Association of anxiety and use of anxiolytics among health-related college students

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Association of anxiety and use of anxiolytics among health-related college students

Associação entre ansiedade e uso de ansiolíticos entre estudantes universitários da área da saúde

Anxiety and anxiolytics among students

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Abstract

This article aimed to analyze the correlation between anxiety and the use of anxiolytics among university students in the health area. A nationwide online survey was conducted with 286 university students in the health area, 77.9% of whom were female,

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with a mean age of 23.3 years (standard deviation = 4.9). Among the main results, it is noteworthy that 39.86% of the students used anxiolytic medication, most of whom were veterans (87.9%). The use of anxiolytic drugs was detected in 58.8% of students with high trait anxiety and in 60.5% of those with moderate state anxiety. In addition to the statistically significant association between medication use and university type, there was a significant correlation between age and trait anxiety - weak negative. Universities should encourage strategies for managing anxiety and include actions to reduce its symptoms in their support programs.

Keywords: Anxiety; Anxiolytics; University students; Higher education; Mental health.

Resumo

Este artigo teve por objetivo analisar a correlação da ansiedade e uso de ansiolíticos entre estudantes universitários da área da saúde. Foi realizado um survey on-line em âmbito nacional com 286 estudantes universitários da área da saúde, sendo 77,9% do sexo feminino, com a média de idade de 23,3 anos (desvio-padrão = 4,9). Entre os principais resultados, ressalta-se que o uso de medicamento ansiolítico era feito por 39,86% dos estudantes, sendo a maior parte veteranos (87,9%). Foi detectado o uso de medicamentos ansiolíticos em 58,8% dos estudantes com ansiedade traço alta e em 60,5% daqueles com ansiedade estado moderada. Além da associação estatisticamente significante entre o uso de medicamento e o tipo de universidade, houve uma correlação significativa entre idade e ansiedade traço – negativa fraca. As universidades devem incentivar estratégias para o manejo da ansiedade e incluir ações para reduzir seus sintomas em seus programas de apoio.

Palavras-chave: *Ansiedade; Ansiolíticos; Estudantes universitários; Educação superior; Saúde mental*.

Entering university is an important milestone in the lives of many young people. Indeed, it is a period of maturational transformations, including physiological, neurological, and psychological changes that occur during the transition from adolescence to adulthood (Silva & Costa, 2012). This transition can be challenging as it requires adaptation to a new social role and changes in various aspects of the university student's life (Ferreira et al., 2009; Pereira & Ramos, 2021).

In view of this, specifically, university students in the health area face challenges in their academic experience that can negatively affect their physical and mental health (Carli et al., 2022). These challenges include high teaching hours, overload of academic tasks, and curricular internships in hospital and primary care settings where they can be exposed to stressful situations related to illness and the process of becoming ill (Chattu et al., 2020).

Thus, exposure to a challenging environment during academic training can increase susceptibility to the development of anxiety, negatively affecting the academic performance and well-being of the university student (Balapala & Indla, 2017). In this context, it is highlighted that anxiety is defined as a mental state of restlessness and disorder characterized by the presence of worry, avoidance, and emotional reactivity or arousal that cause an unrealistic and unpleasant emotional state in the individual (Gama et al., 2021).

It is in this sense that it is clarified that anxiety can be understood in two different ways: trait anxiety and state anxiety. In the university space, trait anxiety is understood as a stable personality characteristic (Machado et al., 2016), which predisposes the student to perceive the university as threatening and dangerous, causing levels of

anxiety disproportionate to the situation (Balapala & Indla, 2017). On the other hand, state anxiety is characterized as a transient emotional state (Machado et al., 2016) that generates symptoms such as nervousness, worry, and apprehension related to the excitement felt in this environment (Gama et al., 2021).

Global research indicates that the prevalence of anxiety is higher in college students than in non-college young adults of the same age group. Auerbach et al. (2016) reported a prevalence of 31% (n = 1.572) among students, compared to a lower prevalence of 21.4% (n = 4.178) among non-students. In a subsequent study, Auerbach et al. (2018) found that 31.1% (n = 13.984) of students had an anxiety condition. In the Brazilian context, Demenech et al. (2021) estimated that approximately 37.75% (n = 3.193) of higher education students had anxious symptoms.

Given this worrying scenario, anxious symptoms may contribute to the inappropriate use of prescription anxiolytic drugs among university health students (Pérez et al., 2023). This population is a target for the misuse of these psychotropic drugs, as they have a certain degree of economic independence, are free from direct supervision by parents or guardians, and are more likely to try them to help cope with the overload of curricular activities (Nogueira et al., 2021; Souza et al., 2022).

To support this perspective, the relationship between the use of anxiolytic medications and anxiety has been mainly investigated among university students. A global study conducted by Auerbach et al. (2018) revealed that 12.6% of university students with anxious symptoms were using these medications. Among the most commonly used are benzodiazepines (BZDs; 5.9%), selective serotonin reuptake inhibitors (SSRIs; 3.9%), and serotonin-norepinephrine reuptake inhibitors (SNRIs;

2.2%). In Brazil, a study found that 24.3% of medical students used antidepressant and/or anxiolytic drugs (Souza et al., 2022).

The literature has also indicated that female university students are more vulnerable to anxiety (Blanco et al., 2021) and to taking anxiolytic medication (Martínez-Líbano et al., 2023). This evidence suggests the need for a more detailed analysis of possible sex-related differences. Although there are studies in this regard, the prevalence of anxiety and the use of anxiolytic medications are usually treated separately in the national literature. Similarly, national empirical studies on prevalence tend to focus on samples of medical students (Chattu et al., 2020; Souza et al., 2022) and nursing students (Marchi et al., 2013; Paixão, et al., 2021).

Considering the scarcity of research in Brazil on the correlation between anxiety and consumption of anxiolytic drugs, especially among university students in the health area who work directly in the health sector, this article presents a contribution by analyzing the correlation of anxiety and use of anxiolytics among university students in the health area.

Method

This is a cross-sectional web survey study with a descriptive and correlational approach. For greater methodological rigor, this work follows the guidelines proposed by Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) (Cevallos et al. 2014). The research setting covered three geographic regions of Brazil (Northeast, Southeast, and South). Data collection was online and took place from September 15 to October 14, 2021, over a period of 30 days. The sample consisted of undergraduate university students in the health area.

Participants

The study included 286 university students from 13 different undergraduate courses in biological and health science areas (biology, biomedicine, physical education, nursing, pharmacy, physiotherapy, speech therapy, medicine, nutrition, dentistry, psychology, chiropractics, and occupational therapy). The participants were selected by convenience (nonprobability sampling) and by meeting the following criteria: (a) being undergraduate in the health area in Brazilian Higher Education Institutions (HEI), (b) being 18 years old or older, and (c) having access to the internet.

In the present study, the students are from different educational institutions, public, private, and community, and from some Brazilian states in the Northeast (Alagoas, Bahia, and Sergipe), Southeast (Minas Gerais, Rio de Janeiro, and São Paulo), and South (Paraná and Rio Grande do Sul) regions.

Instruments

Sociodemographic and clinical questionnaire: addressed questions such as age, ethnicity, sex, marital status, state, course, term, university, symptoms (physical and psychological) of anxiety, and history of anxiolytic medication use.

Anxiety Trait-State Inventory (IDATE): created by Spielberger et al. (1970) and validated in Brazil by Biaggio and Natalício (1979). The Cronbach's alpha coefficient of the instrument is 0.86 to 0.95 (Spielberger et al., 1980). It consists of two 40-item scales distributed in a four-point Likert format, ranging from "4-very much" to "1-absolutely not". The first scale evaluates the anxiety state (IDATE-E), and the second evaluates the anxiety trait (IDATE-T). Each evaluative part consists of 20 alternatives (Grös et al., 2007). In this study, Cronbach’s alpha was 0.85, revealing that the internal consistency of the data is satisfactory.

Procedures

The study was approved by the Research Ethics Committee of Tiradentes University (CAAE No. 20058919.5.0000.5371) and complied with national and international standards of ethics in research involving human beings.

Initially, data collection was carried out through an online questionnaire, made available through a Google Forms link sent to the institutional e-mails of university students regularly enrolled in health courses at a private university in Sergipe where one of the researchers comes from.

Subsequently, the virtual snowball sampling method was used to disseminate a link to access the survey on the social network Instagram. This referral technique, known as viral strategy, consisted of sending a message presenting the research and requesting that it be shared with the recipient's network of contacts. Thus, university students from any health course, educational institution or location could access and answer the questionnaire.

In general, when accessing the questionnaire link, respondents were directed to the Informed Consent Form (ICF) screen, which ensured voluntary participation and anonymity, in addition to allowing withdrawal from the study without prejudice to psychological integrity. Consent was obtained through electronic acceptance, and it was necessary to click on "I agree to participate in the research" to continue. Next, participants were directed to a page containing the sociodemographic and clinical questionnaire and the IDATE, with an average duration of 20 minutes.

Data Analysis

The data obtained were organized in a Microsoft Excel spreadsheet through double typing and later validation to control for possible errors and later exported and analyzed in the software Statistical Package for the Social Sciences (SPSS) version 25.0 so that the sociodemographic and clinical profile data were characterized by absolute and relative percentage frequencies (descriptive statistics). The Kolmogorov–Smirnov test with Lilliefors correlation was used to verify the normality assumption.

Then, Fisher's exact test was performed in quadratic tables (rows and columns have the same number) and Pearson's chi-square test ($\chi 2$) in nonsquare tables (number of rows and columns differ), both aiming to evaluate the data distribution of the variables in relation to the symptomatic levels of anxiety through the scores of the IDATEs (IDATE-T and IDATE-E).

For the correlational analysis, Kendall's Tau-b test was used to assess the correlation of the scores (IDATE) between both indices, analyzing the strength of the correlation with the variables age, period and medications used. Additionally, the agreement rate between IDATE-T and IDATE-E was verified through the Kappa (K) coefficient test. For all analyses, a 95% confidence interval and a significance level of $p < 0.05$ were adopted.

Results

Table 1 presents the characterization of the sample through the descriptive analysis of sociodemographic and clinical data. Of the 286 research participants, the majority are female (77.9%), with a mean age of 23.3 years (standard deviation SD= 4.9). They are veterans (87.9%), enrolled in the Medicine course (44.2%), self-declared white (49.8%), single (85.8%), attended private universities (80.4%), and mostly lived in the state of Sergipe (58.2%).

< Insert Table1>

Regarding the use of anxiolytic drugs, it was observed that 39.9% of the participants used these drugs, while 60.1% did not use them. In this context, Table 2 presents a correlation analysis between age, period, amount of anxiolytic medication, and state-trait anxiety. It is noteworthy that no statistically significant relationship was found between age, period, amount of anxiolytic medication, and state anxiety. The same occurred between period, amount of anxiolytic medication, and trait anxiety. However, there was a weak and significant negative correlation between age and trait anxiety ($r = -0.114$, $p = 0.007$).

< Insert Table 2>

When analyzing the comparison of the use of anxiolytic drugs according to the type of university and sex (Table 3), a higher frequency of anxiolytic drug use was observed among female students (42.3%) and those attending public universities (55.3%). In addition, there was a statistically significant association between the type of university and the use of anxiolytic drugs ($p=0.042$), but not between sex and the use of anxiolytics.

< Insert Table 3>

Regarding the use of anxiolytic drugs and state-trait anxiety (Table 4), it was found that there was a statistically significant relationship between high trait anxiety with the use of anxiolytic drugs ($p=0.019$).

In terms of the correlation between gender and state anxiety, it was noted that a higher proportion of women (68%) exhibited moderate anxiety levels in comparison to men (60.3%). Regarding sex and trait anxiety, 51.8% of women had high levels of anxiety, while 57.1% of men had moderate levels. These data suggest the existence

of differences in the prevalence of anxiety between men and women, depending on the type of anxiety assessed (state or trait).

Table 4 reveals that, during the data collection period, participants used twenty-one different medications. Anxiolytic BZDs (Diazepam and Clonazepam) were the most commonly consumed, followed by antidepressants of the SSRI class (Escitalopram, Citalopram, and Fluoxetine) and ADTs (Amitriptyline), respectively. These data provide information on the most commonly used medications by survey participants.

< Insert Table 4>

Discussion

This study analyzed the correlation of anxiety and use of anxiolytics among university students in the health area. The main findings showed that 58.8% of the students investigated reported the use of anxiolytic drugs, with most of the sample being veterans. The presence of anxious symptoms leads students to seek quick solutions to deal with the overload of curricular activities, including the use of medications (Nogueira et al., 2021; Pérez et al., 2023).

In addition, the university is a critical environment for the use of anxiolytic drugs and the development of problematic patterns of consumption of these drugs (Vera et al., 2021). One study found that 20% of senior health students use anxiolytics daily due to anxiety before exams, difficulties in coping with academic responsibilities, and fulfilling curricular and/or extracurricular internship activities (Fond et al., 2019).

An association was also observed between the type of university and the use of anxiolytic drugs. Female students had a higher occurrence of use of these drugs, a result in line with the findings of other national studies (Aquino et al., 2010; Bojanić et al., 2021; Souza et al., 2022). This result can be partially explained by the greater

exposure of women to medicalization at all stages of their life, greater demand for medical care, and educational campaigns more directed at them (Forster et al., 2019). On the other hand, the lower percentage of male participants may be attributed to the tendency of men to be less likely to seek help to deal with their mental health problems (Souza et al., 2022).

It is also worth adding that, although university students are at higher risk, the sample of this study was composed mostly of women, which may have influenced the results. Therefore, it is important to consider the composition of the sample when interpreting the results and to conduct further research to confirm these observations.

In general terms, the main finding of the study was that 58.8% of health students with high trait anxiety and 60.5% of those with moderate state anxiety used anxiolytic drugs. In addition, students attending public universities made greater use of anxiolytic drugs. These data are corroborated by a national study conducted by Marchi et al. (2013), which revealed that 34% of nursing students at a public university have mild anxiety, and 16% of them use or have used some type of anxiolytic medication.

Another important result of this research was that, compared to male participants, female participants showed higher levels of moderate state anxiety. Recent research suggests that state anxiety in female university students is related to transient anxiety, which varies according to emerging stimuli from their academic experiences and can cause temporary negative emotional states (Deer et al., 2018; Thomas & Cassady, 2021).

In contrast, an international study by Nazir et al. (2021) reported that female university students had higher levels of trait anxiety ($M = 48.45$, $SD = 12.79$, $p < 0.001$) compared to males who had higher levels of state anxiety ($M = 41.85$, $SD = 8.91$, $p < 0.001$). Studies have shown that manifestations of trait anxiety in university students

may be related to personality traits and a stable tendency to experience anxiety in academic situations (Bados et al., 2010; Williams & Crawford, 2016).

The present study also demonstrated that participants use a variety of medications to cope with anxiety symptoms, with BZDs being the most commonly used, followed by SSRIs and ADTs, respectively. It is noteworthy that the data presented provide information on the most commonly used medications by the participants at the time of the survey data collection. In this context, anxiolytics are considered to be all psychotropic drugs classified as antidepressants, antipsychotics, BZDs, barbiturates, and other sedative-hypnotic medications that act on mild to severe anxiety symptoms (Morris et al., 2021).

In addition, it is important to emphasize that if anxiety is not adequately treated with psychological monitoring and only the use of anxiolytics is made, this can lead to adverse reactions or dependence among university students, resulting in aggravations to the physical and mental health of this population (Morcerf & Acero, 2021).

Conclusion

The results of this research show that just over half of a sample of university students in the health field were using anxiolytic medication. There was a higher occurrence of the use of these drugs among females and those attending public universities. Our study also revealed that a significant portion of university students with high trait anxiety and those with moderate state anxiety use anxiolytic medications. These results contribute to knowledge in the area, showing the presence of state-trait anxiety symptoms among students and the importance of using the IDATE for screening anxious symptoms in this population.

In addition, this research can contribute to the practice of health psychology, expanding attention to the university context. From this investigation, it was found that the prevalence of consumption of anxiolytic drugs among university students was higher than expected, considering the context (university) and the stage of the life cycle of this population (young adult).

In the national context, there are no studies investigating the relationship between anxiety and the use of anxiolytics in students from different undergraduate courses in the health area. Existing research tends to focus on medical or nursing students. This gap represents a challenge for universities and researchers, who need to conduct studies in this area to reflect the national reality and contribute to the implementation of preventive actions, as well as to evaluate their evolution and impact.

This study presents some limitations that should be considered. The first is the cross-sectional design, which prevents conclusions about cause-and-effect relationships. Another limitation is the small sample size, which may affect the representativeness of the results. However, the data obtained may be useful for future longitudinal studies, despite the limitation of sample size. In addition, the use of a self-administered questionnaire may generate memory bias and interpretation of questions by participants. The sample is also limited in terms of types of higher education institutions, with low representativeness of public and community universities.

Additionally, another limitation of the study is the composition of the sample, which was mainly composed of women. To overcome this limitation in future studies, one could try to balance the proportion of men and women in the sample, using stratified or quota sampling techniques. The generalization of the results should be done with caution, as convenience sampling resulted in a higher concentration of participants from the state of Sergipe, which does not guarantee the

representativeness of the results for the entire Brazilian population. Therefore, new research should replicate this study, considering the limitations pointed out.

Despite presenting limitations, this research is one of the first to investigate the correlation between anxiety and anxiolytic use in university students from different health courses in the country, which gives merit to the study. The results showed a frequency ranging from moderate to high of state and trait anxiety associated with the use of anxiolytic drugs among university students in the health area. In view of this, it is understood that the university is a favorable environment for health promotion and, therefore, studies that evaluate anxiety and subsidize strategies for its management should be encouraged in order to reduce the need for medication use among students.

Contribution

Ma. D. PEREIRA, J. P. SILVA and M. F. SANTANA contributed to the conception and design of the overall project (data analysis and interpretation), as well as for the review and approval of the final version of this article. C. A. S. ROSA and P. F. S. ANTUNES contributed to the data collection, interpretation and discussion of the results. Mi. D. PEREIRA contributed to the design, supervision of data collection, interpretation and discussion of results. J. A. MORAES FILHO contributed to data analysis, interpretation and discussion of results.

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Table 1.
Distribution of university health students according to sociodemographic variables

Variable	**N (%)**
Ethnicity	
Yellow	2 (0.7)
White	142 (49.8)
Indigenous	6 (2.1)
Black	26 (9.1)
Brown	109 (38.2)
Sex	
Female	222 (77.9)
Male	63 (22.1)
Marital status	
Married	17 (6)
Divorced	1 (0.4)
Single	267 (93.7)
State	
Alagoas	18 (6.3)
Bahia	9 (3.2)
Minas Gerais	16 (5.6)
Outros	35 (12.3)
Paraná	14 (4.9)
Rio de Janeiro	1 (0.4)
Rio Grande do Sul	6 (2.1)
São Paulo	20 (7)
Sergipe	166 (58.2)
Course	
Biology	1 (0.4)
Biomedicine	13 (4.6)
Physical Education	3 (1.1)
Nursing	78 (27.4)
Pharmacy	14 (4.9)
Physiotherapy	9 (3.2)
Phonoaudiology	2 (0.7)
Medicine	126 (44.2)
Nutrition	5 (1.8)
Dentistry	2 (0.7)
Psychology	29 (10.2)
Chiropractic	1 (0.4)
Occupational Therapy	2 (0.7)
Periodo	
1	11 (3.9)
2	24 (8.4)
3	19 (6.7)
4	17 (6)
5	40 (14)
6	35 (12.3)
7	24 (8.4)
8	74 (26)
9	19 (6.7)
10	21 (7.4)
12	1 (0.4)
Time of course	
Entrants	35 (12.1)
Veterans	250 (87.9)
Higher Education Institution	
Community	9 (3.2)
Private	229 (80.4)
Public	47 (16.5)
Use of anxiolytic drugs	
Yes	114 (39.9)
No	172 (60.1)

Table 2.
Correlation between age, period, amount of anxiolytic medication and state-trait anxiety

Variable		State anxiety	Anxiety trait
Age	r	-0.044	-0.114
	p	0.301	0.007
Period	r	-0.037	-0.066
	p	0.396	0.125
Amount of anxiolytic medication	r	0.132	-0.065
	p	0.081	0.390

Note: $p \leq 0.05$. Kendall's tau b correlation test.

r: correlation coefficient, p: significance level.

Table 3.
Comparison of the variables studied with the use of anxiolytics

Variable	Use of anxiolytic drugs		p
	Yes	*No*	
Higher Education Institution			
Community	2 (22.2)	7 (77.8)	0.042*
Private	86 (37.6)	143 (62.4)	
Public	26 (55.3)	21 (44.7)	
Sex			
Female	94 (42.3)	128 (57.7)	0.146**
Male	20 (31.7)	43 (68.3)	

Note: p ≤ 0.05. *χ2: Pearson's chi-square test. **Fisher's exact test. p: significance level.

Table 4.

Multivariate association between anxiolytic use and trait-state anxiety

Variable	IDATE-E				IDATE-T			
	No or mild anxiety	Moderate anxiety	High anxiety	*p	No or mild anxiety	Moderate anxiety	High Anxiety	*p
Anxiolytic use	2 (1.8)	69 (60.5)	43 (37.7)	0.187	1 (0.9)	46 (40.4)	67 (58.8)	0.019
Sex								
Female	3 (1.4)	151 (68)	68 (30.6)	0.283	1 (0.5)	106 (47.7)	115 (51.8)	0.379
Male	0 (0)	38 (60.3)	25 (39.7)		0 (0)	36 (57.1)	27 (42.9)	
Diazepam	0 (0)	8 (72.7)	3 (27.3)	0.649	0 (0)	6 (54.5)	5 (45.5)	0.582
Amitriptyline	0 (0)	8 (72.7)	3 (27.3)	0.722	0 (0)	3 (37.5)	5 (62.5)	0.945
Bupropion	0 (0)	4 (100)	0 (0)	0.259	0 (0)	2 (50)	2 (50)	0.911
Buspirone	0 (0)	2 (40)	3 (60)	0.564	0 (0)	2 (40)	3 (60)	0.977
Citalopram	0 (0)	9 (69.2)	4 (30.8)	0.730	0 (0)	7 (53.8)	6 (46.2)	0.552
Clonazepam	1 (2)	30 (60)	19 (38)	0.982	0 (0)	19 (38)	31 (62)	0.588
Desvenlafaxine	0 (0)	3 (60)	2 (40)	0.952	0 (0)	2 (40)	3 (60)	0.977
Duloxetine	0 (0)	2 (50)	2 (50)	0.855	0 (0)	2 (50)	2 (50)	0.911
Escitalopram	0 (0)	7 (87.5)	1 (12.5)	0.268	0 (0)	5 (62.5)	3 (37.5)	0.410
Fluoxetine	0 (0)	10 (50)	10 (50)	0.399	0 (0)	9 (45)	11 (55)	0.818
Fluvoxamine	0 (0)	0 (0)	2 (100)	0.186	0 (0)	0 (0)	2 (100)	0.490
Levomepromazine	0 (0)	1 (100)	0 (0)	0.720	0 (0)	1 (100)	0 (0)	0.474
Sertraline	0 (0)	4 (40)	6 (60)	0.301	0 (0)	4 (40)	6 (60)	0.952
Venlafaxine	0 (0)	3 (75)	1 (25)	0.720	0 (0)	1 (25)	3 (75)	0.793
Zolpidem	0 (0)	2 (66.7)	1 (33.3)	0.956	0 (0)	2 (66.7)	1 (33.3)	0.953
Bromazepam	0 (0)	3 (75)	1 (25)	0.821	0 (0)	2 (50)	2 (50)	0.911
Clobazam	0 (0)	1 (100)	0 (0)	0.720	0 (0)	1 (100)	0 (0)	0.474
Clorpromazine	0 (0)	0 (0)	1 (100)	0.435	0 (0)	0 (0)	1 (100)	0.702
Vortioxetine	0 (0)	1 (100)	0 (0)	0.720	0 (0)	0 (0)	1 (100)	0.702
Trazodone	0 (0)	2 (66.7)	1 (33.3)	0.956	0 (0)	1 (33.3)	2 (66.7)	0.953
Quetiapine	0 (0)	0 (0)	2 (100)	0.186	0 (0)	1 (50)	1 (50)	0.955

Note: $p \leq 0.05$. *$\chi 2$: Pearson's chi-square test. p: significance level.

Declaration of conflicting interests

We, Mara Dantas Pereira, Míria Dantas Pereira, Michele Fraga de Santana, Joilson Pereira da Silva, João Alves de Moraes Filho, Caique Anizio Santos da Rosa, and Paola Fernanda Santos Antunes, authors of the manuscript titled ‘Association of anxiety and use of anxiolytics among university students in the health area,’ declare that we have no conflicts of interest of a financial, institutional, commercial, political, religious, academic, or personal nature.

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