Prevalence of anxiety, depression, and psychoactive substances use among pharmacy students in Minas Gerais: Impacts of the pandemic and the university environment

Igor Henrique Buscain de Almeida[1], Renata Maria Leal de Souza[1], Márcia Helena Miranda Cardoso Podestá[1], Larissa Helena Lobo Torres[1] & Alessandra Oliveira Silva[1]

[1] Federal University of Alfenas, Alfenas, Minas Gerais, Brazil

Correspondence: Alessandra Oliveira Silva, Farmacy Department, Federal University of Alfenas, Alfenas, Minas Gerais, Brazil. E-mail: alessandraoliveira.silva@yahoo.com.br

Abstract

Mental disorders affect the population widely, and university students are considered a risk group due to the challenges of academic life. Furthermore, the COVID-19 pandemic has had a major impact on this population, intensifying symptoms of anxiety and depression. On the other hand, there is a high consumption of psychoactive substances among academics, which initially aim to minimize internal tensions, but can, in a chronic manner, harm health. Given this, a quantitative, descriptive, and cross-sectional study was carried out on the presence of anxiety and depression, as well as the use of psychoactive substances among pharmacy students at a public university in the interior of Minas Gerais. Two questionnaires were used for data collection, one for demographic and psycho-emotional assessment and another specific for anxiety and depression, known as the Hospital Anxiety and Depression Scale (HADS). The study population consisted of 350 academics. Of these, 69.43% were female, with an average age of 21.72 years. The data indicate that 39.14% of the interviewees had "probable" anxiety and 25.14% "probable" depression, affecting first-year and last-year students more prominently. In addition, there was a higher prevalence of anxiety in males. Depression, on the other hand, affected women more. Regarding the social context, it is observed that both the university and the COVID-19 pandemic increased the prevalence of anxiety and depression. Furthermore, 64.86% of the participants used psychoactive substances, with alcohol and anxiolytics and/or antidepressants being the most used. Thus, the impact of the university and the pandemic on mental illnesses is clear. Furthermore, the high use of psychoactive substances is worrying, as it can generate secondary damage. Therefore, it is suggested that educational measures for preventing psychoactive substance use, as well as improvements in programs related to mental health.

Keywords: mental disorders, students, pharmacy, psychotropic drugs, COVID-19.

Prevalência da ansiedade, depressão e do uso de substâncias psicoativas entre estudantes de farmácia em Minas Gerais: Impactos da pandemia e do ambiente universitário

Resumo

Os transtornos mentais atingem amplamente a população, sendo que os estudantes universitários se enquadram como grupo de risco, devidos os desafios da vida acadêmica. Ainda, a pandemia do COVID-19 teve grande impacto nessa população, intensificando os sintomas de ansiedade e depressão. Por outro lado, temos um alto consumo de uso de substâncias psicoativas entre os acadêmicos, tendo a princípio o intuito de minimizar as tensões internas, pode de forma crônica, prejudicar a saúde. Diante disso, realizou-se um estudo quantitativo, descritivo e transversal sobre a presença de ansiedade e depressão, bem como o uso de psicoativos entre os acadêmicos do curso de farmácia de uma universidade pública no interior de Minas Gerais. Para a coleta de dados utilizou-se dois questionários, um para avaliação demográfica e psicoemocional e outro específico para ansiedade e depressão, conhecido como Hospital Anxiety and Depression Scale (HADS). A população de estudo foi composta por 350 acadêmicos. Destes 69,43% eram do sexo feminino, com idade média de 21,72 anos. Os

dados indicam que 39,14% dos entrevistados apresentavam "provável" ansiedade e 25,14% "provável" depressão, afetando de forma mais proeminente estudantes dos primeiros e últimos períodos. Além disso, verificou-se uma maior prevalência da ansiedade no sexo masculino. Já a depressão, atingiu em maior proporção o sexo feminino. Em relação ao contexto social, observa-se que tanto a universidade, quanto a pandemia da COVID-19 aumentaram a prevalência da ansiedade e depressão. Ainda, 64,86% dos participantes faziam o uso de substâncias psicoativas, sendo o álcool e os ansiolíticos e/ou antidepressivos, os mais usados. Assim, e nítido o impacto da universidade e da pandemia nas doenças mentais. Ainda, o alto uso de substância psicoativas é preocupante, pois pode gerar danos secundários. Portanto, sugere-se a implementação de medidas educativas contra o uso de substâncias psicoativas, bem como melhorias de programas relacionada a saúde mental.

Palavras-chave: transtornos mentais, estudantes de farmácia, psicotrópicos, COVID-19.

1. Introduction

The mental illnesses, such as anxiety and depression, are highly prevalent worldwide (Herrman et al., 2022; Javaid et al., 2023) and have significantly affected university students (Ramón-Arbués et al., 2020). The nuances throughout academic life, including geographical changes, financial difficulties, excessive workload, high levels of stress, competitiveness, sleep deprivation and concerns about the future, are related to high levels of stress, which in turn will sustain the development of psychological disorders (Beiter et al., 2015; Acharya et al., 2018; Barbosa et al., 2020; Demenech et al., 2021). In Brazil, it is estimated that 9.3% and 5.8% of the population suffer from anxiety disorders and depression, respectively (World Health Organization, 2017), with a four times greater prevalence of anxiety and twice as high of depression among university students (Demenech et al., 2021).

Furthermore, with the advent of COVID-19, prophylactic social isolation associated with fear of infection, transmission, suffering, and financial concerns, for example, increased the global prevalence of mental disorders by 25% in the first year of the pandemic (MAIA; DIAS 2020; World Health Organization, 2022). Among university students, this scenario is no different, demonstrating an increase in the prevalence of symptoms of anxiety and depression (Maia; Dias, 2020; Rodrigues et al., 2020; Wang et al., 2020).

Anxiety and depression are pathologies characterized by emotional discomfort and physiological changes, presenting similar symptoms such as difficulty sleeping, fatigue, muscle tension, and irritability (Ramón-Arbués et al., 2020; Freitas et al., 2023). While stress is a response to some external factor and of short duration, anxiety is a persistent response, including symptoms such as fear, anguish, and excessive thoughts about the future. Depression, in turn, includes symptoms such as lack of interest or pleasure in daily activities, changes in appetite, feelings of worthlessness and/or guilt, and suicidal ideations (Barbosa et al., 2020; Ramón-Arbués et al., 2020).

Additionally, the negative effects of anxiety and depression are linked to the chronic use of psychoactive substances. Initially intended to minimize symptoms related to internal tensions, when used chronically, they can exacerbate symptoms and cause dependence, predisposing to the worsening of these disorders, as well as the development of risky behaviors and acts of violence. It is worth noting that psychoactive substances are those capable of acting on the central nervous system (CNS), altering brain function and impacting behavior, mood, and cognition. This group includes both illicit drugs, such as cocaine and cannabis, as well as alcohol, tobacco, opioids, and benzodiazepines, among others (Barbosa et al., 2020; Siebra et al., 2021).

In this sense, assessing the prevalence of anxiety and depression among university students is extremely important, given the direct influence of the university context on mental health, as well as on the use of psychoactive substances. In addition, there is scarce literature on the subject in Brazil, especially among pharmacy students, who have been demonstrating high rates of depression and anxiety (Santos, 2021; Anosike et al., 2022; Pérez et al., 2023), making it difficult to develop policies to improve the quality of life of university students. Therefore, the present study aimed to assess the prevalence of anxiety and depression among pharmacy students at a public institution in the interior of Minas Gerais, investigate the pattern of consumption of psychoactive substances, and analyze the impact of the university and the COVID-19 pandemic on these disorders.

2. Materials and Methods

2.1 Experimental design

This is a quantitative, descriptive, and cross-sectional study on the presence of anxiety and depression, as well as the use of psychoactive substances among pharmacy students at the Federal University of Alfenas, carried out

from 07/01/2023 to 08/01/2023.

Data collection was performed using the Google Forms application. Students were invited via institutional email by the pharmacy course coordinator after authorization to access students' email addresses was granted upon presentation of the Data Use Agreement (DUA). The invitation contained the Written Informed Consent Form (WICF) and, after acceptance, the questionnaires were made available. It is important to emphasize that the virtual environment was chosen to ensure that all students had access to the questionnaires, since the research began shortly after the end of the COVID-19 pandemic, and not all students had fully returned to in-person activities. Exclusion criteria were students under 18 years of age or who did not agree to sign the WICF.

2.2 Demographic and psycho-emotional characterization questionnaire

To collect comprehensive data and gain a broader view of the participants, the researchers developed questionnaires that assessed the sociodemographic and psycho-emotional profile of each participant. The questionnaires included information on age, gender, semester they were studying, use of psychoactive substances, and the impact of the pandemic and university on their behavior.

2.3 Hospital Anxiety and Depression Scale (HADS)

To assess the prevalence of anxiety and depression, the Hospital Anxiety and Depression Scale (HADS) was used, due to its good sensitivity and specificity concerning the Beck Anxiety Inventory (BAI) and the Beck Depression Inventory (BDI), which are considered the gold standard. Developed by Zigmond and Snaith (1983), it was validated in Brazil by Botega et al. (2021). It consists of 14 questions, 7 of which are aimed at assessing anxiety and the other 7 at depression. Each question on the scale consists of 4 options, with scores ranging from zero (0), one (1), two (2), or three (3). From the final sum, the probability of occurrence is determined, with zero (0) to seven points (7), "unlikely"; eight (8) to 11 points, "possible"; and 12 to 21 points, "probable" (Zigmond; Snaith, 1983; Botega et al., 1995; Campos et al., 2020).

2.4 Statistical analysis

The results obtained in the present study were analyzed using the free software R (R version 4.2.2 (2022-10-31 ucrt). First, a descriptive analysis of the data regarding sociodemographic characteristics, prevalence of anxiety and depression among students, and use of psychoactive substances was performed. Then, the normality of the data was verified using the Shapiro-Wilk test, observing that the data did not follow a normal distribution. Thus, the nonparametric Mann-Whitney test was used for the comparison between two groups, and the Kruskal-Wallis test, followed by Dunn's post-hoc test for comparisons involving more groups. A significance level of 5% was considered.

3. Results

3.1 Sociodemographic characterization

The study population consisted of 514 pharmacy students, from the 1st to the 10th period, of which 350 agreed to participate in the research (68.09%). There was a predominance of females (69.43%), with a mean age of 21.72 years. Regarding the period studied, the majority were between the 7th and 10th period (37.43%) (Table 1).

Table 1. Sociodemographic characterization of pharmacy students.

Variable (n = 350)	Statistic
Age	
Min-Max	18-40
Q1-Q3	20-23
Median	21
Average (SD)	21.72 (2.44)

Gender	
Female	243 (69.43%)
Male	103 (29.43%)
Not informed	3 (0.86%)
Gender fluid	1 (0.29%)
Semester you are currently studying	
1st semester	46 (13.14%)
2nd semester	38 (10.86%)
3rd semester	31 (8.86%)
4th semester	30 (8.57%)
5th semester	43 (12.29%)
6th semester	31 (8.86%)
7th semester	31 (8.86%)
8th semester	32 (9.14%)
9th semester	42 (12%)
10th semester	26 (7.43%)
Semester	
1 to 3	115 (32.86%)
4 to 6	104 (29.71%)
7 to 10	131 (37.43%)

Source: Authors, 2024.

3.2 Overall prevalence of anxiety and depression, and prevalence by gender and semester of the course

The overall classification of anxiety and depression among the 350 participants shows a prevalence of anxiety and depression as "probable" in 39.14% and 25.14% of participants, respectively (Table 2).

Table 2. General classification of anxiety and depression among pharmacy students.

Variable	n = 350 (%)
Anxiety	
Unlikely	80 (22.86%)
Possible	133 (38%)
Probable	137 (39.14%)
Depression	
Unlikely	76 (21.71%)
Possible	186 (53.14%)
Probable	88 (25.14%)

Source: Authors, 2024.

Furthermore, when comparing the prevalence between genders, there is a higher prevalence of anxiety in males, with "probable" in 44.66% of respondents. Depression, on the other hand, affects females more, with "probable" in 26.75% of respondents. However, when comparing the variables "unlikely", "possible", and "probable" with each other, considering both genders, it is not possible to observe differences between the groups (Table 3; $p >$ 0.05).

Table 3. Relationship between anxiety and depression among academics according to predominant gender

identities.

Feature	General (n=346)	Female	Male	p-value
Anxiety score				
Min-Max	1-20	1-20	2-17	0.066f
Q1-Q3	8-13	8-12	9-13	$(\eta^2 = 0.01)$
Median	10	10	11	
Average	10.11	9.91	10.57	
SD	3.38	3.44	3.22	
Anxiety classification				
Unlikely	79 (22.83%)	60 (24.69%)	19 (18.45%)	0.128f
Possible	131 (37.86%)	93 (38.27%)	38 (36.89%)	$(\eta^2 = 0)$
Probable	136 (39.31%)	90 (37.04%)	46 (44.66%)	
Depression score				
Min-Max	1-20	1-20	1-15	0.381f
Q1-Q3	8-12	8-12	7-11	$(\eta^2 = 0)$
Median	10	10	10	
Average	9.72	9.86	9.39	
SD	2.93	2.95	2.86	
Depression classification				
Unlikely	75 (21.68%)	48 (19.75%)	27 (26.21%)	0.180f
Possible	183 (52.89%)	130 (53.5%)	53 (51.46%)	$(\eta^2 = 0)$
Probable	88 (25.43%)	65 (26.75%)	23 (22.33%)	

Note: Statistical analyses were performed using the Kruskal-Wallis test followed by Dunn's post-hoc test. Source: Authors, 2024.

Regarding the semester studied, "possible" or "probable" anxiety was observed in 44.4% and 40% of participants who were in the first semesters (1st to 3rd), respectively. Meanwhile, 41.2% of respondents who were in the last semesters (7th to 10th) presented "probable" anxiety. Depression, in turn, had a similar incidence in both semesters. Additionally, when evaluating the variables among themselves, considering the semester studied, there were no significant differences (Table 4; $p > 0.05$).

Table 4. Prevalence of anxiety and depression among students according to semester grouping.

Feature	Semesters			p-value
	1 to 3	4 to 6	7 to 10	
Anxiety score				
Min-Max	3-17	2-17	1-20	0.146f ($\eta^2 = 0.01$)
Q1-Q3	9-12.5	07-12	8-13	
Median	11	10	10	

Average	10.5	9.56	10.17	
SD	2.98	3.55	3.52	
Anxiety classification*				
Unlikely	18 (15.7%)	34 (32.7%)	28 (21.4%)	$0.135f$ ($\eta^2 = 0.01$)
Possible	51 (44.4%)	33 (31.7%)	49 (37.4%)	
Probable	46 (40%)	37 (35.6%)	54 (41.2%)	
Depression score				
Min-Max	1-15	1-17	2-20	$0.893f$ $\eta^2 = -0.01$
Q1-Q3	8-12	8-12	8-11	
Median	10	10	10	
Average	9.66	9.65	9.8	
SD	2.72	2.94	3.08	
Depression classification*				
Unlikely	24 (20.87%)	24 (23.08%)	28 (21.37%)	$0.940f$ $\eta^2 = -0.01$
Possible	61 (53.04%)	53 (50.96%)	72 (54.96%)	
Probable	30 (26.09%)	27 (25.96%)	31 (23.66%)	

Note: *n (%) and statistical analyses were performed using the Kruskal-Wallis test followed by Dunn's post-hoc test. Source: Authors, 2024.

3.3 Influence of the social context (university and the COVID-19 pandemic) on the increase in the prevalence of mental disorders

Analyzing the influence of the social context on the prevalence of mental disorders, it was observed that both the pandemic and entry into university culminated in an increase in the prevalence of anxiety and depression (Table 5; $p < 0.05$).

Table 5. Influence of the social context (university and COVID-19 pandemic) on the increase in mental disorders among academics.

Feature (n=350)	n (%)	Average	SD	p-value
COVID-19 pandemic increase your anxiety/depression?				
Yes	331 (94.6)	10.31	3.25	<0.001***d (r = -0.23)
No	19 (5.4)	6.32	3.38	
The university context increased your anxiety/depression?				
Yes	334 (95.4)	10.23	3.29	0.003**d (r = -0.16)
No	16 (4.6)	7.31	4	

Note: Statistical analyses were performed using the Mann-Whitney test. Source: Authors, 2024.

3.4 Psychoactive substances consumption

When evaluating the use of psychoactive substances, it was found that 64.86% (n=227) of participants use these types of substances, with 36.56% using them daily, and the majority having used them for one year (23.35%)

(Table 6).

Table 6. Consumption of psychoactive substances among pharmacy students.

Variable	n (%)
Consumption of psychoactive substance (n = 350)	
Yes	210 (60%)
No	140 (40%)
Frequency of use (n = 210)	
Almost never	17 (8.1%)
Monthly	6 (2.86%)
Weekends	52 (24.76%)
Two to three days a week	54 (25.71%)
Daily	81 (38.57%)
Time of use in years (n = 210)	
Less than one	43 (20.48%)
One	50 (23.81%)
Two	45 (21.43%)
Three	31 (14.76%)
Four	26 (12.38%)
Five or more	15 (7.14%)

Source: Authors, 2024.

Among the 227 participants who used psychoactive substances, the types of substances were classified, first by general use, without considering whether the substance was used alone or in combination. The results indicate that one of the most used substances is alcohol (70.93%, n = 161), followed by anxiolytics and/or antidepressants (34.80%, n = 79), nicotine (23.79%, n = 54), cannabis (21.59%, n = 49), LSD (3.52%, n = 8) and others (9.69%, n = 22). When evaluating isolated use, it was observed that alcohol was mentioned by 38.33% of the participants (n = 87), anxiolytics and/or antidepressants by 15.42% (n = 35), and cannabis by 2.20% (n = 5), with no isolated use of nicotine, LSD, or other substances being reported. Furthermore, nicotine use was generally associated with alcohol and/or cannabis consumption.

4. Discussion

This study aimed to fill a gap in the literature by providing insights into the prevalence of anxiety and depression, and the use of psychoactive substances among pharmacy students in the interior of Minas Gerais. The study indicated a prevalence of females in the university environment. Anxiety was more prevalent in males, while depression affected females more. In addition, alcohol stood out as one of the most used psychoactive substances among the interviewees and in the academic environment, and the pandemic directly influenced the prevalence of mental illnesses.

The predominance of women in the academic environment has already been demonstrated in previous studies around the world (Neves; Dalgalarrondo, 2007; Beiter et al., 2015; Acharya et al., 2018; Demenech et al., 2021). Furthermore, in Brazil, there is a higher proportion of women enrolled in higher education, reinforcing the present findings (Andifes, 2013).

The results indicate that 39.14% of the participants presented "probable anxiety". In a study carried out in Nigeria with 522 students in the health field (pharmacy, medicine and nursing), a prevalence of anxiety was reported in 61.7% of the participants, according to the Generalized Anxiety Disorder Scale (GAD-7), with 10.3% presenting severe anxiety (Anosike et al., 2022). Additionally, a study carried out at a private university in Brazil, when evaluating 276 academics, found a prevalence of anxiety of 64.5% (Santos, 2021). Finally, when

evaluating 6798 academics from a university in Madrid, a higher prevalence of anxiety symptoms was observed in women according to the GAD-7 (Pérez et al., 2023), in contrast to the present findings, which surprisingly showed a higher prevalence of anxiety in men.

Regarding depression, 25.14% of respondents classified it as "probable". In a study conducted in the USA with 631 participants, it was found that 46.54% of them were at risk of mild to severe symptoms of depression, according to the Center for Epidemiologic Studies Depression Scale (CES-D), and 25.67% were at risk of major depression, with women being the most affected (Acharya et al., 2018). Similarly, a study conducted in Brazil with 1,290 participants found a higher prevalence of depression among women when applying the Mini International Neuropsychiatric Interview questionnaire (Neves; Dalgalarrondo, 2007).

In general, the factors associated with the prevalence of anxiety and depression in university students are related to the fact that the beginning of university life coincides with the transition between adolescence and adulthood. Thus, as demonstrated in this study, insertion into the university environment has a great impact on the development of mental disorders, as it is related to the emergence of stressors such as lifestyle changes, new demands, and inadequate social support (Acharya et al., 2018; Santos, 2021; Anosike et al., 2022). Furthermore, it is believed that the prevalence of depression in females may be linked to women's lack of social power and differences in biological responses to stressors, as well as coping behaviors (Acharya et al., 2018).

Furthermore, the data indicate differences between the incidence of anxiety and the period studied, noting a higher prevalence of anxiety in students who are in the first and last periods. These findings corroborate the literature, highlighting a greater susceptibility in these periods, since the beginning of the course is characterized by the tension between the transition from high school to academic life, while end of the course encompasses feelings about the uncertainties of the future (Santos, 2021). Thus, the influence of gender and the period studied on mental disorders is clear, although we did not find significant differences in the direct comparison between the variables "unlikely", "possible" and "probable".

Additionally, there was a positive impact of the pandemic on the prevalence of mental disorders. A study carried out in Portugal with 619 students in total observed a higher level of anxiety and depression when compared to the non-pandemic period. Furthermore, a study in Greece, using the Depression Anxiety Stress Scale (DASS-21) questionnaire, with 2,322 participants in November 2020 and later in November 2021 with 3,160 participants, showed that extremely severe anxiety affected 12.5% of participants in 2020, rising to 22.6% in 2021. Extremely severe depression affected 16.1% of participants in 2020, rising to 21.7% in 2021 (Kavvadas et al., 2022). It is worth mentioning that the period in which the work was carried out was shortly after the end of the COVID-19 pandemic, indicating the influence of this period on the prevalence results of anxiety and depression in this study and corroborating the literature.

The COVID-19 pandemic, with the closure of universities, profoundly affected the physiological phases of life, aggravating symptoms of anxiety and depression (Maia; Dias, 2020; Rodrigues et al., 2020). During this phase, students were forced to adapt to a new lifestyle and teaching method, in addition to the installation of a feeling of loneliness, due to the separation from friends and family, which favored the consumption of substances with potential for abuse (Rodrigues et al., 2020). In this way, the university environment, which alone generates great impacts, has become even more conflicting.

Thus, when evaluating psychoactive substances, a prevalence of use was found in 64.86% of the participants in this study, corroborating previous studies that found high consumption of psychoactive substances among university students (Santos et al., 2019; Barbosa et al., 2020; Siebra et al., 2021). Additionally, it was observed that alcohol was the most used substance, followed by anxiolytics and/or antidepressants. A study carried out with 131 medical students found that 78.6% of the participants consumed alcohol, while anxiolytics, sedatives, and hypnotics came in second place, covering 29.8% of the studied population (Siebra et al. 2021). Furthermore, when interviewing 116 psychology students, alcohol was the most used substance (43.97%), and anxiolytics (9.48%) and antidepressants (4.31%) ranked 4th and 5th, respectively (Barbosa et al., 2020).

Alcohol is one of the most widely used substances in Brazil, and its high consumption is possibly associated with its high social acceptance. Furthermore, the university environment is associated with greater independence and opportunities for socialization, where alcohol can be easily found. On the other hand, the transition period, the new demands arising from academic life, the distance from family, and the feeling of loneliness may favor the greater use of this substance (Mendonça et al., 2018; Gomes et al., 2018; Santos et al., 2019).

Additionally, the present study found a higher prevalence of nicotine use (23.79%) compared to cannabis (21.59%). However, nicotine use has always been associated with alcohol and/or cannabis consumption. Similarly, previous studies have also demonstrated a high association between alcohol consumption and smoking,

suggesting that alcohol favors other addictions (Petroianu et al., 2010; Mendonça et al., 2018).

Still, studies point to the use of anxiolytics and antidepressants as a public health problem (Alswayed et al., 2022). Antidepressants are the most consumed medications by the general population (Fasanella et al., 2022). Furthermore, the use of benzodiazepines among university students reached its highest level in recent decades (McCabe, 2005). The problem, however, arises when the use of these medications is done without supervision, erroneously or without a medical prescription, which can lead to serious complications such as risky behavior, dependence, suicidal ideation, suicide and even overdose (Rocha et al., 2011; Mendonça et al., 2018; Santos et al., 2019; Siebra et al., 2021; Alswayed et al., 2022). It is worth noting that a worrying factor is the use of polysubstance among those interviewed, thus increasing the risk of adverse outcomes and problems related to physical and mental health (Ford et al., 2021).

Finally, some limitations had to be considered. First, the research was conducted at a single university in the south of Minas Gerais. In addition, we expected a greater participation of students in the study, and this limitation may be related to the difficulty of students in expressing their feelings or commenting on the use of psychoactive substances.

5. Conclusions

In conclusion, university, pandemic, and use of psychoactive substances are directly linked to decreased quality of life and prevalence of mental disorders. Therefore, it is necessary to implement educational measures on the use of psychoactive substances and improve counseling and mental health monitoring programs for university students.

6. Acknowledgments

7. Authors' Contributions

Igor Henrique Buscain de Almeida: conceived and designed research, and conducted experiments. *Márcia Helena Miranda Cardoso Podestá*: conceived and designed research. *Larissa Helena Lobo Torres*: conceived and designed research. *Renata Maria Leal de Souza*: wrote the manuscript. *Márcia Helena Miranda Cardoso Podestá*: wrote the manuscript. *Alessandra Oliveira Silva*: wrote the manuscript. All authors reviewed and approved the manuscript. All authors of the paper have fulfilled the criteria for authorship.

8. Conflicts of Interest

No conflicts of interest.

9. Ethics Approval

Yes applicable. A pesquisa atendeu a Resolução 466/12 do Conselho Nacional de Saúde/Ministério da Saúde, (Brasil, 2012). O projeto foi aprovado pelo Comitê de Ética em Pesquisa (CEP) da Universidade Federal de Alfenas (parecer nº 5.458.303).

10. References

Acharya, L., Jin, L., & Collins, W. (2018). College life is stressful today–Emerging stressors and depressive symptoms in college students. *Journal of American College Health*, 66, 655-664. https://doi.org/10.1080/07448481.2018.1451869

Alswayed, K., Alshuaibi, S., Alsayegh, H., Shulhub, A., Alsultan, R., Khudhair, M., &Haddad, B. (2022). Medical and nonmedical use of psychiatric medications among medical students in Riyadh, Saudi Arabia. *Journal of Family Medicine and Primary Care*, 11(4), 1455-1461. https://doi.org/10.4103/jfmpc.jfmpc_1720_21

Anosike, C., Anene-Okeke, C. G., Ayogu, E. E., & Oshigbo, M. C. (2022). Prevalence of depression and anxiety, and attitudes toward seeking help among first-year pharmacy, medical, and nursing students at a Nigerian

university. *Currents in Pharmacy Teaching and Learning*, 14(6), 720-728. https://doi.org/10.1016/j.cptl.2022.06.002

Andifes. (2013). Andifes e os rumos das universidades federais. Available in: <chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.andifes.org.br/wp-content/uploads/2021/01/Livro-ANDIFES.pdf>. Access on: November 18, 2024.

Barbosa, L. N. F., Asfora, G. C. A., & Moura, M. C. (2020). Anxiety and depression and psychoactive substance abuse in university students. SMAD. *Revista Eletrônica Saúde Mental Álcool e Drogas*, 16(1), 01-08. https://doi.org/10.11606/issn.1806-6976.smad.2020.155334

Beiter, R., Nash, R., McCrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S. (2015). The prevalence and correlates of depression, anxiety, and stress in a sample of college students. *Journal of Affective Disorders*, 173, 90-96. https://doi.org/10.1016/j.jad.2014.10.054

Botega, N. J., Bio, M. R., Zomignani, M. A., Garcia Jr, C., & Pereira, W. A. B. (1995). Transtornos do humor em enfermaria de clínica médica e validação de escala de medida (HAD) de ansiedade e depressão. *Revista Saúde Pública*, 29(5). https://doi.org/10.1590/S0034-89101995000500004

Campos, J. C. L., Morgado, F. E. F., Paiva, S. V., & Souza, I. D. C. S. (2020), Evaluation of the level of anxiety and depression of medical students at Unifeso. *Revista da Jopic*, 3(7), 40-55.

Freitas, P. H. B., Meireles, A. L., Ribeiro, I. K. S., Abreu, M. N. S., Paula, W., & Cardoso, C. S. (2023). Symptoms of depression, anxiety and stress in health students and impact on quality of life. *Revista Latino Americana de Enfermagem*, 17(31), e3884. https://doi.org/10.1590/1518-8345.6315.3885

Demenech, L. M., Oliveira, A. T., Neiva-Silva, L., & Dumith, S. C. (2021). Prevalence of anxiety, depression and suicidal behaviors among Brazilian undergraduate students: A systematic review and meta-analysis. *Journal of Affective Disorders*, 282, 147-159. doi: 10.1016/j.jad.2020.12.108.

Fasanella, N. A., Custódio, C. G., Cabo, J. S., Andrade, G. S., Almeida, F. A., & Pavan, M. V. (2022). Use of prescribed psychotropic drugs among medical students and associated factors: a cross-sectional study. *Sao Paulo Medical Journal*, 140, 697-704. https://doi.org/10.1590/1516-3180.2021.0566.R2.05012022

Ford, J. A., Schepis, T. S., & McCabe, S. E. (2021). Poly-prescription drug misuse across the life course: Prevalence and correlates across different adult age cohorts in the U.S. *International Journal of Drug Policy*, 88, 103017. https://doi.org/10.1016/j.drugpo.2020.103017

Gomes, L. S., Barroso, C. R. D., Silvestre, V. A., Baylão, A. C. P., Garcia, S. C. M., & Pacheco, S. J. B. (2018). Consumo de álcool entre estudantes de medicina do Sul Fluminense – RJ. *Revista de Medicina (Rio J)*, 97(3), 260-266. https://doi.org/10.11606/issn.1679-9836.v97i3p260-266

Herrman, H., Patel, V., Kieling, C., Berk, M., Buchweitz, C., Cuijpers, P., Furukawa, T. A., Kessler, R. C., Kohrt, B. A., Maj, M., McGorry, P., Reynolds, C. F., Weissman, M. M., Chibanda, D., Dowrick, C., Howard, L. M., Hoven, C. W., Knapp, M., Mayberg, H. S., Penninx, B., Xiao, S., Trivedi, M., Uher, R., Vijayakumar, L., & Wolpert, M. (2022). Time for united action on depression: a Lancet–World Psychiatric Association Commission. *The Lancet*, 399, 957-1022. DOI: 10.1016/S0140-6736(21)02141-3

Javaid, S. F., Hashim, I. J., Hashim, M. J., Stip, E., Samad, M. A., & Ahbabi, A. A. (2023). Epidemiology of anxiety disorders: global burden and sociodemographic associations. *Middle East Current Psychiatry*, 30 (44). https://doi.org/10.1186/s43045-023-00315-3

Kavvadas, D., Kavvada, A., Karachrysafi, S., Papaliagkas, V., Cheristanidis, S., Chatzidimitriou, M., & Papamitsou, T. (2022). Stress, Anxiety and Depression Prevalence among Greek University Students during COVID-19 Pandemic: A Two-Year Survey. *Journal of Clinical Medicine*, 11(15), 4263. https://doi.org/10.3390/jcm11154263

Maia, B. R., & Dias, P. C. (2020). Ansiedade, depressão e estresse em estudantes universitários: o impacto da COVID-19. *Estudos de Psicologia (Campinas)*, 37. https://doi.org/10.1590/1982-0275202037e200067

McCabe, S. E. (2005), Correlates of nonmedical use of prescription benzodiazepine anxiolytics: results from a national survey of U.S. college students. *Drug and Alcohol Dependence*, 79(1), 53-62. https://doi.org/10.1016/j.drugalcdep.2004.12.006

Mendonça, A. K. R. H., Jesus, C. V. F., & Lima, S. O. (2018). Fatores associados ao consumo alcoólico de risco entre universitários da área da saúde. Revista Brasileira de Educação Médica, 42(1), 207-215. https://doi.org/10.1590/1981-52712018v42n1rb20170096

Neves, M. C, C., & Dalgalarrondo, P. (2007). Transtornos mentais auto-referidos em estudantes universitários Self-referred mental disorders in university students. *Jornal Brasileiro de Psiquiatria*, 56(4). https://doi.org/10.1590/S0047-20852007000400001

Pérez, T., Pardo, M. C., Cabellos, Y., Peressini, I. U., Ureña-Vacas, I, Serrano, D. R., & González-Burgos, E. (2023). Mental health and drug use in college students: Should we take action?. *Journal of Affective Disorders*, 338, 32-40. https://doi.org/10.1016/j.jad.2023.05.080

Petroianu, A., Reis, D. C. F., Cunha, B. D. S., & Souza, D. M. (2010). Prevalência do consumo de álcool, tabaco e entorpecentes por estudantes de medicina da Universidade Federal de Minas Gerais. *Revista da Associação Médica Brasileira*, 56(5), 568-571. https://doi.org/10.1590/S0104-42302010000500019

Ramón-Arbués, E., Gea-Caballero, V., Granada-López, J. M., Juárez-Vela, R., Pellicer-García, B., & Antón-Solanas, I. (2020). The prevalence of depression, anxiety and stress and their associated factors in college students. *International Journal of Environmental Research and Public Health*, 17, 1-15. https://doi.org/10.3390/ijerph17197001

Rocha, L. A., Lopes, A. C. F. M. M., Martelli, D. R. B., Lima, V. B., & Martelli- Júnior, H. (2011) Consumo de álcool entre estudantes de faculdades de Medicina de Minas Gerais, Brasil. *Revista Brasileira de Educação Médica*, 35, 369-375. https://doi.org/10.1590/S0100-55022011000300010

Rodrigues, B. B., Cardoso, R. R., Peres, C. H. R., & Marques, F. F. (2020). Aprendendo com o Imprevisível: Saúde Mental dos Universitários e Educação Médica na Pandemia de Covid-19. *Revista Brasileira de Educação Médica*, 44(01). https://doi.org/10.1590/1981-5271v44.supl.1-20200404

Santos, D. D. M., Guimarães, M. M., Bodevan, E. C., Rocha, R. L., & Pinheiro, M. L. P. (2019) Uso de substâncias psicoativas entre estudantes universitários. *SMAD Revista Eletrônica Saúde Mental Álcool e Drogas*, 15, 1-9. https://doi.org/10.11606/issn.1806-6976.smad.2019.148973

Santos, J. R. B. (2021). Prevalência de ansiedade entre estudantes de Farmácia em períodos de avaliações de rendimento acadêmico em Universidade privada na cidade de São Paulo, Brasil. *Research, Society and Development*, 10, e25610212526. https://doi.org/10.33448/rsd-v10i2.12526

Siebra, S. M. S., Queiroz, T. D. R., Lucena, E. E. S., Maia, A. M. L. R., Junior, U. C. L. N., & Lima, A. M. P. (2021). Prevalência do consumo de substâncias psicoativas entre estudantes de medicina no interior do Nordeste brasileiro. *Revista Brasileira de Educação Médica*, 45(04). https://doi.org/10.1590/1981-5271v45.4-20210362

Wang, C., Riyu, P., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. R. (2020), Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health*, 17(5), 1729. https://doi.org/10.3390/ijerph17051729

World Health Organization. (2017). Depression and Other Common Mental Disorders Global Health Estimates. Available in: < https://www.who.int/publications/i/item/depression-global-health-estimates>. Access on: November 18, 2024.

World health Organization (2022). Covid-19 pandemic triggers 25% increase in prevalence of anxiety and depression worldwide. Available in: < https://www.who.int/news/item/02-03-2022-covid-19-pandemic-triggers-25-increase-in-prevalence-of-anxiety-and-depression-worldwide>. Access on: November 18, 2024.

Zigmond, A. S., & Snaith, R. P. (1983). The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica*, 67(6), 361-370. https://doi.org/10.1111/j.1600-0447.1983.tb09716.x

Funding

Institutional Review Board Statement

Not applicable.

Informed Consent Statement

Not applicable.

Copyrights