REVISTA DA ABENO
Associação Brasileira de Ensino Odontológico
https://revabeno.emnuvens.com.br ISSN 2595 027

Use of anxiolytics/antidepressants among university students in the pre-vaccine period of the COVID-19 pandemic

Myrelle Leal Campos Sousa[1]
0000-0001-9155-4508

Ramon Targino Firmino[2]
0000-0001-5581-0658

Rafael Domingos Almeida Durand Gomes[3]
0000-0001-6087-7945

Wanúbia Barbosa Nunes[1]
0000-0001-8866-9996

Matheus França Perazzo[4]
0000-0003-1231-689X

Saul Martins Paiva[5]
0000-0002-3968-1638

Ana Flávia Granville-Garcia[1]
0000-0002-6054-8372

[1] Universidade Estadual da Paraíba (UEPB), Campina Grande, Paraíba, Brasil.
[2] Universidade Federal de Campina Grande (UFCG), Patos, Paraíba, Brasil.
[3] Faculdade de Ciências Médicas de Campina Grande (UNIFACISA) Campina Grande, Paraíba, Brasil.
[4] Universidade Federal de Goiás (UFG), Goiânia, Goiás, Brasil.
[5] Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Minas Gerais, Brasil.

Correspondence:
Ramon Targino Firmino
E-mail: ramontargino@gmail.com

Received: Oct 5, 2023
Approved: Nov 08, 2023
Last revision: Nov 22, 2023

Abstract The present study assessed the prevalence of the use of anxiolytics/antidepressants and associated factors among university students in the pre-vaccine period of the COVID-19 pandemic. A cross-sectional study was conducted with 983 students of public and private universities in Brazil. Data were collected between September and December 2020 with the aid of a questionnaire available on the Survey Monkey® platform addressing socioeconomic data, self-rated health, the use of anxiolytics/antidepressants, history of depression, psychological/psychiatric treatment and aspects of the undergraduate course. Statistical analysis involved descriptive statistics and Poisson regression with robust variance (α = 5%). The prevalence of anxiolytics/antidepressants use was 15.7%. The use of anxiolytics/antidepressants was associated with the female sex (PR = 1.53; 95% CI: 1.03-2.26), dissatisfaction with one's overall health (PR = 1.40; 95% CI: 1.08-1.82), undergoing psychological/psychiatric treatment (PR = 2.85; 95% CI: 1.91-4.22) and a medical diagnosis of depression (PR = 3.44; 95% CI: 2.52-4.70). The female sex, dissatisfaction with one's own overall health status, undergoing psychological/psychiatric treatment and a medical diagnosis of depression exerted an influence on the use of anxiolytics/antidepressants by undergraduate university students during the COVID-19 pandemic.
Descriptors: Anti-Anxiety Agents. Antidepressive Agents. COVID-19. Pandemics. Universities.

Uso de ansiolíticos/antidepresivos por estudiantes universitarios en el periodo prevacuna en la pandemia COVID-19

Resumen El presente estudio evaluó la prevalencia del uso de ansiolíticos/antidepresivos y factores asociados entre estudiantes universitarios en el período previo a la vacunación de la pandemia COVID-19. Se realizó un estudio transversal con 983 estudiantes de universidades públicas y privadas de Brasil. Los datos fueron recolectados entre septiembre y diciembre de 2020 con la ayuda de un cuestionario disponible en la plataforma Survey Monkey® que aborda datos socioeconómicos, salud autoevaluada, uso de ansiolíticos/antidepresivos, antecedentes de depresión, tratamiento psicológico/psiquiátrico y aspectos de la carrera universitaria. curso. El análisis estadístico implicó estadística descriptiva y regresión de Poisson con varianza robusta (α = 5%). La prevalencia del uso de ansiolíticos/antidepresivos fue del 15,7%. El uso de ansiolíticos/antidepresivos se asoció con el sexo femenino (RP = 1,53; IC 95%: 1,03-2,26), insatisfacción con la salud general (RP = 1,40; IC 95%: 1,08-1,82), estar sometido a tratamiento psicológico/psiquiátrico (RP = 2,85; IC 95%: 1,91-4,22) y diagnóstico médico de depresión (RP = 3,44; IC 95%: 2,52-4,70). El sexo femenino, la insatisfacción con el propio estado de salud general, el tratamiento psicológico/psiquiátrico y el diagnóstico médico de depresión influyeron en el uso de ansiolíticos/antidepresivos por parte de estudiantes universitarios durante la pandemia de COVID-19.
Descriptores: Ansiolíticos. Antidepresivos. COVID-19. Pandemias. Universidades.

Uso de ansiolíticos/antidepressivos por estudantes universitários em período pré-vacina na pandemia da COVID-19

Resumo O presente estudo avaliou a prevalência do uso de ansiolíticos/antidepressivos e fatores associados entre estudantes universitários no período pré-vacinal da pandemia de COVID-19. Foi realizado um estudo transversal com 983 estudantes de universidades públicas e privadas do Brasil. Os dados foram coletados entre setembro e dezembro de 2020 com auxílio de questionário disponível

na plataforma Survey Monkey® abordando dados socioeconômicos, autoavaliação de saúde, uso de ansiolíticos/antidepressivos, histórico de depressão, tratamento psicológico/psiquiátrico e aspectos da graduação curso. A análise estatística envolveu estatística descritiva e regressão de Poisson com variância robusta (α = 5%). A prevalência de uso de ansiolíticos/antidepressivos foi de 15,7%. O uso de ansiolíticos/antidepressivos esteve associado ao sexo feminino (RP = 1,53; IC 95%: 1,03-2,26), insatisfação com a saúde geral (RP = 1,40; IC 95%: 1,08-1,82), estar em tratamento psicológico/psiquiátrico (RP = 2,85; IC 95%: 1,91-4,22) e diagnóstico médico de depressão (RP = 3,44; IC 95%: 2,52-4,70). O sexo feminino, a insatisfação com o próprio estado geral de saúde, a realização de tratamento psicológico/psiquiátrico e o diagnóstico médico de depressão exerceram influência no uso de ansiolíticos/antidepressivos por estudantes universitários de graduação durante a pandemia de COVID-19.
Descritores: Ansiolíticos. Antidepressivos. COVID-19. Pandemias. Universidades.

INTRODUCTION

During the COVID-19 pandemic, health measures directed at the containment of the virus that caused this disease, particularly social distancing, abruptly altered the daily lives of individuals, generating social tension, anguish and psychological instability that intensified the degree of psychosocial stress[1]. Prevalence of clinically elevated depression and anxiety symptoms were higher in studies collected later in the pandemic, with estimates datas that are double of prepandemic ones[2].

Anxiety among university students was aggravated during the pandemic[3] and reached alarming rates. For example, 35% of undergraduate students in Saudi Arabia experienced moderate to severe levels of anxiety[4]. The use of stimulants, sedatives and anxiolytics without a medical prescription is an evident trend among students[5,6] and the effects of the pandemic augmented the vulnerability of this group to the administration of psychoactive drugs and the development of risk behaviors (use of non-prescribed sedatives and illicit drugs)[7].

With the suspension of in-person classes, traditional teaching was replaced with classes mediated through digital technologies[8]. This strategy was the best option for avoiding delays in the educational process and the conclusion of courses[9]. However, the closing of universities and the transition to distance learning exerted a negative impact on university life[8]. The evaluations and methods employed with this teaching model were considered unsatisfactory, as accessibility to digital resources was not ensured for all students due to differences in socioeconomic status[10].

The use of psychoactive drugs is more frequent among students in the health field and the female sex[11]. When occurring without guidance from a healthcare provider, such use is motivated by the desire for improved quality of life, such as better sleep, greater relaxation and the relief of tension and pain, which are consistent factors in the administration of these medications[12]. The use of multiple substances concomitantly with the use of anxiolytics without a medical prescription is also common among university students, with justifications that range from the desire to improve one's academic performance, increase energy or enhance the effects of other illicit drugs[13].

Remote teaching is related to an excessive burden of activities demanded of students by professors, difficulties in mastering new technologies on the part of teaching staff and insufficient interaction with other students, which culminate in a greater frequency of fatigue and the loss of motivation among students that can be seen since high school[14]. Investigating the prevalence of unprescribed psychoactive medication use and associated factors among university students is essential to the monitoring of the indiscriminate use of these medications and possible health consequences, such as the risk of death due to inadvertent combinations with other substances, such as alcohol and illicit drugs[12,15].

The use of anxiolytics/antidepressants may have increased during the pandemic. To the best of our knowledge, no previous study has investigated the use of prescribed medications among undergraduate students in this period[12,16], especially the period prior to the vaccine. Therefore, the aim of the present study was to investigate the prevalence of the use of anxiolytics/antidepressants and associated factors among university students in Brazil in the pre-vaccine

period of the COVID-19 pandemic.

METHODS

Study design, setting and sample

An analytical cross-sectional study was conducted with Brazilian university students during the COVID-19 pandemic (September to December 2020) using virtual technologies. Non-probabilistic convenience sampling (snow-all technique) was performed. The sample size was calculated using the G*Power software program for the estimate of proportions[17]. Considering a 5% margin of error, 80% power and 50% prevalence of the use of anxiolytics, the minimum sample was estimated to be 385 students, to which 20% was added to compensate for possible losses. The final sample comprised 983 students.

Eligibility criteria

University students 18 years of age or older enrolled in undergraduate courses at public and private higher education institutions in Brazil were included in the study. Individuals with visual impairment not able to respond to the data collection instruments were excluded.

Data collection

The data were collected in the second semester of 2020, virtually through questionnaires made available on the SurveyMonkey® platform (sociodemographic questionnaire and questionnaire addressing aspects related to the course and perceptions of the impact of the COVID-19 pandemic). Contact was first made via e-mail with the boards of the universities in the country following searches of institutional sites and contact with collaborating researchers at other institutions. The e-mail included a presentation letter detailing the objective and methods of the study as well as the link to the electronic questionnaire to be sent to students. Entrance to the platform occurred by "clicking" on the link. The link was also publicized through the social media (Instagram®, Facebook® and WhatsApp®) of the researchers involved in the study.

Data collection instruments

Two instruments were employed for the collection of data: (1) sociodemographic questionnaire to collect data on sex, age, marital status, family income using the monthly minimum wage (equivalent to US$190 at the time of the survey) as reference and geographic region in which the student lived; and (2) questionnaire on aspects related to the course, perception of the impact of the COVID-19 pandemic on the education process and psychological aspects to collect data on the type of institution (public or private), semester of the course, satisfaction with overall health, use of anxiolytics/antidepressants ("Do you use anxiolytics or antidepressants medications?"), diagnosis of depression ("Have you ever had a medical diagnosis of depression?") and psychological/psychiatric treatment for reasons related to the pandemic.

The items of both instruments were grouped into a single questionnaire to facilitate data collection and the dissemination of the study. The first page consisted of a term of consent and the other pages comprised the items of interest of the study. The approximate response time of the questionnaire was 10 minutes.

The applicability and efficiency of virtual resources for surveys have been demonstrated, especially in light of the limitations imposed by the COVID-19 pandemic, as the computerized mode in the supervised school environment has proved to produce similar results to those achieved with the traditional teaching model.

Data processing and analysis

Descriptive statistics were performed, with the calculation of absolute and relative frequencies for qualitative variables as well as mean, standard deviation, median and inter-quartile range for continuous variables. The data were analyzed using bivariate and multivariate Poisson regression with robust variance ($\alpha = 5\%$). Variables with a p-value <0.20 in the bivariate analysis were tested in the multivariate analysis. The Statistical Package for the Social Sciences, version 25 (SPSS for Windows 25.0, SPSS Inc, Chicago, IL, USA) was used for the statistical calculations.

Ethical aspects

This study received approval from the Human Research Ethics Committee of Centro Universitário UNIFACISA (certificate number: 37033420.6.0000.5175). A code was attributed to each participant to ensure confidentiality and anonymity. All volunteers had autonomy with regards to participating or not participating in the survey. Prior to completing the questionnaire, all students consented to participation by accepting the statement of informed consent. All procedures were in accordance with Brazilian regulations regarding ethics in research.

RESULTS

The final sample was composed of 983 Brazilian university students, which was majority composed (75.2%) by undergraduates enrolled in courses of biological and health areas (physical education, psychology, biomedicine, nursing, pharmacy, physiotherapy, speech therapy, medicine, veterinary medicine, nutrition, dentistry, psychology, radiology, occupational therapy). Students from the human and social areas (administration, architecture and urbanism, archival science, law, political science, social communication, philosophy, geography, history, journalism, literature (Portuguese, English, Spanish), international relations, public health, social services) comprised 12.1%; 10.9% were from exact and technological areas (computer science, accounting sciences, controllership and finance, design, product design, mechanical engineering, civil engineering, aerospace engineering, computer engineering, food engineering, biosystems engineering, control engineering and automation, petroleum engineering, production engineering, electrical engineering, sanitary and environmental engineering, statistics, physics, IT, mathematics, industrial chemistry, information systems) and 0.5% of the agricultural area (agronomy).

Mean age was 23.2 ± 4.9 years and the mean semester of the course was 5.6 ± 2.9. Women (75.5%), unmarried individuals (88.5%), those with a family income higher than two times the monthly minimum wage (64%), those who resided in the northeastern region of the country (65.5%) and students at private universities (52.3%) predominated in the sample. Most students (76%) reported being satisfied with their overall health and 40.8% reported being in psychological treatment. A total of 15.7% of the students reported both the use of anxiolytics/antidepressants and having a medical diagnosis of depression (Table 1). The female sex (PR = 1.53; 95% CI: 1.03-2.26), dissatisfaction with overall health (PR = 1.40; 95% CI: 1.08-1.82), undergoing psychological/psychiatric treatment (PR = 2.85; 95% CI: 1.91-4.22) and a medical diagnosis of depression (PR = 3.44; 95% CI: 2.52-4.70) were associated with the use of anxiolytics/antidepressants (Table 2).

DISCUSSION

In the present study, the female sex, a medical diagnosis of depression, undergoing psychological/psychiatric treatment and dissatisfaction with one's overall health were associated with the use of anxiolytics/antidepressants among Brazilian university students during the pre-vaccine phase of the COVID-19 pandemic. This is the first study to determine such an association during the pandemic.

Around 16% of the students reported taking these medications during the period analyzed. This rate is higher than that was reported in a prior study[18], which one found that 10% of undergraduate students reported the use of antidepressant therapy. This divergence may be due to the fact the occurrence of response bias is feasible, as some individuals taking medication may have reported not taking it due to feelings of embarrassment. In the United States of America (USA), the use of anxiolytics increased by 35.7% among the entire population during the pandemic[19]. In another study involving university students, the occurrence of psychological problems was augmented during the pandemic, with the manifestation of moderate to severe anxiety disorders among 40.6% of students[3]. However, the study offered no data on the use of medications.

The prevalence of anxiolytic/antidepressant use was higher among women in the present study, which was represented by 75.5% of the total sample. Levels of depression and anxiety are influenced by gender, where female undergraduate students had higher depression and anxiety means scores compared with others male students[18]. Women are more prone to the development of anxiety disorders, especially during the pandemic, and have higher frequencies of medication use to control anxiety[6,11]. The intense social pressure placed on women to maintain stereotypes, the burden of assigned gender roles and expectations as well as hormonal changes inherent to the sex

are factors that produce physical and mental strain, leading to the use of these substances in an attempt to improve quality of life[20].

Students with a medical diagnosis of depression comprised almost 16% of the undergraduates and those in psychological/psychiatric treatment were closely represented by 41% of the sample. In the study, students with these conditions were more likely to use anxiolytics/antidepressants. The global pandemic contributed to the development of psychological problems and the yearning for an immediate vaccine served to amplify the stress level[21], leading to a greater frequency of symptoms of depression and anxiety in the period[22]. Social support is fundamental in the treatment of mental disorders[1]. Considering the strong influence of social distancing imposed by the pandemic on psychological health[3], the loneliness caused by isolation may have induced the prescription of these medications for undergraduate students during this period as auxiliary treatment in such cases.

Table 1. Sample characterization (n = 983).

Variable	Frequency	
	n	%
Sex		
Female	742	75.5
Male	241	24.5
Civil status		
Not married	873	88.5
Married	113	11.5
Family income		
Up to two minimum wages	352	36.0
More than two minimum wages	623	64.0
Geographic region		
North	50	5.1
North East	646	65.5
Midwest	76	7.7
South	33	3.3
Southeast	182	18.4
Educational institution		
Public	470	47.7
Private	515	52.3
Health satisfaction		
Dissatisfied	237	24.0
Satisfied	751	76.0
Psychological/psychiatric follow-up		
Yes	402	40.8
No	584	59.2
Use of anxiolytics/antidepressants		
Yes	155	15.7
No	834	84.3
Diagnosis of depression		
No	786	79.5
Yes	155	15.7
	Mean (SD)	Median (Q1-Q3)
Semester	5.6(2.9)	6.0 (3-8)
Age	23.2(4.9)	22(20-24)

SD: standard deviation. Q1: first quartile. Q3: third quartile.

Table 2. Unadjusted and adjusted Poisson regression of independent variables associated with the use of anxiolytics/antidepressants in university students.

Variables	Use of anxiolytics/antidepressants		p-value*	Unadjusted PR (95% CI)	p-value**	Adjusted PR (95% CI)
	Yes n (%)	No n (%)				
Sex						
Female	131(17.7)	611(82.3)	0.002	1.93(1.26-2.96)	0.033	1.53(1.03-2.26)
Male	22(9.0)	219(91.0)		1.00		1.00
Civil status						
Not married	139(16.0)	734(85.0)	0.472	1.20(0.73-1.97)	-	-
Married	15(13.3)	98(86.7)		1.00		-
Family income						
Up to two minimum wages	49(14.0)	303(86.0)	0.283	0.84(0.61-1.15)	-	-
More than two minimum wages	103(16.5)	520(83.5)		1.00		-
Age	23.6(5.1)	23.1(4.8)	0.318	1.01(0.98-1.04)	-	-
Geographic region						
North	6(12.0)	44(88.0)	0.555	0.78(0.34-1.78)	-	-
North East	95(14.7)	551(85.3)	0.820	0.95(0.64-1.41)	-	-
Midwest	17(22.4)	59(77.6)	0.174	1.45(0.65-1.41)	-	-
South	8(24.2)	25(75.8)	0.198	1.57(0.78-3.15)	-	-
Southeast	28(15.4)	154(84.6)		1.00	-	-
Educational institution						
Public	74(15.7)	396(84.3)	0.994	1.00(0.75-1.33)	-	-
Private	434(84.3)	81(15.7)		1.00		-
Health satisfaction						
Dissatisfied	56(23.6)	181(76.4)	<0.001	1.79(1.33-2.40)	0.010	1.40(1.08-1.82)
Satisfied	99(13.2)	652(86.8)		1.00		1.00
Psychological/psychiatric follow-up						
Yes	121(30.0)	281(70.0)	<0.001	5.17(3.61-7.40)	<0.001	2.85(1.91-4.22)
No	34(5.8)	550(94.2)		1.00		1.00
Diagnosis of depression						-
Yes	95(46.8)	108(53.2)	<0.001	6.13(4.61-8.14)	<0.001	3.44(2.52-4.70)
No	60(7.6)	726(92.4)		1.00		1.00
Semester	5.6(2.8)	5.6(2.8)	0.821	0.99(0.94-1.04)	-	-

PR: prevalence ratio. * Unadjusted Poisson regression. ** Variables incorporated in the adjusted model ($p < 0.20$): gender, geographic region, satisfaction with health, psychological/psychiatric follow-up, diagnosis of depression.

Dissatisfaction with overall health among the university students was related by 24% of the students and it was also associated with the use of anxiolytics/antidepressants by them. With social distancing, the inability to maintain healthy habits, such as the regular practice of physical exercise, induces the release of inflammatory substances that raise levels of stress and anxiety, constituting a risk factor for psychological problems[1]. Compromised physical fitness and depression are highly comorbid among undergraduate students[2,3]. When added to poor adaptation to the distance teaching modality, with reports of difficulties related to academic performance during the pandemic, such conditions increase the anxiety level and compromise the mental health of these individuals[3].

The present study has some limitations which include the absence of data about the use of anxiolytics and antidepressants medications by undergraduates prior to the COVID-19 pandemic. Furthermore, considering the difficulties in the time of data collection, the predominance of participants from the northeastern region could mean the possibility of sampling bias. Another limitation is inherent to the cross-sectional design, which impedes the determination

of cause-and-effect relationships. The strengths of this study are the participation of students from public and private universities, reflecting different situations within all of the regions in the country. New studies should be developed, especially among graduate students, to enable an assessment of the factors associated with the use of anxiolytics/antidepressants considering the impacts of the COVID-19 pandemic about the performance of students in their academic careers. Such studies could provide a deeper understanding of the longtime effects of these variables on the students' lives, with specific data about consumption of these medications, type and amount.

The present findings underscore the importance of prioritizing the mental health of undergraduate students, especially women. The frequent monitoring of the mental health of these students is needed through the offer of psychological support by the university in the form of counseling programs and advice on how to control anxiety and fear[8].

The present findings on factors associated with the use of anxiolytics/antidepressants among university students can contribute to the formulation of strategies directed at minimizing the exposure of these individuals to situations that trigger psychological suffering, which could assist the control of these medications in this group.

CONCLUSION

It can be concluded that the female sex, dissatisfaction with one's own overall health status, undergoing psychological/psychiatric treatment and a medical diagnosis of depression exerted an influence on the use of anxiolytics/antidepressants by undergraduate university students during the COVID-19 pandemic.

REFERENCES

1. Gryksa K, Neumann ID. Consequences of pandemic-associated social restrictions: Role of social support and the oxytocin system. Psychoneuroendocrinology. 2022;135:105601. doi: https://doi.org/10.1016/j.psyneuen.2021.105601
2. Racine N, McArthur BA, Cooke JE, Eirich R, Zhu J, Madigan S. Global prevalence of depressive and anxiety symptoms in children and adolescents during COVID-19: a meta-analysis. JAMA Pediatr. 2021;175(11):1142-1150. doi: https://doi.org/10.1001/jamapediatrics.2021.2482
3. Alqudah A, Al-Smadi A, Oqal M, Qnais EY, Wedyan M, Abu Gneam M, et al. About anxiety levels and anti-anxiety drugs among quarantined undergraduate Jordanian students during COVID-19 pandemic. Int J Clin Pract. 2021;75(7):e14249. doi: https://doi.org/10.1111/ijcp.14249
4. Khoshaim HB, Al-Sukayt A, Chinna K, Nurunnabi M, Sundarasen S, Kamaludin K, et al. Anxiety level of university students during COVID-19 in Saudi Arabia. Front Psychiatry. 2020;11:579750. doi: https://doi.org/10.3389/fpsyt.2020.579750
5. McCabe SE, Boyd CJ, Teter CJ. Subtypes of nonmedical prescription drug misuse. Drug Alcohol Depend. 2009;102(1-3):63-70. doi: https://doi.org/10.1016/j.drugalcdep.2009.01.007
6. Demenech LM, Dumith SC, Dytz AS, Fontes F, Neiva-Silva L. Under pressure: non-medical use of prescription drugs among undergraduate students. J Bras Psiquiatr. 2020;69(1):23-30. doi: https://doi.org/10.1590/0047-2085000000260
7. Caravaca-Sánchez F, Aizpurua E, Stephenson A. Substance use, family functionality, and mental health among college students in Spain. Soc Work Public Health. 2021;36(2):221-231. doi: https://doi.org/10.1080/19371918.2020.1869134.
8. Karasmanaki E, Tsantopoulos G. Impacts of social distancing during COVID-19 pandemic on the daily life of forestry students. Child Youth Serv Rev. 2021;120:105781. doi: https://doi.org/10.1016/j.childyouth.2020.105781.
9. Fernandes AC. Emergency remote teaching in the Covid-19 Pandemic Context: Reports of a challenging and successful experience in an Undergraduate Chemistry class at IFRN. Res Soc Dev. 2021;10(5):e4310514670. doi: https://doi.org/10.33448/rsd-v10i5.14670.
10. Pokhrel S, Chhetri R. A literature review on impact of COVID-19 pandemic on teaching and learning. High Educ Future. 2021;8(1):133-141. doi:https://doi.org/10.1177/2347631120983481.

11. Baxter AJ, Scott KM, Vos T, Whiteford HA. Global prevalence of anxiety disorders: a systematic review and meta-regression. Psychol Med. 2013;43(5):897-910. doi: https://doi.org/10.1017/S003329171200147X
12. Drazdowski TK, Kelly LM, Kliewer WL. Motivations for the nonmedical use of prescription drugs in a longitudinal national sample of young adults. J Subst Abuse Treat. 2020;114:108013. doi: https://doi.org/10.1016/j.jsat.2020.108013
13. Butler SF, Faraone SV, Rostain AL, Newcorn JH, Antshel KM, Robbins RS, et al. Non-medical Use of Prescription Stimulants Among College Students: Non-oral Routes of Administration, Risk Factors, Motivations, and Pathways. Front Psychiatry. 2021;12:1384. doi: https://doi.org/10.3389/fpsyt.2021.667118
14. Niemi HM, Kousa P. A case study of students' and teachers' perceptions in a Finnish high school during the COVID pandemic. IJTES. 2020;4(4):352-369. doi: https://doi.org/10.46328/ijtes.v4i4.167.
15. Zacny J, Bigelow G, Compton P, Foley K, Iguchi M, Sannerud C. College on Problems of Drug Dependence taskforce on prescription opioid non-medical use and abuse: position statement. Drug Alcohol Depend. 2003;69(3):215-232. doi: https://doi.org/10.1016/s0376-8716(03)00003-6
16. Neri JVD, Teston APM, Araújo DCM. Use of ansiolitics and antidepressives by academics in the health area: a bibliographical review. Braz J Dev. 2020;6(10):75673-75686. doi: https://doi.org/10.34117/bjdv6n10-118.
17. Kirkwood BR, Stern JAC. Essential Medical Statistics. 2nd Edition, Oxford: Blackwell Science; 2003. 512p.
18. Naser AY, Alwafi H, Amara NA, Alhamad H, Almadani MA, Alsairafi ZK, et al. Epidemiology of depression and anxiety among undergraduate students. Int J Clin Pract. 2021;75(9):e14414. doi: https://doi.org/10.1111/ijcp.14414
19. Grigsby TJ, Howard JT, Deason RG, Haskard-Zolnierek KB, Howard K. Correlates of COVID-19 pandemic-related increases in sleep aid and anti-anxiety medication use. J Subst Use. 2022;27(1):56-61. doi: https://doi.org/10.1080/14659891.2021.1892221
20. de Souza ARL, Opaleye ES, Noto AR. Contexts and patterns of undue use benzodiazepine among women. Cien Saude Colet. 2013;18(4):1131-1140. doi: https://doi.org/10.1590/s1413-81232013000400026
21. Szmyd B, Bartoszek A, Karuga FF, Staniecka K, Błaszczyk M, Radek M. Medical students and SARS-CoV-2 vaccination: attitude and behaviors. Vaccines (Basel). 2021;9(2): 128. doi: https://doi.org/10.3390/vaccines9020128
22. Li W, Zhao Z, Chen D, Peng Y, Lu Z. Prevalence and associated factors of depression and anxiety symptoms among college students: a systematic review and meta-analysis. J Child Psychol Psychiatry. 2022;63(11):1222-1230. doi: https://doi.org/10.1111/jcpp.13606
23. Vereecke S, Sorensen K, Zhu J, Liu D, Jiao F, Wang X, et al. The impact of physical conditions on the incidence of major depressive disorder in Chinese university students: Results from a longitudinal study. J Affect Disord. 2022;303:301-305. doi: https://doi.org/10.1016/j.jad.2022.02.041

Conflict of Interest: the authors report no conflict of interest.

Funding: no funding to declare.

Acknowledgment: The authors would like to thank all students who agreed to participate in the study.

Authors' Contribution: Study conception and planning: RTF, AFGG, SMP. Data collection, analysis and interpretation: MLCS, RTF, RDADG, WBN, MFP, SMP, AFGG. Preparation or review of the manuscript: MLCS, RTF, RDADG, WBN, MFP, SMP, AFGG. Approval of the final version: MLCS, RTF, RDADG, WBN, MFP, SMP, AFGG. Public responsibility for the content of the article: MLCS, RTF, RDADG, WBN, MFP, SMP, AFGG.