



STRESS IN UNIVERSITY STUDENTS: AN EPIDEMIOLOGICAL APPROACH
ESTRESSE EM ESTUDANTES UNIVERSITÁRIOS: UMA ABORDAGEM EPIDEMIOLÓGICA
ESTRÉS EN ESTUDIANTES UNIVERSITARIOS: UN ENFOQUE EPIDEMIOLÓGICO

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ABSTRACT

Objective: to determine the occurrence of stress and sociodemographic and academic vulnerabilities in university students. **Method:** this is a quantitative, descriptive, epidemiological cross-sectional study, conducted with 391 university students, using a semistructured questionnaire prepared by the authors, and the Perceived Stress Scale. Descriptive and inferential statistical analysis and analysis of variance (one-way ANOVA) were performed. Results are presented in tables. **Results:** the occurrence of stress was confirmed in all the participants of the study, with average stress of 26.18 and mode of 28, and 192 (49.1%) students obtained scores for stress level above the average of all the participants. There was a statistically significant difference between stress levels with respect to race and the undergraduate courses ($p < 0.05$). These variables had an effect on the average stress score between groups. On the other hand, there was a tendency towards equal level of stress regarding sexual orientation ($p = 0.858$). **Conclusion:** We confirmed the occurrence of stress in all the participants, distributed in different intensity levels. It can be stated that the experience of stress was related to race and the undergraduate courses in which the students were enrolled. **Descriptors:** Students; Student health; Higher education; Psychological stress; Health profile; Study on vulnerability.

RESUMO

Objetivo: identificar a ocorrência de estresse e as vulnerabilidades sociodemográficas e acadêmicas em estudantes universitários. **Método:** trata-se de estudo quantitativo, descritivo, epidemiológico transversal, realizado com 391 estudantes universitários, com aplicação de questionário semiestruturado elaborado pelos autores e a Escala de Estresse Percebido. Realizou-se análise estatística descritiva e inferencial e análise de variância (ANOVA um fator). Os resultados são apresentados em tabelas. **Resultados:** revelou-se a ocorrência de estresse em todos os participantes deste estudo, com média de estresse de 26,18 e moda 28, sendo que 192 (49,1%) estudantes universitários apresentaram escore para nível de estresse acima da média de todos os participantes. Evidenciou-se diferença estatisticamente significativa entre o nível de estresse em relação à cor de pele e ao curso de graduação ($p < 0,05$), de modo que estas variáveis exerceram efeito na média de pontuação para estresse entre os grupos. Por outro lado, evidenciou-se tendência a igualdade de nível de estresse em relação à orientação sexual ($p = 0,858$). **Conclusão:** identificou-se a ocorrência de estresse em todos os participantes, distribuído em níveis de intensidade diferentes. Pode-se afirmar que a vivência do estresse estava relacionada à cor de pele e aos cursos de graduação nos quais os alunos estavam matriculados. **Descritores:** Estudantes; Saúde do estudante; Educação superior; Estresse psicológico; Perfil de saúde; Estudo sobre vulnerabilidade.

RESUMEN

Objetivo: identificar la incidencia de estrés y vulnerabilidades sociodemográficas y académicas en estudiantes universitarios. **Método:** estudio cuantitativo, descriptivo, epidemiológico transversal, realizado con 391 estudiantes universitarios, utilizando un cuestionario semiestructurado preparado por los autores y la Escala de Estrés Percibido. Se realizaron análisis estadísticos descriptivos e inferenciales y análisis de varianza (ANOVA unidireccional). Los resultados son presentados en tablas. **Resultados:** la incidencia de estrés se observó en todos los participantes de este estudio, con un estrés medio de 26.18 y modo de 28, y 192 (49.1%) estudiantes obtuvieron un puntaje de nivel de estrés superior al promedio de todos los participantes. Hubo una diferencia estadísticamente significativa entre el nivel de estrés en relación con la raza y el curso de grado ($p < 0.05$), por lo que estas variables tuvieron un efecto en la puntuación promedio de estrés entre los grupos. Por otro lado, hubo una tendencia hacia el mismo nivel de estrés en relación con la orientación sexual ($p = 0.858$). **Conclusión:** identificamos la incidencia de estrés en todos los participantes, distribuido en diferentes niveles de intensidad. Se puede afirmar que la experiencia del estrés estaba relacionada con la raza y los cursos de grado en el que los estudiantes estaban matriculados.

Descriptores: Estudiantes; Salud estudiantil; Educación universitaria; Estrés psicológico; Perfil de salud; Estudio sobre vulnerabilidad.

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INTRODUCTION

It is worth mentioning that the prevalence of stress is high worldwide, regardless of sex, age, social class, and occupation. This situation has led to the need to adopt preventive measures to reduce this problem as well as its effects.¹

Stress is defined as a reaction of the body that occurs in a situation that requires the maximum effort, beyond what it can handle, i.e., beyond its limit. Poorly employed coping strategies can culminate in the worsening of the situation. Stress can hinder a person's sense of well-being, quality of life and health.²

It has been stated that the cause of stress might be linked to multiple physiological or psychological events, factors, or stimuli. These events are called stressors and their effects will be different in each individual, due to their internal and/or external characteristics. All regions of the body are influenced by events occurring in the minds of the individuals, and stress has a considerable effect on the minds, which consequently has a significant effect on health and well-being.³

It is understood that physiological stress is a normal adaptation. However, when the response is pathological, in maladjusted individuals, there is a dysfunction, which leads to transient disorders or serious diseases. At the very least, it aggravates existing ones and can trigger those for which the individuals are genetically predisposed.

Stress includes four phases, according to the four-phase model proposed by Lipp, namely: alarm/alert; resistance; near exhaustion; and exhaustion. The first phase is characterized by the production of adrenaline. The fight or flight reaction begins, with signs and symptoms that include hard difficulty in sleeping as a result of increased adrenaline in the bloodstream, increased libido, high productivity and creativity at work, muscle tension, tachycardia, sweating, anorexia, mandibular tenseness, dyspnea, euphoria, and irritability.³⁻⁶

The next phase is that of resistance. The individual is still exposed to the stressor agent; however, physiological reserves have already been mobilized to provide increased resistance to stress. Signs and symptoms that include decreased libido, productivity, and creativity return to the usual levels, but with difficulties for new ideas, tiredness unrelated to sleep and rest time, excessive worries and externalization of these concerns related to the sources of stress.³⁻⁶

The near-exhaustion phase is characterized by insomnia, marked loss of libido, drastic drop in creativity and productivity at work, tiredness linked to the feeling of physical wear, memory loss, disease onset, gynecological problems, daily anxiety, loss of desire for socialization, and disinterest in life.³⁻⁶

The fourth and final phase is described as exhaustion, characterized by a feeling of total energy consumption. The individuals require external intervention to replace adaptive energy sources, such as medicines. Signs and symptoms include insomnia, short sleep and rest, almost no libido, loss of interest in work, intense tiredness, lack of socialization, loss of sense of humor, apathy, desire for death, onset of serious illnesses such as depression, ulcers, high blood pressure, diabetes, heart attack, among others, and even death.³⁻⁶

It is noteworthy that changes in the lifestyles of individuals are making them debilitated and, therefore, vulnerable to stress, which has assumed the status of disease.⁷⁻⁸ In Brazil, there has been increased occurrence of stress, product of knowledge deficit, observed in most individuals, about how to deal with their sources of tension. Stress has become a very common health problem.⁹

The transition to university represents a life-changing moment that can have implications for physical and mental health. The resolution of problems in the academic environment has become imperative. It should be mentioned that university students go through times of change, development, frustration, growth, fears, and anxieties. This way, the environment that would contribute to the building of knowledge, and would be the basis for the experiences of vocational training, sometimes becomes the trigger of pathological disorders, when there is an exacerbation of the problem of academic stress in the students.¹⁰⁻¹³

This study becomes relevant due to the fact that the authors understand the importance that exists between body and mind that influences students' learning. These students will exhibit difficulties in the evolution of their learning, experiencing stressors in their routine. It is worth noting that one of the main stressors may occur within the educational institutions.

It is assumed that, currently, university students have long and tiring days, due to the fact that most of them work, study, and perform personal tasks. Thus, stress-related problems are triggered, such as irritation, impatience, demotivation, and decreased productivity, among others. As a result, many students react in different ways to the solution of these disorders, seeking ways such as food, smoking, caffeine consumption, or even dropping out of the university.

OBJECTIVE

- To determine the occurrence of stress and sociodemographic and academic vulnerabilities in university students.

METHOD

This is a quantitative, descriptive, epidemiological cross-sectional study conducted with 391 university students, enrolled in a higher education institution in the center-west region of São Paulo. We used a proportional stratified random probability sampling model in order to have representatives of all undergraduate courses offered by the institution. The population of university students enrolled in the educational institution in 2017 was 2,164. The sample obtained with 95% confidence level and margin of error of 5% included 326 participants. The final sample was composed of 391 university students who participated in the study. Inclusion criteria included being present in the classroom on the day chosen for data collection, and consenting to participate voluntarily in the study.

For data collection, we applied a semistructured questionnaire prepared by the authors to characterize the participants regarding sociodemographic variables. We also applied the Perceived Stress Scale, which consisted of 14 questions, whose answers would be classified according to a five-point Likert scale. The final score would range between zero and fifty-six points.¹⁴ The participants of the present study spent, on average, fifteen minutes to complete the questionnaires.

Data were collected during the third quarter of 2017, in classrooms or internal spaces of the institution that provided privacy for answering the questionnaires. All the participants signed an

informed consent form agreeing to participate. Subsequently, the respective instruments were answered according to the specific legislation for research with human beings.¹⁵

Data were analyzed using descriptive statistical analysis and one-way ANOVA inferential analysis. The dependent variable was the stress scores obtained through the Perceived Stress Scale. The predictors were the sociodemographic and academic variables. The Kolmogorov-Smirnov test ($p = 0.180$) was applied and the null hypothesis was not rejected, so that the data of the studied variable originate from a normal distribution. The significance level adopted for the analyses of the present study was $p < 0.05$.

The research was submitted to the Research Ethics Committee of the Amaral Carvalho Hospital, and approved through certificate CAAE No. 66222117.9.0000.5402, with favorable Opinion No. 2.04.482, of 3rd May 2017.

RESULTS

The sample of the present study was composed of 391 university students, who obtained an average score of 26.18 and mode of 28 in the Perceived Stress Scale. It should be noted that the possibility of scoring, according to this instrument, ranged from zero to fifty-six points, which, in turn, allowed affirming that all the participants revealed the experience of stress at different levels of intensity. Most of the participants were female, aged between 17 and 26 years, heterosexual, white, single, and without children (Table 1).

Table 1. Association between sociodemographic variables and perceived stress tracking in university students. Assis, SP, Brazil, 2019.

Variables	No. (%)	PERCEIVED STRESS SCALE				p-value*
		VARIATION	AVERAGE	MEDIAN	MODE	
Sex						0.063
Female	233 (59.6)	3 - 48	26.91	27	28	
Male	158 (40.4)	3 - 54	25.12	26	28	
Age group						0.365
17 to 26 years	318 (81.3)	3 - 54	26.25	26	28	
27 to 36 years	44 (11.5)	7 - 45	27.16	28	28	
37 to 46 years	13 (3.1)	18 - 37	25.85	28	28	
47 to 58 years	16 (4.1)	4 - 32	22.38	25.5	14	
Sexual orientation						0.858
Heterosexual	362 (92.6)	3 - 54	26.20	26	28	
Homosexual	19 (4.9)	12 - 41	26.68	26	24	
Bisexual	10 (2.6)	3 - 48	24.70	28.5	3	
Race						0.028
White	314 (80.3)	3 - 50	26.56	28	28	
Mestizo	59 (15.1)	3 - 54	24.56	24	19	
Black	13 (3.3)	3 - 40	25.23	27	28	
Asian	4 (1.0)	13 - 21	18.25	19.5	21	
Indigenous	1 (0.3)	48	48.00	48	48	
Marital status						0.197
Single	344 (88.0)	3 - 54	26.27	26	28	
Married	25 (6.4)	14 - 45	26.40	28	28	
Common-law marriage	15 (3.8)	10 - 38	26.13	26	28	
Divorced	6 (1.5)	18 - 32	24.00	21.5	32	
Widower	1 (0.3)	4	4.00	4	4	
Children						0.565
No	350 (89.5)	3 - 54	26.28	26	28	
Yes	41 (10.5)	4 - 43	25.39	28	28	

*One-factor ANOVA.

The alternative hypothesis was accepted. This way, stress was associated with race ($p < 0.05$), whereas the null hypothesis was accepted for the other sociodemographic variables. However, it is noteworthy that there was statistical proximity in the association between stress and sex ($p = 0.063$). Also, among the variables, it is possible to observe that there was a tendency for equality of

stress level with respect to sexual orientation ($p = 0.858$).

The stress level related to the academic variables was also analyzed. This analysis indicated that the experience of stress was related to the undergraduate courses in which the students were enrolled ($p < 0.001$) (Table 2).

Table 2. Association between academic variables and perceived stress tracking in university students. Assis, SP, Brazil, 2019.

Variables	No. (%)	PERCEIVED STRESS SCALE				p-value*
		VARIATION	AVERAGE	MEDIAN	MODE	
University Course						<0.001
Law	169 (43.2)	4 - 54	26.25	27	28	
Administration	43 (11.0)	10 - 45	30.40	28	28	
Computer Science	34 (8.7)	3 - 41	23.35	22	26	
Nursing	32 (8.2)	7 - 36	24.09	26	29	
Advertising	28 (7.2)	3 - 41	24.11	23,5	26	
Systems Analysis	28 (7.2)	17 - 43	31.18	28	28	
Chemistry	27 (6.9)	3 - 41	23.11	21	21	
Medicine	20 (5.1)	10 - 41	27.00	30	32	
Photography	10 (2.6)	3 - 37	21.80	21	19	
Classes						0.734
Night	297 (76.0)	3 - 54	25.98	26	28	
Morning	74 (18.9)	7 - 45	26.80	28	28	
Integral	20 (5.1)	10 - 41	27.00	30	32	

*One-factor ANOVA.

DISCUSSION

Stress is a concept characterized by a biological dimension. It is considered a response to a particular stressor that causes various disorders, such as tiredness, exhaustion, ulcers, and sleep loss, among countless symptomatic situations.¹⁶

The prevalence of stress was observed in university students. Studies have indicated that this fact may be related to numerous factors linked to a new and unknown world, such as compulsory activities, workload, care with family and the home.¹⁷⁻¹⁸ It is understood that the predominance of female, single, and childless participants is similar to that found in published studies, which have presented this same characteristic among university students.^{17,19}

Even though there was no statistical significance, the average stress score was higher among female students when compared to male students. This situation can be observed in several countries around the world, and several risk factors for stress occurrence in women, according to regional characteristics, can be mentioned.²⁰

It is worth mentioning the conquest of space in the labor market by women, linked to the maintenance of an old family model, in which they remain responsible for household chores. This fact creates a female triple-journey situation, which is composed of work, study, and children. This situation becomes a factor that hinders women's productive performance, in other words, this situation can be considered a stress factor.¹⁹

On the other hand, it can be observed that the greater occurrence of stress among women, when compared to men, may include the fact that they

are more susceptible than men, and that they are more spontaneous in admitting stress or that they suffer more stress than regional men.²⁰

There are important considerations regarding the association between a) the variables age, marital status, sexual orientation, and number of children, and b) stress in university students. Even if there were not statistically significant values, stress occurred in all of these situations.

It was observed that emotional instability may occur in accordance with these factors, which are integrators of university students' experience. Admission to university coincides with an important transition period, i.e., adolescence to adulthood. This phase involves fundamental evolutionary tasks, such as making friends, and maintaining mature and stable love relationships, as well as commitment to the academic world, and later to the world of work.^{12,21-22}

It was observed that race and stress obtained statistical significance regarding their association. A systematic review, published in 2017, sought to understand the association in the Brazilian context between race and mental health. In non-white individuals, there was a prevalence of mental disorders; however, there were difficulties in reaching the goals. These difficulties were related to the mental disorders studied and the different ways of categorizing race, which were not standardized according to the census.²³

The analysis of the association between stress and undergraduate courses indicated statistical significance ($p < 0.001$). Students enrolled in the courses Systems Analysis, Administration, and Medicine obtained the highest stress average score. The analysis of study hours indicated that

full-time students obtained the highest stress average scores.

It is noteworthy that stress was present in students of all courses, and that there were university students with higher scores than the general average of all the participants. There are studies that have demonstrated this stress scenario in university students, and pointed out the need to create institutional policies in order to early treat mental health, focusing on the prevention of individuals' health problems.²⁴

University life is described as one of the best and most remarkable periods of life guided by a process of transition and adaptation of greater freedom, decision-making responsibility, and fostering of interpersonal relationships. This way, this period may impair academic and social functioning. Therefore, this process is also marked by a series of requirements and the need to develop strategies to deal with emerging difficulties.²⁵⁻²⁶

It is clear that this study had limitations, consequences of the methodological approach to a given reality and not to the whole, in order to better understand this issue in each Brazilian region. However, it is important to consider the fact discussed, given that other studies have evidenced a similar scenario regarding the situation exposed in the present study.

CONCLUSION

It is concluded that university students experience stress, and that this experience manifests itself with varying intensities. In the present study, the participants obtained an average of 26.18, ranging from three to fifty-four points. As statistical significance, the variables race and undergraduate course stood out.

It can be reaffirmed that university students go through moments of change, development, frustration, growth, fears, and anxieties. This way, the environment that would contribute to building knowledge of vocational training, sometimes becomes the trigger of pathological disorders.

It should be emphasized that there is a need for creating local public policies by higher education institutions that safeguard the mental health of students, because it has been proven that there is stress in the academic environment and that, if not treated, there is a risk of aggravation of the situation and the emergence of other pathologies, resulting from the stress experienced.

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