohls et al. (2021), which adds that among the college students, a higher risk of alcohol abuse and eating disorders was observed. On the other hand, a study raised protective factors negatively associated with signs of anxiety and stress. These factors are linked to family financial stability, living with relatives, and maintaining social support (Cao et al., 2020). Another study of students reveals that while they found no increase in stress levels, adverse effects on well-being, attention, emotional functioning, and behavior were detected. However, students who participated in an institutional quality of life program were less affected, calling attention to the need for specific actions, especially first-semester students (Copeland et al., 2021).

Even though most professors maintained the same pattern of alcohol and marijuana consumption as before the SD period, negative associations due to increased alcohol use were observed in the aspects of the three domains analyzed—quality of life, health satisfaction, perceived enjoyment of life, satisfaction with oneself, and sex life. Recent studies indicate a heterogeneous scenario related to the professors. Akour et al. (2020) found that the professors showed moderate or high motivation about the teaching strategies adopted during the SD; however, they found a higher prevalence of signs of distress in the male audience. Almhdawi et al. (2021) showed an increase in professors' quality of life after implementing online teaching; on the other hand, there are studies (Akour et al., 2020; Brooks et al., 2020; Kotowski et al., 2022; Malkawi et al., 2020; Minihan et al., 2022) that report increased stress levels due to the transfer to online teaching, directly—and negatively—impacting the quality of life of this population, as well as reduced performance satisfaction for these professors.

The technicians and administrative staff were the segment that presented the lowest frequency of negative associations due to the increase in alcohol and/or marijuana consumption, as well as the majority maintained the same pattern of consumption of these substances as before the SD period. Although specific literature on quality of life and mental health for this sample group is scarce, two studies indicate the opposite, that this population has a high rate of mental illness and alcohol and other drug use (Lopes, 2011; Soares et al., 2019). The studies hypothesize the dynamics of the work, which needs to be agile (meeting the demand of thousands of students and professors), exhausting routines, and professional dissatisfaction. The study by Salazar et al. (2021) shows that the highest scores of depression, anxiety, and stress during the pandemic were found among female technical and administrative workers, younger individuals, and administrative and maintenance (service) workers. In other words, there is a correlation between the occupation sector in the university and illness during the pandemic, where technical and administrative workers were sicker than professors.

The increase in alcohol consumption, primarily, and marijuana associated with a worsening in the quality of life and in the psychosocial aspects of the university community demonstrated the importance of institutional support to face such a traumatic adverse event as prolonged SD. These issues have become urgent, requiring emergency support actions from the university, such as increasing the offer of medical and psychological care and

preventive health promotion measures that encourage coexistence among peers, even if some of them occur remotely, to ensure an improvement in quality of life, in the psychosocial aspects, and decrease in the use of substances to avoid dropouts for mental health and substance use disorders. Such efforts should focus on the most affected groups of the university community: the female population and students. Psychologists and other mental health professionals play a key role in this context, as observed in previous large-scale outbreaks, particularly the Ebola virus disease epidemic from 2014 to 2016 (Amsalem et al., 2021) . They can provide insight into the potential impact of rapidly spreading diseases on mental health problems to mitigate behaviors and feelings related to fear, the stigma of infected people, the grief of families who lost loved ones, and the difficulties faced in accessing care that negatively affected the recovery of survivors and family members. Also, these professionals can guide adequate information consumption, facilitate social support, continue mental health care delivery, and develop and test innovative and personalized contact-based interventions that, if found effective, can be disseminated to meet emerging mental health needs.

Limitations of the Study

This study presents some limitations that have to be mentioned. The online survey was based entirely on self-rated questionnaires. Although valid and widely used, people are often biased when they report on their own experiences, and screening questionnaires can overestimate prevalence of mental disorders relative to structured diagnostic interviews. Although the number of respondents was significant, we had planned to offer the possibility of answering the questionnaire face-to-face at the university for those who might have Internet access difficulties and even to encourage and stimulate the participation of those who started to “ignore” emails with links to participating in online surveys. However, this strategy did not prove feasible, as people were not interested in this face-to-face mode of participation, restricting the study to responses obtained only online.

Conclusion

This study shows that the increased consumption of alcohol and marijuana, especially alcohol, negatively impacted the quality of life of the university community in a significant number of people among those who reported using these substances. That was innovative by associating increased alcohol and/or marijuana use with worsening quality of life and psychosocial aspects rather than evaluating them apart.

Although the entire university community has been affected by the pandemic and the social distance, there is a predominance among women and students, demonstrating the vulnerability that these groups find themselves, both at the university and in the social processes that are reflected within the educational institution. Following measures adopted by the university must address these issues.

Future studies must identify whether this association between increased alcohol use, mainly, and the worsening quality of life and psychosocial aspects during the SD period is maintained or improved with the return to face-to-face activities at the university, with particular attention to women and students. Psychologists and other mental health professionals need to be called to develop and test innovative and personalized contact-based interventions that, if found effective, can be disseminated to meet emerging mental health needs.

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Author Contribution ADG, DSR, JES, and FMO conceptualized and designed the study. ADG and EYN modified the study instrument. ADG and FMO supervised data collection and with EYN analyzed and interpreted the data. ADG, KGM, and FMO wrote the first draft of the manuscript; DSR, JES, and KGM reviewed and revised the initial draft for intellectual content and data interpretation. All authors read and approved the final manuscript.

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Data Availability Dataset available at: <http://alcooledrogas.unb.br/nossas-publicacoes> (*Dados do Estudo da Covid-19 na UnB*).

Research Ethics Committee of the University of Brasília approved this study by the certificate number: CAAE: 33499820.0.0000.8093. Available to consult at <https://plataformabrasil.saude.gov.br/login.jsf>. All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all participants for being included in the study.

Declarations

Competing Interests The authors declare no competing interests.

References

- Akour, A., Al-Tammemi, A. B., Barakat, M., Kanj, R., Fakhouri, H. N., Malkawi, A., & Musleh, G. (2020). The impact of the COVID-19 pandemic and emergency distance teaching on the psychological status of university teachers: A cross-sectional study in Jordan. *The American journal of tropical medicine and hygiene*, 103(6), 2391–2399. <https://doi.org/10.4269/ajtmh.20-0877>
- Almeida, W., Szwarcwald, C. L., Malta, D. C., Barros, M., Souza Júnior, P., Azevedo, L. O., Romero, D., Lima, M. G., Damacena, G. N., Machado, Í. E., Gomes, C. S., Pina, M. F., Gracie, R., Werneck, A. O., & Silva, D. (2021). Changes in Brazilians socioeconomic and health conditions during the COVID-19 pandemic. *Mudanças nas condições socioeconômicas e de saúde dos brasileiros durante a pandemia de COVID-19. Brazilian Journal of Epidemiology*, 23, 200105. <https://doi.org/10.1590/1980-549720200105>
- Almhdawi, K. A., Obeidat, D., Kanaan, S. F., Hajela, N., Bsoul, M., Arabiat, A., Alazrai, A., Jaber, H., & Alrabbaie, H. (2021). University professors mental and physical well-being during the COVID-19 pandemic and distance teaching. *Work (Reading, Mass)*, 69(4), 1153–1161. <https://doi.org/10.3233/WOR-205276>
- Amsalem, D., Dixon, L. B., & Neria, Y. (2021). The coronavirus disease 2019 (COVID-19) outbreak and mental health: Current risks and recommended actions. *JAMA Psychiatry*, 78(1), 9–10. <https://doi.org/10.1001/jamapsychiatry.2020.1730>
- Aquino, E., Silveira, I. H., Pescarini, J. M., Aquino, R., Souza-Filho, J. A., Rocha, A. S., Ferreira, A., Victor, A., Teixeira, C., Machado, D. B., Paixão, E., Alves, F., Pilecco, F., Menezes, G., Gabrielli, L., Leite, L., Almeida, M., Ortelan, N., Fernandes, Q., ... Lima, R. (2020). Social distancing measures to control the COVID-19 pandemic: Potential impacts and challenges in Brazil. *Ciencia & saude coletiva*, 25(suppl 1), 2423–2446. <https://doi.org/10.1590/1413-81232020256.1.10502020>
- Barros, M., Lima, M. G., Malta, D. C., Azevedo, R., Fehlberg, B. K., Souza Júnior, P., Azevedo, L. O., Machado, Í. E., Gomes, C. S., Romero, D. E., Damacena, G. N., Werneck, A. O., Silva, D., Almeida, W., & Szwarcwald, C. L. (2022). Mental health of Brazilian adolescents during the COVID-19 pandemic. *Psychiatry Research Communications*, 2(1), 100015. <https://doi.org/10.1016/j.psymcom.2021.100015>
- Been, F., Emke, E., Matias, J., Baz-Lomba, J. A., Boogaerts, T., Castiglioni, S., Campos-Mañas, M., Celma, A., Covaci, A., de Voogt, P., Hernández, F., Kasprzyk-Hordern, B., ter Laak, T., Reid, M., Salgueiro-González, N., Steenbeek, R., van Nuijs, A. L. N., Zuccato, E., & Bijlsma, L. (2021). Changes in drug

- use in European cities during early COVID-19 lockdowns – A snapshot from wastewater analysis. *Environment International*, 153, 106540. <https://doi.org/10.1016/j.envint.2021.106540>
- Bendau, A., Viohl, L., Petzold, M. B., Helbig, J., Reiche, S., Marek, R., Romanello, A., Moon, D. U., Gross, R. E., Masah, D. J., Gutwinski, S., Mick, I., Montag, C., Evens, R., Majić, T., & Betzler, F. (2022). No party, no drugs? Use of stimulants, dissociative drugs, and GHB/GBL during the early COVID-19 pandemic. *The International Journal on Drug Policy*, 102, 103582. <https://doi.org/10.1016/j.drugpo.2022.103582>
- Bezerra, A.C.V., Silva C.E.M. da, Soares F.R.G. & Silva J.A.M. da (2020). Fatores associados ao comportamento da população durante o isolamento social na pandemia de COVID-19. *Ciênc. saúde coletiva* 25(Suppl 1) <https://doi.org/10.1590/1413-81232020256.1.10792020>.
- Bhattacharjee, B., & Acharya, T. (2020). The COVID-19 Pandemic and its effect on mental health in USA - A review with some coping strategies. *The Psychiatric Quarterly*, 91(4), 1135–1145. <https://doi.org/10.1007/s11126-020-09836-0>
- Biddle, N., Edwards, B., Gray, M., & Sallis, K. (2020). Alcohol consumption during the COVID-19 period: May 2020. Centre for Social Research and Methods: Australian National University. Retrieved from: https://openresearch-repository.anu.edu.au/bitstream/1885/213196/1/Alcohol_consumption_during_the_COVID-19_period.pdf
- Bomeny, H. (2016). Universidade de Brasília: filha da utopia de reparação. *Sociedade e Estado*, 31, 1003–1028. <https://doi.org/10.1590/s0102-69922016.0spe0009>
- Brasil. Presidência da República (2010). I Levantamento Nacional sobre o Uso de Álcool, Tabaco e Outras Drogas entre Universitários das 27 Capitais Brasileiras / *Secretaria Nacional de Políticas sobre Drogas*. Retrieved From <https://cetadobserva.ufba.br/sites/cetadobserva.ufba.br/files/634.pdf>. Accessed 01 May 2022.
- Brazilian National Institute of Geography and Statistics (IBGE) (2021). National Household Sample Survey – PNAD. *IBGE*. Retrieved from: <https://www.ibge.gov.br/estatisticas/sociais/trabalho/9171-pesquisa-nacional-por-amostra-de-domicilios-continua-mensal.html?=&t=destaques>. Accessed 3 May. 2022.
- Brazilian Public Safety Forum. (2020). *Violência doméstica durante a pandemia de Covid-19* Retrieved from: <https://forumseguranca.org.br/wp-content/uploads/2020/06/violencia-domestica-covid-19-ed02-v5.pdf>. Accessed 3 May. 2022.
- Brooks, S.K., Webster, R.K., Smith, L.E., Woodland, L., Wessely, S., Greenburg, N., Rubin, G.J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *The Lancet*; 395:912–920. Retrieved from [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30460-8/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30460-8/fulltext).
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, 287, 112934. <https://doi.org/10.1016/j.psychres.2020.112934>
- Chams, N., Chams, S., Badran, R., Shams, A., Araji, A., Raad, M., Mukhopadhyay, S., Stroberg, E., Duval, E. J., Barton, L. M., & Hajj Hussein, I. (2020). COVID-19: A multidisciplinary review. *Frontiers in Public Health*, 8, 383. <https://doi.org/10.3389/fpubh.2020.00383>
- 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>
- Chegg Organization (2021). Global Student Survey. Retrieved from <https://www.chegg.com/about/wp-content/uploads/2021/02/Chegg.org-global-student-survey-2021.pdf>. Accessed 3 May 2022.
- 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>
- Cordeiro, J. R., Camelier, A., Oakley, F., & Jardim, J. R. (2007). Cross-cultural reproducibility of the Brazilian Portuguese version of the Role Checklist for persons with chronic obstructive pulmonary disease. *The American Journal of Occupational Therapy*, 61(1), 33–40. <https://doi.org/10.5014/ajot.61.1.33>
- da Costa Lemos, A. H., de Oliveira Barbosa, A., & Pinheiro Monzato, P. (2020). Mulheres em home office durante a pandemia da Covid-19 e as configurações do conflito trabalho-família. *RAE-Revista De Administração De Empresas*, 60(6), 388–399. <https://doi.org/10.1590/S0034-759020200603>
- de Sá Junior, A. R., Liebel, G., Andrade, A. G. D., Andrade, L. H., Gorenstein, C., & Wang, Y. P. (2019). Can gender and age impact on response pattern of depressive symptoms among college students? A differential item functioning analysis. *Frontiers in Psychiatry*, 10, 50. <https://doi.org/10.3389/fpsy.2019.00050>
- De Souza, W. M., Buss, L. F., Candido, D., Carrera, J. P., Li, S., Zarebski, A. E., Pereira, R., Prete, C. A., Jr., de Souza-Santos, A. A., Parag, K. V., Belotti, M., Vincenti-Gonzalez, M. F., Messina, J., da

- Silva Sales, F. C., Andrade, P., Nascimento, V. H., Ghilardi, F., Abade, L., Gutierrez, B., ... Faria, N. R. (2020). Epidemiological and clinical characteristics of the COVID-19 epidemic in Brazil. *Nature Human Behaviour*, 4(8), 856–865. <https://doi.org/10.1038/s41562-020-0928-4>
- Decanato de Planejamento, Orçamento e Avaliação Institucional (DPO) (2017). Anuário Estatístico. Retrieved from http://www.dpo.unb.br/images/phocadownload/unbemnumeros/anuarioestatistico/Anuario_Estatistico_2017.pdf. Accessed 3 May 2022.
- Diretoria de Atenção à Saúde da Comunidade Universitária (DASU), (20220). Retrieved from <http://dasu.unb.br/institucional/a-unidade>.
- Eleftheriou, A., Rokou, A., Arvaniti, A., Nena, E., & Steiropoulos, P. (2021). Sleep quality and mental health of medical students in Greece during the COVID-19 pandemic. *Frontiers in Public Health*, 9, 775374. <https://doi.org/10.3389/fpubh.2021.775374>
- Fleck, M. P., Louzada, S., Xavier, M., Chachamovich, E., Vieira, G., Santos, L., & Pinzon, V. (2000). Application of the Portuguese version of the abbreviated instrument of quality life WHOQOL-bref. *Revista de saude Publica*, 34(2), 178–183. <https://doi.org/10.1590/s0034-8910200000200012>
- Fundação Oswaldo Cruz (Fiocruz) (2020). Resultados da ConVid: pesquisa de comportamentos. Retrieved from: https://convid.fiocruz.br/index.php?pag=bebiba_alcoolica. Accessed 3 May 2022.
- 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), 1–25. <https://doi.org/10.3390/ijerph17238853>
- Giurge, L. M., Whillans, A. V., & Yemiscigil, A. (2021). A multicountry perspective on gender differences in time use during COVID-19. *Proceedings of the National Academy of Sciences*, 118(12), e2018494118. <https://doi.org/10.1073/pnas.2018494118>
- Graupensperger, S., Fleming, C. B., Jaffe, A. E., Rhew, I. C., Patrick, M. E., & Lee, C. M. (2021). Changes in young adults' alcohol and marijuana use, norms, and motives from before to during the COVID-19 pandemic. *Journal of Adolescent Health*, 68(4), 658–665. <https://doi.org/10.1016/j.jadohealth.2021.01.008>
- Graupensperger, S., Jaffe, A. E., Fleming, C. N., 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*, 9(5), 531–540. <https://doi.org/10.1177/2167696820986742>
- Henrique, I. F., De Micheli, D., Lacerda, R. B., Lacerda, L. A., & Formigoni, M. L. (2004). Validation of the Brazilian version of alcohol smoking and substance involvement screening test (ASSIST). *Revista da Associação Médica Brasileira* (1992), 50(2), 199–206. <https://doi.org/10.1590/s0104-42302004000200039>
- Herrera-Añazco, P., Urrunaga-Pastor, D., Benites-Zapata, V. A., Bendezu-Quispe, G., Toro-Huamanchumo, C. J., & Hernandez, A. V. (2022). Gender differences in depressive and anxiety symptoms during the first stage of the COVID-19 pandemic: A cross-sectional study in Latin America and the Caribbean. *Frontiers in Psychiatry*, 13, 727034. <https://doi.org/10.3389/fpsy.2022.727034>
- Holm-Hadulla, R. M., Klimov, M., Juche, T., Möltner, A., & Herpertz, S. C. (2021). Well-being and mental health of students during the COVID-19 pandemic. *Psychopathology*, 54(6), 291–297. <https://doi.org/10.1159/000519366>
- Horigian, V. E., Schmidt, R. D., & Feaster, D. J. (2021). Loneliness, mental health, and substance use among US young adults during COVID-19. *Journal of Psychoactive Drugs*, 53(1), 1–9. <https://doi.org/10.1080/02791072.2020.1836435>
- Hossain, M. M., Sultana, A., & Purohit, N. (2020). Mental health outcomes of quarantine and isolation for infection prevention: A systematic umbrella review of the global evidence. *Epidemiology and Health*, 42, e2020038. <https://doi.org/10.4178/epih.e2020038>
- Houvèssou, G. M., Souza, T. P., & Silveira, M. (2021). Lockdown-type containment measures for COVID-19 prevention and control: a descriptive ecological study with data from South Africa, Germany, Brazil, Spain, United States, Italy and New Zealand, February - August 2020. *Epidemiologia e Serviços de Saude*, 30(1), e2020513. <https://doi.org/10.1590/S1679-49742021000100025>
- Huang, Y., & Zhao, N. (2020). Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: A web-based cross-sectional survey. *Psychiatry Research*, 288 <https://doi.org/10.1016/j.psychres.2020.112954>
- Huckins, J. F., daSilva, A. W., Wang, W., Hedlund, E., Rogers, C., Nepal, S. K., Wu, J., Obuchi, M., Murphy, E. I., Meyer, M. L., Wagner, D. D., Holtzheimer, P. E., & Campbell, A. T. (2020). Mental health and behavior of college students during the early phases of the COVID-19 pandemic: longitudinal smartphone and ecological momentary assessment study. *Journal of Medical Internet Research*, 22(6), e20185. <https://doi.org/10.2196/20185>
- Jacobson, N., Lekkas, D., Price, G., Heinz, M., Song, M., O'Malley, A., & Barr, P. (2020). Flattening the mental health curve: COVID-19 stay-at-home orders are associated with alterations in mental health search behavior in the United States. *JMIR Ment Health*, 7(6), e19347. <https://doi.org/10.2196/19347>






- Johnson, M. C., Saletti-Cuesta, L., & Tumas, N. (2020). Emociones, preocupaciones y reflexiones frente a la pandemia del COVID-19 en Argentina. *Ciência Saúde Coletiva*, 25, 2447–2456. <https://doi.org/10.1590/1413-81232020256.1.10472020>
- Kohls, E., Baldofski, S., Moeller, R., Klemm, S. L., & Rummel-Kluge, C. (2021). Mental health, social and emotional well-being, and perceived burdens of university students during COVID-19 pandemic lockdown in Germany. *Frontiers in psychiatry*, 12, 643957. <https://doi.org/10.3389/fpsy.2021.643957>
- Kotowski, S. E., Davis, K. G., & Barratt, C. L. (2022). Teachers feeling the burden of COVID-19: Impact on well-being, stress, and burnout. *Work (Reading, Mass)*, 71(2), 407–415. <https://doi.org/10.3233/WOR-210994>
- Liu, X., Liu, J., Zhong, X. (2020). Psychological state of college students during COVID-19 epidemic. *The Lancet Global Health*. Available at SSRN: <https://ssrn.com/abstract=3552814> or <https://doi.org/10.2139/ssrn.3552814>.
- Lopes, M. (2011). *Uso de álcool, estresse no trabalho e fatores associados entre servidores técnicos-administrativos de uma universidade pública* (Doctoral dissertation, Universidade de São Paulo). Retrieved from: <https://doi.org/10.11606/D.22.2011.tde-19012012-132453>.
- Lunnay, B., Foley, K., Meyer, S. B., Warin, M., Wilson, C., Olver, I., & Ward, P. R. (2021). Alcohol consumption and perceptions of health risks during COVID-19: A qualitative study of middle-aged women in South Australia. *Frontiers in Public Health*, 9, 616870. <https://doi.org/10.3389/fpubh.2021.616870>
- Lynn, B. K., López, J. D., Miller, C., Thompson, J., & Campian, E. C. (2019). The relationship between marijuana use prior to sex and sexual function in women. *Sexual Medicine*, 7(2), 192–197. <https://doi.org/10.1016/j.esxm.2019.01.003>
- Malkawi, S. H., Almhdawi, K., Jaber, A. F., & Alqatarneh, N. S. (2020). Malkawi, S. H., Almhdawi, K., Jaber, A. F., & Alqatarneh, N. S. (2021). COVID-19 quarantine-related mental health symptoms and their correlates among mothers A cross sectional study. *Maternal and Child Health Journal*, 25(5), 695–705 <https://doi.org/10.1007/s10995-020-03034-x>.
- Martínez-Vélez, N. A., Tiburcio, M., Natera Rey, G., Villatoro Velázquez, J. A., Arroyo-Belmonte, M., Sánchez-Hernández, G. Y., & Fernández-Torres, M. (2021). Psychoactive substance use and its relationship to stress, emotional state, depressive symptomatology, and perceived threat during the COVID-19 pandemic in Mexico. *Frontiers in Public Health*, 9, 709410. <https://doi.org/10.3389/fpubh.2021.709410>
- Martinotti, G., Alessi, M. C., Di Natale, C., Sociali, A., Ceci, F., Lucidi, L., ... & di Giannantonio, M. (2020). Psychopathological burden and quality of life in substance users during the COVID-19 lockdown period in Italy. *Frontiers in Psychiatry*, 11, 572245. Retrieved from: <https://doi.org/10.3389/fpsy.2020.572245>
- Meyer, S. B., Foley, K., Olver, I., Ward, P. R., McNaughton, D., Mwanri, L., & Miller, E. R. (2019). Alcohol and breast cancer risk: Middle-aged women's logic and recommendations for reducing consumption in Australia. *PLoS one*, 14(2), e0211293. <https://doi.org/10.1371/journal.pone.0211293>
- Miller, E. R., Wilson, C., Chapman, J., Flight, I., Nguyen, A. M., Fletcher, C., & Ramsey, I. (2018). Connecting the dots between breast cancer, obesity and alcohol consumption in middle-aged women: Ecological and case control studies. *BMC Public Health*, 18(1), 1–14. <https://doi.org/10.1186/s12889-018-5357-1>
- Minihan, E., Adams, D., Dunleavy, M., Martin, A., Gavin, B., & McNicholas, F. (2022). COVID-19 related occupational stress in teachers in Ireland. *International Journal of Educational Research Open*, 3, 100114. <https://doi.org/10.1016/j.ijedro.2021.100114>
- Mukhtar, S. (2020). Mental health and psychosocial aspects of coronavirus outbreak in Pakistan: Psychological intervention for public mental health crisis. *Asian Journal of Psychiatry*, 51, 102069. <https://doi.org/10.1016/j.ajp.2020.102069>
- Osse, C. M. C., & Costa, I. I. D. (2011). Saúde mental e qualidade de vida na moradia estudantil da Universidade de Brasília. *Estudos de Psicologia (Campinas)*, 28(1), 115–122. <https://doi.org/10.1590/S0103-166X2011000100012>
- Palamar, J. J., & Acosta, P. (2021). Virtual raves and happy hours during COVID-19: New drug use contexts for electronic dance music partygoers. *The International Journal on Drug Policy*, 93, 102904. <https://doi.org/10.1016/j.drugpo.2020.102904>
- Panlilio, L. V., Stull, S. W., Kowalczyk, W. J., Phillips, K. A., Schroeder, J. R., Bertz, J. W., ... & Preston, K. L. (2019). Stress, craving and mood as predictors of early dropout from opioid agonist therapy. *Drug and Alcohol Dependence*, 202, 200–208. Retrieved from: <https://doi.org/10.1016/j.drugalcdep.2019.05.026>
- Rolland, B., Haesebaert, F., Zante, E., Benyamina, A., Haesebaert, J., & Franck, N. (2020). Global changes and factors of increase in caloric/salty food intake, screen use, and substance use during the early

- COVID-19 containment phase in the general population in France: Survey study. *JMIR Public Health and Surveillance*, 6(3), e19630. <https://doi.org/10.2196/19630>
- Salazar, A., Palomo-Osuna, J., de Sola, H., Moral-Munoz, J. A., Dueñas, M., & Failde, I. (2021). Psychological impact of the lockdown due to the COVID-19 pandemic in university workers: Factors related to stress, anxiety, and depression. *International Journal of Environmental Research and Public Health*, 18(8), 4367. <https://doi.org/10.3390/ijerph18084367>
- Serafim, A. P., Durães, R., Rocca, C., Gonçalves, P. D., Saffi, F., Cappelozza, A., Paulino, M., Dumas-Diniz, R., Brissos, S., Brites, R., Alho, L., & Lotufo-Neto, F. (2021). Exploratory study on the psychological impact of COVID-19 on the general Brazilian population. *PLoS one*, 16(2), e0245868. <https://doi.org/10.1371/journal.pone.0245868>
- Soares, L. S., Silva, M. P. M. e, Rocha, R. C., Silva, G. R. F. da, Nogueira, L. T., & Figueiredo, M. do L. F. (2019). Padrão de consumo de álcool entre trabalhadores de um colégio técnico-agrícola: um estudo transversal. *Revista De Enfermagem da UFSM*, 9, e42. Retrieved from: <https://doi.org/10.5902/2179769226945>
- Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of Medical Internet Research*, 22(9), e21279. <https://doi.org/10.2196/21279>
- Sun, A. J., & Eisenberg, M. L. (2017). Association between marijuana use and sexual frequency in the United States: A population-based study. *The Journal of Sexual Medicine*, 14(11), 1342–1347. <https://doi.org/10.1016/j.jsxm.2017.09.005>
- Tavolacci, M. P., Boerg, E., Richard, L., Meyrignac, G., Dechelotte, P., & Ladner, J. (2016). Prevalence of binge drinking and associated behaviours among 3286 college students in France. *BMC Public Health*, 16, 178. <https://doi.org/10.1186/s12889-016-2863-x>
- The World Health Organization (WHO). (1995). Quality of Life assessment (WHOQOL): position paper from the World Health Organization. *Social Science & Medicine* (1982), 41(10), 1403–1409. [https://doi.org/10.1016/0277-9536\(95\)00112-k](https://doi.org/10.1016/0277-9536(95)00112-k)
- United Nations Office on Drugs and Crime (UNODC) (2020). *Suggestions about treatment, care and rehabilitation of people with drug use disorder in the context of the COVID-19 pandemic*. Retrieved from https://www.unodc.org/documents/drug-prevention-and-treatment/Drug_treatment_and_care_services_and_COVID19.pdf. Accessed 3 May, 2022.
- Universidade de Brasília (UnB) (2020). Plano de contingência em saúde mental e apoio psicossocial para enfrentamento do novo coronavírus (SARS-CoV-2) para a Universidade de Brasília. Retrieved from: https://unb.br/images/Noticias/2020/Documentos/2020-PlanoContingenciaCovid19_v6.pdf. Accessed 3 May 2022.
- Vieira, D. A., & Meirinhos, V. (2021). COVID-19 lockdown in Portugal: Challenges, strategies and effects on mental health. *Trends in Psychology*, 29(2), 354–374. <https://doi.org/10.1007/s43076-021-00066-2>
- Vitorino, L. M., Júnior, G. H. Y., Gonzaga, G., Dias, I. F., Pereira, J. P. L., Ribeiro, I. M. G., ... & Trzesniak, C. (2021). Factors associated with mental health and quality of life during the COVID-19 pandemic in Brazil. *BJPsych open*, 7(3). Retrieved from: <https://doi.org/10.1192/bjo.2021.62>
- Wang, X., Hegde, S., Son, C., Keller, B., Smith, A., & Sasangohar, F. (2020). Investigating mental health of US college students during the COVID-19 pandemic: Cross-sectional survey study. *Journal of Medical Internet Research*, 22(9), e22817. <https://doi.org/10.2196/22817>
- Wathelet, M., Duhem, S., Vaiva, G., Baubet, T., Habran, E., Veerapa, E., Debien, C., Molenda, S., Horn, M., Grandgenèvre, P., Notredame, C. E., & D'Hondt, F. (2020). Factors associated with mental health disorders among university students in France confined during the COVID-19 pandemic. *JAMA network open*, 3(10), e2025591. <https://doi.org/10.1001/jamanetworkopen.2020.25591>
- Wiebe, E., & Just, A. (2019). How cannabis alters sexual experience: A survey of men and women. *The Journal of Sexual Medicine*, 16(11), 1758–1762. <https://doi.org/10.1016/j.jsxm.2019.07.023>
- Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M., Gill, H., Phan, L., & McIntyre, R. S. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of Affective Disorders*, 277, 55–64. <https://doi.org/10.1016/j.jad.2020.08.001>

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Authors and Affiliations

Andrea Donatti Gallassi^{1,2}  · Eduardo Yoshio Nakano³  ·
Kleverson Gomes de Miranda¹  · Josenaide Engracia dos Santos^{4,5}  ·
Daniela da Silva Rodrigues⁴  · Flávia Mazitelli de Oliveira⁴ 

✉ Andrea Donatti Gallassi
andrea.gallassi@gmail.com

Eduardo Yoshio Nakano
eynakano@gmail.com

Kleverson Gomes de Miranda
kleverson_gomes12@outlook.com

Josenaide Engracia dos Santos
josenaidepsi@gmail.com

Daniela da Silva Rodrigues
danirodrigues.to@gmail.com

Flávia Mazitelli de Oliveira
flaviamazitelli@gmail.com

¹ Post-Graduation Program of Sciences and Health Technology (Programa de Pós-Graduação em Ciências e Tecnologias em Saúde), Faculdade de Ceilândia (FCE), Universidade de Brasília (UnB), Centro Metropolitano 1, Conjunto A, Ceilândia Sul, Brasília, DF ZIP 72220-900, Brazil

² Center of Drugs and Associated Vulnerabilities (Centro de Referência Sobre Drogas e Vulnerabilidades Associadas), FCE, UnB, Centro Metropolitano 1, Conjunto A, Ceilândia Sul, Brasília, DF ZIP 72220-900, Brazil

³ Statistical Department (Departamento de Estatística), UnB, Campus Darcy Ribeiro, Prédio CIC/EST, DF ZIP 70910-900 Brasília, Brazil

⁴ Undergraduate Program in Occupation Therapy (Curso de Graduação em Terapia Ocupacional), FCE, UnB, Centro Metropolitano 1, Conjunto A, Ceilândia Sul, Brasília, DF ZIP 72220-900, Brazil

⁵ Directorate of Health Care of the University Community (Diretoria de Atenção à Saúde da Comunidade Universitária - DASU), UnB, Campus Darcy Ribeiro, Brasília, DF ZIP 70910-900, Brazil