NÍVEL DE ESTRESSE E FATORES CONTRIBUINTES PERCEBIDOS POR ACADÊMICOS DE ENFERMAGEM NO AMBIENTE FORMATIVO

Level of stress and contributing factors perceived by nursing students in the training environment

Nivel de estrés y factores contribuyentes percibidos por estudiantes de enfermería en el ambiente de formación

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RESUMO

Objetivo: identificar o nível de estresse e os fatores contribuintes percebidos por acadêmicos de enfermagem no ambiente formativo. **Método:** estudo descritivo-correlacional, realizado entre dezembro de 2022 a abril de 2023 com 126 estudantes de enfermagem de uma Instituição de Ensino Superior pública de Roraima, Brasil. **Resultados:** participaram do estudo 55 estudantes de enfermagem, com média de idade de 22,3 ± 2,3 anos. A partir das questões da PSS-10, emergiram as médias de sentimentos positivos (57,7 ± 18,0) e negativo (70,0 ± 20,9), com uma média geral de estresse percebido de 65,1 ± 10,9. As variáveis que apresentaram relação estatística significativa com o nível de estresse percebido foram: sexo, filhos, satisfação com o curso, uso de drogas ilícitas, hábito de estudo, horas de sono. **Conclusão:** o perfil dos estudantes de enfermagem acerca do nível de estresse depara-se com uma conjuntura negativa, sendo relevante o conhecimento dos fatores que o influenciam.

DESCRITORES: Estresse psicológico; Estudantes de enfermagem; Ensino superior.

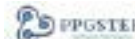[1,2,6] *University of the State of Roraima, Boa Vista, Roraima, Brazil.*
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ABSTRACT

Objective: to identify the level of stress and contributing factors perceived by nursing students in the training environment. **Method:** descriptive-correlational study, carried out between December 2022 and April 2023 with 126 nursing students from a public Higher Education Institution in Roraima, Brazil. **Results:** 55 nursing students participated in the study, with a mean age of 22.3 ± 2.3 years. From the PSS-10 questions, averages of positive (57.7 ± 18.0) and negative (70.0 ± 20.9) feelings emerged, with an overall average of perceived stress of 65.1 ± 10.9. The variables that showed a statistically significant relationship with the level of perceived stress were: sex, children, satisfaction with the course, use of illicit drugs, study habits, hours of sleep. Conclusion: the profile of nursing students regarding the level of stress faces a negative situation, and knowledge of the factors that influence it is important.
DESCRIPTORS: Stress psychological; Students nursing; University education.

RESUMEN

Objetivo: identificar el nivel de estrés y los factores contribuyentes percibidos por los estudiantes de enfermería en el ambiente de formación. **Método:** estudio descriptivo-correlacional, realizado entre diciembre de 2022 y abril de 2023 con 126 estudiantes de enfermería de una institución pública de educación superior en Roraima, Brasil. **Resultados:** Participaron del estudio 55 estudiantes de enfermería, con edad media de 22,3 ± 2,3 años. De las preguntas del PSS-10 surgieron promedios de sentimientos positivos (57,7 ± 18,0) y negativos (70,0 ± 20,9), con un promedio general de estrés percibido de 65,1 ± 10,9. Las variables que mostraron relación estadísticamente significativa con el nivel de estrés percibido fueron: sexo, hijos, satisfacción con el curso, uso de drogas ilícitas, hábitos de estudio, horas de sueño. **Conclusión:** el perfil de los estudiantes de enfermería en cuanto al nivel de estrés enfrenta una situación negativa, siendo importante el conocimiento de los factores que influyen en él.
DESCRIPTORES: Estrés psicológico; Estudiantes de enfermería; Enseñanza superior.

INTRODUÇÃO

When entering higher education, students experience various academic and social situations that are stressful due to their demanding and complex nature. Particularly in nursing, students are confronted with emotionally challenging situations, such as the responsibility of caring for another human being, excessive activities in new environments and sometimes far from family support, pressures and demands related to the pedagogical process of the institution and the course, among others, which, if interpreted and experienced in a negative way, can affect their learning outcomes. Therefore, the level of perceived stress is an indicator related to the quality of life of nursing students during their professional training.[1]

Etymologically, the term "stress" comes from the English word "strain" and was first coined in the medical field in 1936 by the Canadian endocrinologist Hans Selye, as it was used only in STEM sciences.[2] Currently, there are many definitions of stress, such as those that describe stress as a stimulus to focus on the effect caused by the stressor, as a response to the means of assessing the stress reflected by the stressor, and as an action between the individual's external and internal environments through the human-environment process.[3] In this study, the concept of Folkman and Lazarus was adopted,[4] who define it as a psychosocial event with biological effects that occurs in the perception of a real or imagined threat that can affect the psychological or physical integrity of an individual.

From this point of view, an increase in the susceptibility of the individual to stress has been observed in all phases of life, but especially in the professional, economic, family and educational contexts, and exhaustion has become more and more a part of daily life due to the daily pressures of contemporary life, which have turned the human body into a simple working machine.[1]

With regard to student life, especially in higher education, it is essential to consider the factors that characterize the intense routine of the student, as well as the difficulty in adapting to the methodology adopted by the professors and in their interpersonal relationships, the dissatisfaction with the lack of time for the development of leisure activities and the feeling of competition for the best performance among students. It is also worth highlighting the problems related to the direct contact with the patient, as well as the care of serious cases, ethical conflicts and confrontation with the perception of weaknesses and gaps in the health system.[5]

Following this perspective, it is imperative to underline that studies on academic stress show the significant susceptibility that health students must develop mental and physical alterations such as stress, anxiety, depression, insecurity, fear, changes in sleep pattern and quality, social and family self-exclusion, among others. Thus, it is understood that the divergent factors inherent to the academic routine can lead the individual to the development of stress, and that this, as well as other possible changes in their mental state, can affect their quality of life and, consequently, their health.[6]

If understanding the level of stress perceived in nursing students is relevant to indicate their life process in the university environment, on the other hand, it is relevant to the university, which must be sensitive to the mental health issues of the academic community. In view of the above, this study aimed to identify the level of stress and the contributing factors perceived by nursing students in the educational environment.

METHOD

This is a descriptive-correlational study, with a cross-sectional design and quantitative approach, developed with the students of the bachelor's degree in nursing of a public higher education institution (HEI) in Roraima, a pioneer in the state, founded in 2006, with the aim of collaborating and improving the quality of life of the population of Roraima.

The study population consisted of 126 nursing students. The sample selected was a convenience sample, as it brought together the participants who were available to the researchers at the time of data collection and who fit the inclusion profile: over 18 years of age and regularly enrolled in the university and in the course. Students with suspended enrollment status and first-time students were excluded.

Data collection was carried out between December 2022 and April 2023 with two self-administered questionnaires made available virtually on Google Forms. The first instrument aimed to characterize the socio-demographic, academic and health profile of the students. The second questionnaire, related to stress levels, was structured based on the Perceived Stress Scale (EPS-10), translated and validated for Brazil.[7] This instrument has 10 items with Likert scale responses with response options ranging from zero to four (0=never; 1=almost never; 2=sometimes; 3=almost always; 4=always). The questions with a positive connotation (4, 5, 7, and 8) have their summed scores reversed. The other questions are negative and should be added directly. The sum of the question scores results

in scores that can range from zero to 40. The PSS-10 has easy-to-understand questions, addresses common factors, and can be administered to any group to determine the level of perceived stress.[8]

After data collection, the data were tabulated in Excel® spreadsheets from Microsoft 365 and processed in JAMOVI® version 2.4 in a Windows 10 environment. In the analysis, the data were subjected to descriptive statistics and the means of central tendency and dispersion measures were calculated. In addition, the correlation between the numerical variables and the level of perceived stress was evaluated using Pearson's linear correlation coefficient, observing the strength of the correlation based on the following classification: 0 - no correlation; 0 to 0.30 - weak correlation; 0.30 to 0.70 - moderate correlation; >0.70 - strong correlation. Mean differences in the level of perceived stress according to the different predictor variables were evaluated using Student's t-test and Mann-Whitney U test. The variables that reached a value of $p<0.20$ were selected to build the multiple linear regression models that had the perceived stress level as the dependent variable, and in the final adjusted models, the independent variables that reached a value of $p<0.05$ remained.

At the end of the PSS-10, an open-ended question was included with the objective of knowing the stressful situations that were thought about during the act of answering the research instrument, who was involved, what happened and what made the situation stressful. The responses were transcribed and analyzed using Bardin's content analysis technique,[9] which consists of three stages: pre-analysis, exploration of the material, and treatment of the results - inference and interpretation.
Ethical aspects were respected at all stages of the study, in accordance with the guidelines for research involving human subjects. The study protocol was submitted to the Committee for Ethics in Research (CEP) and approved under opinion number 5,734,295. Participants remained anonymous during the study by being coded with the letter "E" (student) followed by the sequential number of the interview.

RESULTS

The study was conducted with 55 (43.7%) nursing students, namely: seven (12.7%) from the 2nd period; 11 (20.0%) from the 3rd period; 10 (18.2%) from the 6th period; 19 (34.5%) from the 8th period; and eight (14.5%) from the 10th period. We excluded 12 students who had their enrollment suspended and 59 who refused to participate in the study. The participants had a mean age of 22.3 ± 2.3 years, ranging from 18 to 32 years, with a mean family income of R$ $4,786.4 \pm$ R$ $3,278.5$, reported a mean sleep time of 6.5 ± 1.6 hours and a mean study time of 4.8 ± 2.9 hours (Table 1).

Table 1 - Sociodemographic, Academic and Daily Life Characterization of the Students. Boa Vista, RR, Brazil 2023 - Rove.me

Variables		n (%)
Sex	Female	43 (78,2)
	Male	12 (21,8)
Color/Ethnicity	Black	8 (14,5)
	White	11 (20,0)
	Brown	32 (58,2)
	Indigenous	2 (3,6)
Marital status	With Partner	19 (34,5)
	No partner	36 (65,5)
Children	Yes	5 (9,1)
	No	50 (90,9)
City where you live	Capital	41 (74,5)
	Inland	14 (25,5)

Means of transportation	Own	39 (70,9)
	Others	16 (29,1)
Who you live with	Partner, relative or friend	49 (89,1)
	Alone	6 (10,9)
Work activity	Yes	11 (20,0)
	No	44 (80,0)
Satisfaction with the course	Yes	45 (81,8)
	No	10 (18,2)
Physical activity	Yes	29 (52,7)
	No	26 (47,3)
Healthy eating	Yes	23 (41,8)
	No	32 (58,2)
Use of legal drugs	Yes	15 (27,3)
	No	40 (72,7)
Use of illegal drugs	Yes	2 (3,6)
	No	53 (96,4)
Study habit	Morning (06:00-11:59)	23 (41,8)
	Afternoon (12:00-17:59)	7 (12,7)
	Evening (18:00-23:59)	19 (34,5)
	Dawn (00:00-05:59)	6 (10,9)

Source: The author. Research data.

The characterization of the level of perceived stress from the PSS-10 in the set of periods (an indicator for all students in the course) resulted in minimum and maximum averages of 11.4 ± 4.8 and 33.2 ± 1.5, respectively. In addition, when calculating the overall average of perceived stress, the mean was 23.6 ± 17.3. In the bachelor's program, the positive questions (P1, P2, P3, and P4) obtained an overall average of 1.7 ± 0.3, with the projected domain "balance" having the highest positive average of 2.1 ± 1.0. On the other hand, the negative questions (P5, P6, P7, P8, P9, and P10) obtained an overall average of 2.8 ± 0.2, with the projected domain "Impatience" having the highest negative average, 3.3 ± 0.9 (Table 2).

Table 2 - Distribution of perceived stress in nursing students for the domains of the Stress Perception Scale-10. Boa Vista, RR, Brazil 2023 - Rove.me

Domains	2nd Period	3nd Period	6nd Period	8nd Period	10nd Period	General
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
P1-Resilience	1,6 ± 1,0	1,6 ± 1,2	1,9 ± 1,3	1,2 ± 1,0	1,4 ± 1,2	1,5 ± 1,1
P2-Satisfaction	1,6 ± 1,0	2,1 ± 0,7	1,9 ± 0,7	1,4 ± 1,0	2,0 ± 0,9	1,7 ± 0,9
P3-Self-Control	1,1 ± 0,7	2,4 ± 0,8	1,1 ± 0,9	1,5 ± 0,9	0,8 ± 1,2	1,5 ± 1,0
P4-Balance	1,7 ± 0,8	2,1 ± 1,3	2,2 ± 1,3	2,1 ± 1,0	2,1 ± 0,6	2,1 ± 2,0
P5-Frustration	2,6 ± 1,1	2,5 ± 0,9	3,0 ± 1,1	2,6 ± 1,2	2,5 ± 0,9	2,7 ± 1,0
P6-Incompetence	2,7 ± 0,8	3,1 ± 1,1	3,0 ± 0,9	2,8 ± 1,2	2,4 ± 1,2	2,8 ± 1,1
P7-Impatience	2,9 ± 0,9	3,4 ± 0,9	3,5 ± 0,7	3,3 ± 0,9	3,0 ± 1,2	3,3 ± 1,1
P8-Anxiety	2,3 ± 1,1	3,0 ± 1,5	3,2 ± 1,4	2,9 ± 1,1	2,4 ± 1,4	2,8 ± 1,3
P9-Tension	2,6 ± 1,0	3,0 ± 1,1	2,9 ± 1,2	2,6 ± 1,1	2,8 ± 1,3	2,8 ± 1,1
P10-Impotence	2,6 ± 1,6	2,8 ± 1,6	2,7 ± 1,4	2,4 ± 1,4	2,3 ± 1,5	2,5 ± 1,4

Source: The author. Research data.

When comparing sociodemographic, academic, and daily life aspects with perceived stress levels of nursing students, age was negatively correlated with the positive (-0.065; p=0.640) and negative (-0.015; p=0.913) axes. Daily study time was negatively correlated with the positive (-0.243; p=0.074) and negative (-0.082; p=0.550) axes. Daily sleep time was positively correlated with the positive (0.281; p=0.038) and negative (0.187; p=0.171) axes. In the bivariate analyses with the positive and negative domains of the PSS-10, variables with a significant theoretical p-value (<0.20) were entered into multiple linear regression.

The multivariate model estimated that the mean P1-Resilience domain of students with their own transportation was 0.69 units higher than those with other means of transportation (p=0.031); students with >6.5 hours of daily sleep were 0.90 units higher than those with less than 6.5 hours of sleep (p=0.003). In the P2-Satisfaction domain, the mean number of students with daily study hours >4.8 hours were -0.64 points lower compared to those with less than 4.8 hours of study per day (p=0.007). On the P3-Self-Control domain, the mean number of students with daily sleep >6.5 hours were 0.64 points higher than those who slept less than 6.5 hours (p=0.016). The mean P9-Tension domain of students with a healthy diet was 0.64 points higher compared to those who did not have a healthy diet (p=0.031); students with daily sleep >6.5 hours was 0.21 units higher compared to those who slept less than 6.5 hours (p=0.035). Finally, the mean P10 impotence domain of students with their own means of transportation was 0.88 times higher than those with other means of transportation (p=0.026) (Table 3).

Table 3 - Non-standard and standard regression coefficients of multiple linear regression equations, with the domains of the Stress Perception Scale-10 as dependent variables according to the predictor variables in the students. Boa Vista, RR, Brazil 2023 - Rove.me

Domain / Predictor (Referrer)	b	b(EP)	BETA	p	R2 (R2aj.)
P1 Resilience					
Means of Transportation (Other)	0,69	0,31	0,620	0,031	
Maintains work activity (No)	-0,08	0,36	-0,073	0,823	0,244 (0,184)
Hours of sleep per night (<6.5 hours)	0,90	0,29	0,808	0,003	
P2-Satisfaction					
Hours of study per day (<4.8 hours)	-0,64	0,23	-0,723	0,007	0,135 (0,102)
P3 Self-control					
Means of Transportation (Other)	0,53	0,29	0,529	0,073	0,163 (0,131)
Hours of sleep per day (<6.5 hours)	0,64	0,25	0,634	0,016	
P4-Balance					
Marital status (with partner)	-0,37	0,30	-0,363	0,218	
Means of transportation (other)	0,53	0,30	0,515	0,082	
Who you live with (Alone)	-0,69	0,46	-0,661	0,146	0,233 (0,119)
Maintains work activity (No)	-0,23	0,38	-0,224	0,545	
Study habits (Evening)	0,36	0,28	0,353	0,203	

	b	b(EP)	BETA	p	R2aj
P5 Frustration					
Gender (Female)	-0,40	0,36	-0,389	0,272	
Children (No)	-0,59	0,62	-0,576	0,341	
Means of Transportation (Other)	0,41	0,32	0,403	0,200	0,181 (0,038)
Maintains work activity (No)	-0,20	0,37	-0,201	0,583	
Regular physical activity (No)	0,42	0,29	0,403	0,155	
Illicit drug use (No)	0,03	1,03	0,037	0,970	
P6 Incompetence					
Marital Status (With Partner)	-0,31	0,31	-0,309	0,297	
Means of Transportation (Other)	0,57	0,31	0,533	0,073	0,135 (0,084)
Maintains work activity (No)	-0,42	0,38	-0,393	0,272	
P7-Impatience					
Means of Transportation (Other)	0,36	0,27	0,397	0,192	0,005 (-0,053)
P8-Fear					
Gender (Female)	-0,11	0,30	-0,128	0,706	0,005 (-0,053)
P9-Tension					
Means of Transportation (Other)	0,42	0,31	0,382	0,184	
Maintains work activity (No)	-0,20	0,37	-0,183	0,588	0,187 (0,122)
Healthy diet (No)	0,64	0,29	0,585	0,031	
Hours of sleep per day (<6.5 hours)	0,21	0,09	0,297	0,035	
P10-Impotence					
Marital Status (With Partner)	-0,69	0,36	-0,499	0,066	
Place of origin (inland)	0,65	0,40	0,476	0,107	0,300 (0,244)
Means of Transportation (Other)	0,88	0,38	0,637	0,026	

Source: The author. Research data.

b - Non-standardized regression coefficient; b(EP) - Standard error of b; BETA - Standardized regression coefficient; R2aj – Adjusted R2.

The analysis of the statements of the participating students allowed the knowledge of the self-perceived stressors, highlighting - excess of academic activities; inadequate nutrition; difficulty in maintaining physical activities and altered sleep patterns; professional, environmental and family relationships; financial hardship; duration of teaching under the distance learning modality; reduced time for leisure activities and rest; and structural and administrative problems of the university - as can be seen in the following statements:

> The course requires a lot of commitment and dedication, which often ends up not being achieved and becomes a snowball, frustration at failing a subject, difficulty i n u nderstanding c omplex ▯ subjects, added to external factors such as family problems, difficulty in traveling to the university ▯ (especially students who live in distant municipalities or neighborhoods). In addition, because it is a full-time course, it prevents the student from having a fixed income, generating dependence on the part of parents or guardians. All of these factors contribute to the development of anxiety, depression, altered sleep patterns, and other illnesses (E1).

> Too many tests and assignments from different disciplines in the same week that end up interfering with household chores and physical activities. I end up devoting the time I have only to exams and seminars, and this interferes with my diet, physical activity, household chores, and leisure time with my family (E10).

> Most of them were family situations [...]. The end of the semester with all the exams was intimidating, accompanied by few hours of sleep and the impossibility of meeting my schedule of daily tasks [...] (E22).

> Presenting papers, for me is very difficult, t he ▯ fact that the course is full-time is very stressful to spend the day at the university without any support such as: bathrooms to shower, adequate rest room, no canteen (E5).

> During the pandemic, when the university adopted the distance learning method, they raced against time to follow the academic calendar, so countless content was shared at once. Per day, they published about 4 video lessons of 1 to 2 hours each (example: in one week, 11 contents of only one subject were taught, which was a complex subject, because the following week there would be a test in this subject. At the same time there were activities and works of other disciplines [...]. This frustrated the students a lot [...] (E47)

DISCUSSÃO

This study allowed the analysis and, consequently, the knowledge of the socioeconomic, demographic and academic characterization of nursing students, which contributed to the understanding of the level of stress and the factors related to it. Thus, there was a predominance of female students, a finding that concerns the literature, since the historical configuration marks nursing as a traditionally feminine work field, linked to the social conception that care is understood as a vocation, being naturally linked to the feminine essence.[6,10]

In terms of race, it has been shown that the population in question identifies itself mainly as brown. In 2022, 70.1% of the population living in the northern region of the country identified themselves as brown.[11] In addition, the socio-demographic profile of the participants in this study is similar to the findings in the literature, most of them do not have children, live in the capital where the university is located, use their own transportation to travel to campus, live with their parents and/or other family members, and do not develop work activities.[6,12]

With regard to the issue of the majority of participants not developing work activities, this fact is usually linked to the fact that the course is full-time, which makes it impossible for the student to develop any work activity with remuneration, an issue that puts students in a situation of financial dependence for their maintenance in the course. Therefore, this context is characterized as a potential stressor.[13]

Regarding the general aspects of life, the results of this research show that most students consider that they do not have a healthy diet. In this sense, it is important to consider the possible factors associated with inadequate nutrition, such as the intense university routine, financial dependence on family members, and reduced time for meal preparation. This set of factors contextualizes a scenario in which students do not eat meals or opt for quickly prepared foods, such as fast food, which confirms inadequate nutrition and possible health impairment.[14-15]

Regarding the practice of physical activity, there was a predominance of students practicing some type of exercise. It is important to consider that physical activity has undoubted health benefits,[16] and that the literature shows a lower rate of perceived stress among university students who practice physical activity, demonstrating the role of this practice in controlling stressors.[17]

Although the majority of participants reported not using legal (72.7%) and/or illegal (96.4%) drugs, studies and research indicate that their use is considered by university students as a strategy to cope with the stress generated by academic, psychological and social overload, as a form of relaxation and as a tool to temporarily forget about problems, to escape and to seek a sense of support.[6,18] On the other hand, it is necessary to pay attention to this practice by university students in the field of health, since it can cause damage to academic, personal and professional life.[19-20] A small discrepancy was found between the average daily sleep of the participants in this study (6.5 ± 1.6 hours) and that recommended in the literature (7 or more hours per night for adults between the ages of 18 and 60).[21] A study of 286 nursing students from a public institution in Salvador, Bahia, found poor sleep quality, especially among students in the 6th and 10th semesters and those with a high level of stress.[22] It is noteworthy that educational and psychopedagogical support programs for university students can be a counterpoint to the damage to health resulting from sleep quality.[22-23]

Regarding the level of stress assessed by the PSS-10, an average level of stress was found among the study participants, similar to what has been shown in other studies.[1,6,24] All semesters of undergraduate nursing were stressful, with greater variations depending on the semester, a fact that highlights the importance of conducting studies of this nature, since the context of stress experienced throughout training can have a negative impact on the physical and psychological health of students and future health professionals.[6,16,25]

The relationships obtained in this study from the multivariate model confirm those identified in other studies. The analysis showed that there was a statistically significant relationship between the positive and negative domains and the sociodemographic, academic and life variables. Among the variables that showed a statistical relationship with the level of stress were: hours of sleep, means of transportation used, hours of study, and healthy diet.[26-27] Taking into account the data obtained through the discursive question at the end of the PSS-10 questionnaire, it is observed that the stressful factors mentioned by the students are consistent with those identified by other studies.[13,22]

CONCLUSION

This study identified the level of stress and the factors perceived by nursing students as triggers of stress in the educational environment, with a prevailing average level of stress influenced by multiple factors internal and external to academic life. It is important to consider that the presence of stress in all the periods investigated is characterized as a warning sign, since the possibility of worsening stress during graduation until the exercise of the profession is real. In addition, in the multiple analysis, adjusted for sociodemographic, psychosocial and behavioral variables, the level of perceived stress contributed to the level of perceived stress, such as hours of sleep, means of transportation used, hours of study and healthy eating. The results instigate the proposition of interventions capable of minimizing the perceived stress in nursing students.

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