

Stress Symptoms and Sociodemographic Factors in Public University Students

Sintomas de Estresse e Fatores Sociodemográficos em Estudantes de Universidade Pública
Síntomas de Estrés y Factores Sociodemográficos en Estudiantes de Universidades Públicas

RESUMO

Objetivo: Analisar a relação entre os níveis de sintomas de estresse e os fatores sociodemográficos de estudantes universitários do extremo norte do Brasil. **Métodos:** Estudo epidemiológico descritivo de abordagem quantitativa, de corte transversal, realizado em uma Instituição de Ensino Superior Pública. A amostra contou com 584 discentes. **Resultados:** O estudo revela a maior prevalência do sexo feminino (60,6%) como participantes da pesquisa, e na área de Ciências da Saúde. Diante dos estudantes que afirmam ser fumantes tem 84% mais chances de apresentar sintomas de estresse severo/extremamente severo, bem como os da área de Engenharia que são mais prováveis de apresentar sintomas ansiosos. **Conclusão:** Foi identificado a prevalência de estudantes do sexo feminino, fumantes, estudantes nos primeiros anos de curso e da área da saúde apresentam maior probabilidade de manifestar sintomas de estresse. Contudo, é importante ressaltar a importância do suporte Universitário e familiar na trajetória acadêmica dos estudantes.

DESCRIPTORES: Estresse. Estudantes Universitários. Saúde mental. Universidades.

ABSTRACT

Objective: To analyze the relationship between stress symptom levels and sociodemographic factors among university students in the far north of Brazil. **Methods:** A descriptive, cross-sectional, quantitative epidemiological study was conducted at a public higher education institution. The sample consisted of 584 students. **Results:** The study revealed a higher prevalence of female participants (60.6%) in the health sciences field. Students who reported being smokers were 84% more likely to present severe/extremely severe stress symptoms, and students in the engineering field were more likely to present anxiety symptoms. **Conclusion:** The prevalence of female students, smokers, students in the first years of their studies, and students in the health field were more likely to manifest stress symptoms. However, it is important to emphasize the importance of university and family support in the academic trajectory of students.

DESCRIPTORS: Stress. College Students. Mental Health. Universities.

RESUMEN

Objetivo: Analizar la relación entre los niveles de síntomas de estrés y los factores sociodemográficos entre estudiantes universitarios del extremo norte de Brasil. **Métodos:** Se realizó un estudio epidemiológico descriptivo, transversal y cuantitativo en una institución pública de educación superior. La muestra estuvo compuesta por 584 estudiantes. **Resultados:** El estudio reveló una mayor prevalencia de participantes mujeres (60,6%) en el área de ciencias de la salud. Los estudiantes que reportaron ser fumadores tuvieron un 84% más de probabilidades de presentar síntomas de estrés severos/extremadamente severos, y los estudiantes del área de ingeniería tuvieron más probabilidades de presentar síntomas de ansiedad. **Conclusión:** La prevalencia de estudiantes mujeres, fumadores, estudiantes en los primeros años de sus estudios y estudiantes del área de salud tuvieron una mayor probabilidad de manifestar síntomas de estrés. Sin embargo, es importante enfatizar la importancia del apoyo universitario y familiar en la trayectoria académica de los estudiantes.

DESCRIPTORES: Estrés. Estudiantes universitarios. Salud mental. Universidades

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ID Leila Martins Lima
Nurse graduated from the Federal University of Roraima.
ORCID: <https://orcid.org/0009-0009-0947-5348>

ID Gleidilene Freitas da Silva
Nurse, Master's degree in Health Sciences from the Federal University of Roraima. Substitute professor in the Bachelor's degree program in Nursing at the Federal University of Roraima.
ORCID: <https://orcid.org/0000-0002-7697-0770>

ID Barbara Almeida Soares Dias
Nurse, PhD in Public Health Epidemiology from the National School of Public Health – FIOCRUZ. Adjunct professor in the bachelor's degree program in Nursing at the Federal University of Roraima.
ORCID: <https://orcid.org/0000-0001-8656-1391>

ID Carlos Eduardo Gomes
Economist, PhD in Economic Sciences from the State University of Maringá. Professor and researcher affiliated with the Higher School of Defense.
ORCID: <https://orcid.org/0000-0003-1702-057X>

ID Karla Emanuely da Silva Rocha
Nurse, Master's student in Health and Biodiversity at the Federal University of Roraima.
ORCID: <https://orcid.org/0009-0002-3667-6275>

ID Paula Nayne Chaves Silva
Nurse, Master's student in Health and Biodiversity at the Federal University of Roraima
ORCID: <https://orcid.org/0000-0002-2336-3387>

ID Rodrigo de Barros Feltran
Biologist, PhD candidate in Biodiversity and Biotechnology at the BIONORTE Network. Adjunct professor in the Department of Animal Science at the Federal University of Roraima
ORCID: <https://orcid.org/0000-0003-1702-057X>

ID Carla Araújo Bastos Teixeira
Nurse, PhD in Psychiatric Nursing from the Ribeirão Preto School of Nursing – USP. Adjunct professor in the bachelor's degree program in Nursing at the Federal University of Roraima.
ORCID: <https://orcid.org/0000-0002-7357-772X>

INTRODUCTION

Stress and other mental health problems are increasingly common among university students. The pressure to succeed and meet deadlines can be overwhelming, especially for those struggling to balance academic and personal life. Stress can lead to serious consequences, including substance abuse, social isolation, and sleep deprivation⁽¹⁾. The pandemic has interfered with various aspects of students' lives and health, causing mental damage and psychological distress in the university community and society in general⁽²⁾.

Stress is a way for the body to react to an event that is often unexpected by humans, generating a physical and emotional response to the situation. Often not immediately identified, stress can evolve into other health conditions such as anxiety and depression, resulting from emotional turmoil⁽³⁾.

A study found that students with

higher stress levels are also those who have moderate/severe depression. This finding raises awareness of the fact that these university students may leave academia already ill and, upon entering the job market, end up having problems in their interpersonal relationships, which also has implications for worker health⁽⁴⁾.

University students may experience stress due to a variety of factors, including personal problems, financial problems, academic problems, and social pressure. Students may also experience stress due to their social life, such as the need to balance their social life with their academic life, or the pressure to be part of specific social groups. A lack of stress management skills can worsen the situation for university students, leading to more serious mental health problems⁽⁵⁾.

Given the impact of university stress in Brazil, it is essential that students, teachers, and educational institutions adopt measures to prevent and treat the problem. It is im-

portant that educational institutions promote a healthy academic environment and encourage a culture of self-care and well-being, with actions that promote students' quality of life and mental health, such as physical activities, meditation, and relaxation practices. In addition, it is essential that students have access to mental health professionals for support and treatment.

Entering university is an important milestone in a student's life and contributes to their intellectual and social development. However, during their years of study, students face many daily challenges and recurring stressful situations that directly affect their academic performance. This requires greater attention from universities toward their students.

Based on this scenario, this study aims to analyze the relationship between stress symptom levels and sociodemographic factors in a university population at a higher education institution in the far north of Brazil.

METHODOLOGY

This is a descriptive epidemiological study with a quantitative, cross-sectional approach. This analysis is part of a larger project entitled "Interface between Mental Health and Sociodemographic Determinants in Higher Education Institutions in the Amazon Region."

The study was conducted at a public higher education institution (HEI) located in the extreme north of Brazil in the Amazon region. Data collection was carried out at three campuses of the Federal University of Roraima (UFRR): Paricarana, Murupu, and Cauamé. Data collection took place between March and June 2023.

The study population consisted of undergraduate students (bachelor's and teaching degrees) at the three campuses of the Federal University of Roraima (UFRR). Students regularly enrolled in the first semester of 2023, aged 18 years or older, were included. Students in irregular situations, students on maternity or sick leave, and indigenous and migrant students were excluded.

The total number of potential participants was 5,432 students, of which 584 were selected through the sample calculation proposed in ⁽⁶⁾ $N = Z^2 \cdot p \cdot q / E^2$. For this, a predicted prevalence of 50% of stress symptoms, a maximum error of 5%, and a 95% confidence interval (95% CI) were used. Considering the differences in stress symptoms between courses, the sample was stratified by course, ensuring the representativeness of the sample.

A questionnaire was administered to characterize sociodemographic and health characteristics, and the Depression Anxiety and Stress Scale (DASS-21) was used as a data collection instrument. The questionnaire was self-designed and consisted of 19 questions with the following vari-

ables: age, gender, marital status, religion, with whom they live, number of people living in the household, family income, course, medical consultation in the last year, self-reported diseases, use of medications, alcohol and tobacco use. Missing data were excluded from the analysis, and no specific values were assigned.

Data collection was carried out through the in-person application of a questionnaire. This was applied to a control group, and the questions were later adjusted to ensure greater dynamism. In addition, the questionnaire administrators underwent specific training to avoid any bias during data collection.

To process the responses, the data collected was initially coded and tabulated by the research team in a Microsoft Windows Excel spreadsheet, using double data entry. Next, descriptive statistics of the sample characteristics and variables were performed using absolute and relative frequencies. The severity of stress symptoms was then recategorized as "normal," "mild/moderate," and "severe/extremely severe." Subsequently, sociodemographic, behavioral, and health characteristics were analyzed according to the severity of stress symptoms using Pearson's chi-square and Fisher's exact tests. Finally, to verify the factors associated with stress symptoms, multinomial logistic regression was used, with only variables with a p-value < 5% remaining in the final model. Thus, the results were presented using crude odds ratios (COR) and adjusted odds ratios (AOR).

The DASS-21 – Short Form was used to measure stress symptoms. This is a non-diagnostic scale that assesses the severity of core symptoms of depression, anxiety, and stress. Studies have validated it for Portuguese ^(6,7) and for university students ^(6,7). The subscale that assesses stress symptoms is present in items 5, 10,

13, 16, 17, and 21. Responses are given on a 4-point Likert scale (0 = did not apply at all to 3 = applied very much or most of the time).

For the final score, the values of each subscale were added together and multiplied by two to correspond to the score on the original scale (DASS-42) ⁽⁸⁾. The classification of stress symptoms (0-9 = normal; 10-12 = mild; 13-20 = moderate; 21-17 = severe; 28-42 = extremely severe).

The areas of knowledge were divided according to pre-established guidelines from CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior), which aims to organize and systematize areas of knowledge and facilitate the provision of information related to research projects. CAPES divides the major areas of knowledge into: Health Sciences, Applied Social Sciences, Linguistics, Literature and Arts, Exact and Earth Sciences, Humanities, Engineering, Agricultural Sciences, Biological Sciences ⁽⁹⁾.

The results were robust to heteroscedasticity. The article follows the recommendations of the Strobe (Strengthening the Reporting of Observational Studies in Epidemiology) instrument.

This research followed the norms of Resolution CNS/MS Nº 466/12, which regulates the guidelines and norms for research involving human beings, and was carried out after approval by the Research Ethics Committee (CEP) of the Federal University of Roraima with CAAE: 66050522.0.0000.5302. Furthermore, the research did not receive any funding for its implementation.

RESULTS

The results will be presented descriptively with the aid of tables and graphs. The sample consisted of 584 participants. The first presentation is a sociodemographic and health char-

acterization.

This study had a higher prevalence of female participants (60.65%), with males accounting for 37.29%. The most prevalent age group was students between 20 and 29 years old (67.70%), followed by those aged 18 to 19 years (24.05%).

Approximately 91.24% were single, and 55.67% identified themselves as mixed race. In terms of religion, 27.32% were Catholic and 26.29% Protestant. Overall, 48.28% were practicing members of their religion.

Most students claim not to smoke (92.78%) and 58.25% do not drink alcohol. Few take medication on a regular basis, only 25.26%.

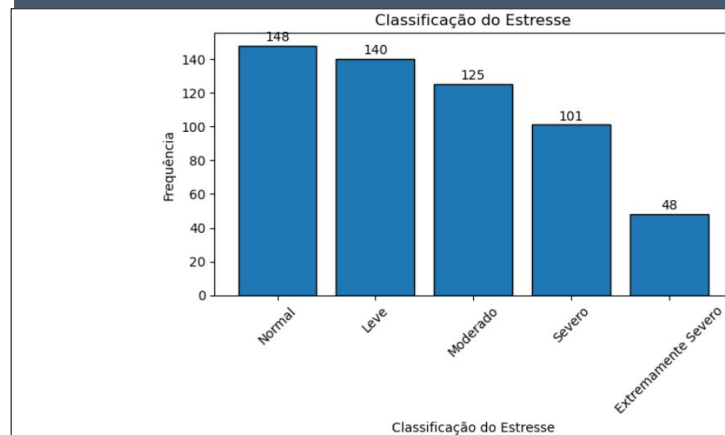
When it comes to medical consultations in recent months, only 35.74% sought care, and overall, 18.21% of the students in the survey have a previous medical diagnosis.

Health Sciences courses had the highest percentage with 27.32% of students participating in the survey, followed by Social Sciences with 21.99%.

Regarding stress symptoms, it was observed that 25.43% have normal symptoms, 24.05% have mild symptoms, 21.48% have moderate symptoms, 17.35% have severe symptoms, and 8.25% have extremely severe symptoms.

Stress can be classified as normal, mild, moderate, severe, and extremely severe. Graph 1 shows that within the stress classification, the majority are considered normal, with 148 students. There were 140 students with mild stress, and only 48 were considered to have extremely severe stress.

Graph 1. Characterization of the sample according to stress classification. Boa Vista, Roraima, 2023.



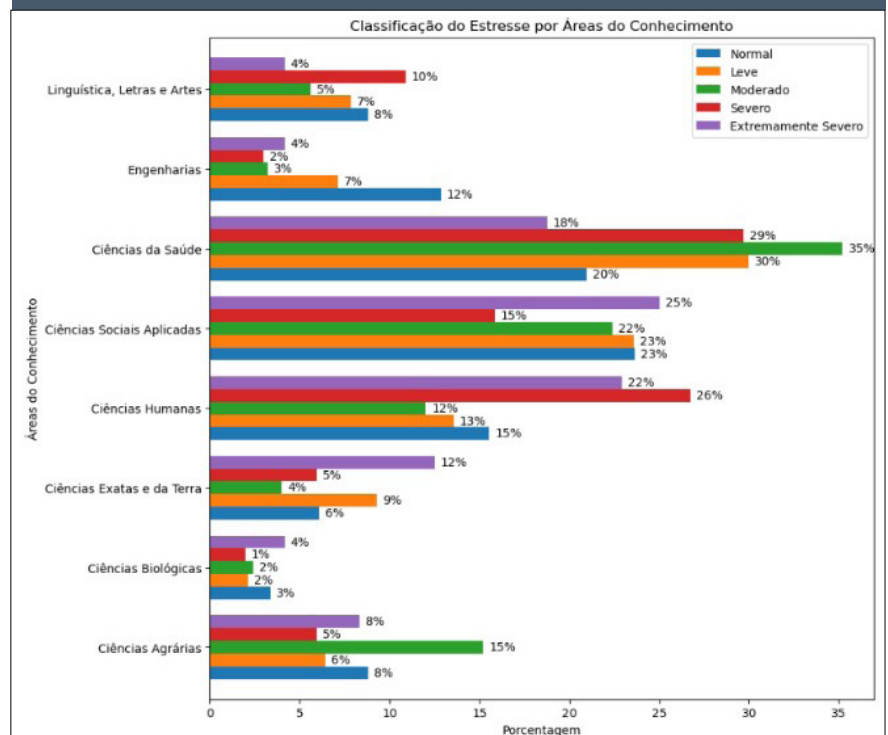
Source: Own work.

With regard to the distribution of sociodemographic characteristics and stress symptoms according to severity levels, it was found that stress symptoms can be considered normal,

mild/moderate, and severe/extremely severe.

Graph 2 shows the stress classification levels by area of knowledge as a percentage.

Graph 2. Characterization of the sample according to stress classification in areas of knowledge. Boa Vista, Roraima, 2023.



Source: Own work.

In the area of Linguistics, Literature, and Arts, severe stress had the highest rate at 10%. In Engineering, stress considered normal was reported by 12% of students. The areas of Health Sciences and Agricultural Sciences had the highest percentage of students with moderate stress, at

35% and 15%, respectively.

In Applied Social Sciences, 25% of students had extremely severe stress, a classification that was also accentuated in Exact Sciences with 12% and Biological Sciences with 4%. Finally, the area of Humanities stood out with 26% of students with severe

stress.

When performing a multinomial regression between sociodemographic categories and stress symptoms according to the reclassification into mild/moderate and severe/extremely severe, we obtained the results shown in the following table (Table 3).

Table 3. Sociodemographic and behavioral characteristics associated with stress symptoms in undergraduate students at an HEI. Boa Vista, Roraima, 2023.

	Mild/Moderate			Severe/Extremely severe		
	RCaj	95% CI	p-value	RCaj	95% CI	p-value
Religion						
Catholic		1,00		1,00		
Protestant	0,95	0,49 - 01,83	0,88	2,14	0,49 - 02,38	0,84
Spiritist	1,00	0,24 - 04,19	0,99	2,14	0,45 - 10,23	0,33
Agnostic	1,08	0,47 - 02,47	0,85	1,41	0,53 - 03,76	0,48
Afro	3,33	0,37 - 29,67	0,28	6,36	0,79 - 51,03	0,08
Other	0,85	0,45 - 01,58	0,61	0,80	0,36 - 01,78	0,59
Religious practice						
No		1,00		1,00		
Yes	1,07	0,65 - 1,77	0,78	1,68	0,93 - 3,05	0,080
Prior Medical Consultation						
No		1,00		1,00		
Yes	1,50	0,85 - 2,63	0,15	3,22	1,68 - 6,16	<0,001
Medication use						
No		1,00		1,00		
Yes	1,93	0,96 - 3,86	0,06	1,50	0,69 - 3,29	0,30
Smoker						
No		1,00		1,00		
Yes	2,16	0,58 - 7,98	0,24	3,91	1,07 - 14,25	0,03
Previous Medical Diagnosis						
No		1,00		1,00		
Yes	1,73	0,79 - 3,79	0,16	3,43	1,51 - 7,82	<0,001
Age						
18		1,00		1,00		
20	1,05	0,58 - 1,91	0,84	8,98	0,45 - 1,77	0,75
30	0,29	0,10 - 0,78	0,01	0,16	0,04 - 0,64	0,01
40	0,27	0,04 - 1,54	0,14	1,82	4,15 - 8,01	<0,001
50						

Field of Knowledge						
Agricultural Sciences		1,00		1,00		
Biological Sciences	0,49	0,11 – 2,02	0,32	0,77	0,13 – 4,40	0,77
Exact and Earth Sciences	1,26	0,40 – 3,92	0,68	1,72	0,41 – 7,07	0,45
Human Sciences	0,87	0,41 – 2,28	0,76	2,33	0,75 – 7,18	0,14
Applied Social Sciences	0,96	0,41 – 2,28	0,94	1,13	0,36 – 3,52	0,82
Health Sciences	1,28	0,53 – 3,09	0,57	1,47	0,46 – 4,66	0,50
Engineering	0,33	0,12 – 0,94	0,03	0,24	0,05 – 1,04	0,05
Linguistics, Literature, and Arts	0,96	0,31 – 2,95	0,95	1,01	0,21 – 4,82	0,98

RCb: Crude Risk Ratio; RCa: Adjusted Risk Ratio; 95% CI: 95% Confidence Interval, Source: Own work.

Table 1 shows that students who had a prior medical consultation in recent months are 3.22 (95% CI 1.68 – 6.16) times more likely to have symptoms of severe/extremely severe stress. And in relation to individuals who already have a previous diagnosis, they are 3.43 (95% CI 1.51–7.82) times more likely to present symptoms of severe/extremely severe stress. Smokers are 3.91 (95% CI 1.07–14.25) times more likely to experience severe/extremely severe stress symptoms than non-smokers.

In relation to age group, students aged 30 to 39 are 84% (95% CI 0.04–0.64) more likely to present severe/extremely severe stress symptoms than those aged 18 to 19. In terms of field of study, engineering students are 76% (95% CI 0.05–1.04) more likely to experience severe/extremely severe stress symptoms than those studying agricultural sciences.

DISCUSSION

COVID-19 had a major impact on students during and after the pandemic, with social isolation taking the academic community by surprise.

The sudden shift to remote learning led many students to drop out, become discouraged, and lose faith in their academic future⁽¹¹⁾. The study conducted with students from the Federal University of Roraima to understand post-COVID-19 stress symptoms has provided important results for discussion. The present study presents the sociodemographic characteristics related to the stress symptoms presented by the participants.

In a survey conducted with students from different courses at a private university in the state of Ceará, a greater predominance of females was observed in relation to stress symptoms, with 65.9% of respondents being women.

In a study conducted at a private university in the state of São Paulo, we also noted a higher prevalence of females (67.14%), and it is important to note that they also had the highest prevalence of stress symptoms. This result is similar to that found in the present sample. We can note the prevalence of females in the survey, accounting for 60.65%, and males accounting for 37.46%⁽¹³⁾. It is important to note that this prevalence is due to the fact that women are generally more willing to participate in

surveys.

The vast majority of female and younger students may develop greater stress, anxiety, and depression compared to males and older people⁽¹¹⁾. Gender was statistically significant in the present sample, similar to what occurred in the cited study. However, the same did not occur with age group.

Stress in university students is a common problem and affects the lives of millions of students worldwide. Students experience a variety of pressures, including tight deadlines, a heavy workload, tests and exams, as well as facing new social and financial situations. All of these demands lead to many symptoms of stress during their academic career⁽¹⁴⁾.

With regard to housing, the study showed that students with high levels of stress were mostly those who lived in shared houses or boarding houses. Students who lived with family members had low stress levels. Although it is not possible to establish the same basis for comparison, as there is no specific question about living in boarding houses, and this data is not yet statistically significant, it is worth noting that in the present sample, the vast majority of study participants (75.95%) live in a house with 1 to 4

other people. Younger students and those at the beginning of their courses had the highest levels of stress⁽¹⁵⁾. In this study, students in their first to fourth years of the course showed symptoms of stress, with 81.30% considered moderate symptoms.

It is important that students feel welcome in the first semesters of their course. Investing in stress prevention measures for university students at an early stage promotes better performance and establishes a closer bond with the institution itself, also bringing benefits to the university.

This study found that students who are nearing the end of their course have lower stress levels than those who are at the beginning of their academic journey. Making this connection, we can see a similarity with a study that noted that students who were at the end of their course (28.8%) presented stressful and anxious symptoms that can be characterized by pressure to finish another stage of life, personal and family demands, and fear of the job market. For students in their first year of the course (71.2%), stressors may be related to a sudden change in routine, entering a new social circle, different commitments, and responsibility for academic demands.

A survey of medical students showed that, in relation to their daily lives, 61.6% of participants had used legal or illegal drugs, and 84.6% had weekly moments of fun⁽¹⁷⁾. In contrast, in the present study, we obtained lower percentages regarding alcohol consumption, with 58.25% stating that they do not drink and only 92.78% stating that they do not smoke.

Among the eight areas of knowledge that participated in the survey, the largest number of students were from the health field, with 159 respondents, of whom 32.35% reported mild/moderate stress. A survey of 792 health students found that 75

participants (9.5%) were classified as having high levels of stress⁽⁴⁾.

Stress in college students is a common problem and affects the lives of millions of students worldwide. Students experience a variety of pressures, including tight deadlines, heavy workloads, tests, and exams, as well as facing new social and financial situations. All of these demands lead to many symptoms of stress during their academic career.

The time spent at university is decisive in a student's life, a process that causes changes in adolescents, who leave their family homes and become adults qualified to enter the job market for which they have studied and trained. Family support and the bonds built throughout their development are factors that contribute to students' successful adaptation to the university environment, with its academic curriculum and relationships between classmates and teachers.

College overloads students' lives, as evidenced by reports about the length of the curriculum and the numerous extracurricular demands that are required, such as the need to participate in research and extension projects. When addressed and observed, it is possible to make statistical correlations so that preventive solutions can be taken. When approached and observed, it is possible to make statistical correlations so that preventive solutions can be taken.

It is extremely important to make the teaching staff and the institution aware of their responsibility towards students who enter the university and those who are already part of it. Initial support can make a big difference in students' academic trajectories. Universities can play an important role in supporting university students who suffer from stress. They can offer counseling and support services, as well as opportunities for students to get involved in activities that help

them deal with stress.

Promoting mental health within the university context is essential for students to be able to continue their academic careers without so many problems. According to --- only 31.9% said they engage in at least one physical activity on a regular basis, and 28.6% are part of a collective sports group⁽¹²⁾.

It is important to conduct studies that focus on and highlight the characteristics of aspects that affect students' mental health. Institutions should also evaluate and promote effective preventive measures for the care and maintenance of students' mental health^(5,16).

CONCLUSION

Based on the data presented, it was identified that female students, smokers, students in their first years of study, and students in the health field are more likely to show symptoms of stress. Stress symptoms manifest themselves in different ways, depending on the demands and responsibilities that students have to take on during the academic period.

It is necessary for the university environment to promote a safe and comfortable environment for students. It is also important to promote activities that develop social interaction between courses and faculty, as well as preventive, informative, and awareness campaigns related to mental health. In addition, family support is necessary and important for students to feel supported.

However, further studies focused on mental health and stress symptoms among university students are needed to better understand the issue.

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