SMAD, Rev. Eletrônica Saúde Mental Álcool Drog.
2017 Oct.-Dec.;13(4):176-188
DOI: 10.11606/issn.1806-6976.v13i4p176-188
http://www.revistas.usp.br/smad

Original Article

Factors associated with the onset of stress in a sample of university nursing students

Camila Aparecida Pinheiro Landim Almeida[1]
Lauryanna de Queiroz Silva[2]
Francisca Cecília Viana Rocha[3]
Maria do Rosário de Fátima Franco Batista[4]
Magda Coeli Vitorino Sales[5]

This study aimed to assess the factors associated with the onset of stress in a sample of university nursing students. Descriptive, exploratory and cross-sectional study, with quantitative approach, carried out with 181 nursing students of a higher education institution. The data were collected by the Assessing Stress among Nursing Students questionnaire and processed in Statistical Package for Social Sciences software. The main results show that the stress conditions are present throughout the course of undergraduate nursing, with emphasis on the field performance of practical activities that showed high levels of stress in the sixth semester. It was concluded on the need to develop comfortable means to lead students to experience a healthier academic training to help reduce stress factors.

Descriptors: Psychological, Stress; Nursing, Students; Higher Education Institutions.

[1] PhD, Full Professor, Centro Universitário Uninovafapi, Teresina, PI, Brazil.
[2] Undergraduate student in Nursing, Centro Universitário Uninovafapi, Teresina, PI, Brazil.
[3] MSc, Assistant Professor, Centro Universitário Uninovafapi, Teresina, PI, Brazil.
[4] Professor, Centro Universitário Uninovafapi, Teresina, PI, Brazil.
[5] Master's student, Centro Universitário Uninovafapi, Teresina, PI, Brazil. Professor, Centro Universitário Uninovafapi, Teresina, PI, Brazil.

Corresponding Author:
Camila Aparecida Pinheiro Landim Almeida
Centro Universitário Uninovafapi
Rua Vitorino Orthiges Fernandes, 6123
Bairro: Uruguai
CEP: 64073-505, Teresina, PI, Brasil
E-mail: camila@uninovafapi.edu.br / camilaapapila@hotmail.com

Fatores associados ao aparecimento do estresse em uma amostra de estudantes de enfermagem universitários

Objetivou-se avaliar os fatores associados ao aparecimento do estresse em uma amostra de estudantes de enfermagem universitários. Estudo descritivo-exploratório e transversal, com abordagem quantitativa, realizado com 181 estudantes de enfermagem de uma Instituição de Ensino Superior. Os dados foram coletados pelo questionário de Avaliação do Estresse de Estudantes de Enfermagem e processados no programa Statistical Package for Social Sciences. Os resultados evidenciaram que as condições do estresse estão presentes ao longo do curso de graduação em enfermagem, com destaque para o domínio realização de atividades práticas que apresentou elevados níveis de estresse no sexto semestre. Concluiu-se sobre a necessidade de desenvolver meios confortáveis para conduzir os estudantes a vivenciar uma formação acadêmica mais saudável, favorecendo a redução de fatores estressores.

Descritores: Estresse Psicológico; Estudantes de Enfermagem; Instituições de Ensino Superior.

Factores asociados con la aparición de estrés en una muestra de estudiantes universitarios de enfermería

El objetivo fue evaluar los factores asociados con la aparición de estrés en una muestra de estudiantes universitarios de enfermería. Estudio descriptivo, exploratorio y transversal, con enfoque cuantitativo, realizado con 181 estudiantes de enfermería de una institución de educación superior. Los datos fueron recogidos por el cuestionario de Evaluación del Estrés de Estudiantes de Enfermería y procesados en el programa Statistical Package for Social Sciences. Los principales resultados muestran que las condiciones de estrés están presentes a lo largo del curso de graduación en enfermería, con énfasis en el rendimiento en el campo de las actividades prácticas que mostraron altos niveles de estrés en el sexto semestre. Se concluyó en la necesidad de desarrollar medios cómodos para conducir a los estudiantes a experimentar una formación académica más saludable para ayudar a reducir los factores de estrés.

Descriptores: Estrés Psicológico; Estudiantes de Enfermería; Instituciones de Enseñanza Superior.

Introduction

Changes in the modern world have increasingly led to a growing interest in the phenomenon of stress, seen as the result of a clash between a difficulty and the ability to overcome it(1-2). The consequences of stress can be directly related to the individual's response to a given demand, i.e. whether the demand is understood as a stimulating challenge or a threat to be faced(1).

Stress has started to be studied as a psychological phenomenon since the 1950s(3). Since then, some associations such as the influence on the behavior and productivity of health professionals, with nursing standing out as one of the professions where stress is frequently observed(4).

In Brazil, the history of health itself reveals problems associated with nursing as a profession since its implementation until modern days, such as the

marginalization of the profession that leads nurses to constantly seek professional recognition before other co-workers(5). For this reason stress has always been present in nursing. In addition, there several other problems related to stress in the nursing work mainly due to the rotation of schedules in the night shift such as the reduced number of nurses in the team and the low salaries that force the professionals to work in more than one institution, and take on a long monthly workload(6-7).

Stress is present in a variety of routine situations and the reaction to stress determines the consequences of this stimulus to personal and/or professional life. Studies have shown a frequent presence of stress since undergraduate training of nursing students(8-10). For example, nursing undergraduate internship in hospital practices has been identified as responsible for triggering a number of stressors, such as: technical procedures, the use of new technologies and equipment, constant supervision of teachers, the system of practical evaluation, the relationships established with patients, uncertainty regarding the teachers' expectations about academic performance and the hospital dynamics itself. Such factors may hinder learning, maybe cause students to make errors, and to have difficulty concentrating(11-12).

In the academic setting, nursing students experience moments of change, development, frustration, growth, fears and anguish. Thus, they often develop feelings of disappointment, irritability, concern, impatience during the undergraduate course, leading to a learning deficit and a consequent drop in the quality of nursing care in their insertions in clinical care settings(13-14).

Added to this are the consequences for the personal routine of nursing students, which considerably influence people who are part of their circle of interactions such as family members, colleagues and friends, associated with the prevalence of mental disorders such as anxiety, depression and death drive(15-18). Research conducted in 2014 with 179 nursing students from a Brazilian public university revealed that among the students with depressive symptoms, 47.7% reported some behavior of suicidal ideation and 26.31% had a history of attempted suicide(19).

Given the magnitude of the presented problem, the realization of this study is justified. The aim is to contribute to the identification of the main factors associated with the appearance of stress in a sample of undergraduate nursing students.

The dissemination of scientific studies addressing this issue is fundamental because stress in academic environments can be a risk factor for illness and mental disorders in the course of personal and academic life, such as anxiety, depression and suicide. They promote reflections on the development of strategies to reduce stress-stimulating factors, making it possible to guarantee a healthy academic life for university students with better performance, learning and personal health conditions.

This study has as object the factors associated with the appearance of stress in a sample of undergraduate nursing students. We intend to answer the following research question: "What are the factors associated with the appearance of stress in a sample of undergraduate nursing students?" Thus this study aimed to evaluate the factors associated with the appearance of stress in a sample of undergraduate nursing students.

Method

This is a descriptive-exploratory and cross-sectional study with a quantitative approach carried out from October to December 2015 in a Higher Education Institution (HEI), a private university center located in Teresina, Piauí, Brazil.

The study population consisted of 289 nursing students enrolled in the morning and afternoon shifts at the abovementioned HEI from the 5th to the 9th semesters. The sample was of the simple random type with replacement and totaled 181 students: 32 from the 5th semester, 45 from the 6th semester, 29 from the 7th semester, 47 from the 8th semester and 28 from the 9th semester.

The inclusion criteria were: to be a student of the Nursing undergraduate course enrolled in the 5th to the 9th semesters of the University Center and to meet the estimated number of the sample calculated by the following statistical equation: n = (Z2.0.25.N) / E2 (N - 1) + Z2.0.25, a margin of error of less than 5%, to 95% confidence level and an increase of 30% for losses in inconsistent cases. Students from the Nursing undergraduate course from the 1st to the 3rd semesters were excluded from this study because they were considered to have had a brief contact with the academic universe, especially absence a lack of contact with academic traineeship; students of the 4th semester were also excluded because, for starting the internships only in the second two months of the

current semester, as well as students who were not regularly enrolled in the selected HEI.

A questionnaire with objective questions was prepared by the researchers for data collection, containing socioeconomic and demographic variables, as well as the instrument called Stress Assessment in Nursing Students (SANS), constructed and validated by Costa and Polak. This instrument proposes that stress is linked to the relationship between the individuals and the environment and its study requires that people be evaluated within their own contexts, in their relation to the environment and in the attribution of meanings to events. The SANS, whose internal consistency estimated by Cronbach's alpha ranged from 0.71 to 0.87, allows assessing stress among nursing students as a variable in studies or for educational purposes through six domains(20).

The domain 1 (D1), Realization of Practical Activities, refers to the instrumental knowledge acquired by the students to perform the procedures and the feelings involved in the moment of patient care. In domain 2 (D2), Professional Communication, we evaluate the difficulties experienced in the communication within the workplace and in the situations of conflict that arise. Domain 3 (D3), Time Management, considers the student's difficulty in reconciling the academic activities established in the curriculum of the course with personal, emotional and social demands(20).

The domain 4 (D4), Environment, addresses the degree of difficulty felt in accessing the university fields or the situations of wear perceived by students with the means of transportation used. The items in domain 5 (D5), Vocational Training, refer to the students' concern about the knowledge acquired during their academic training and the impact that this has on their future professional life, as well as to address their perception in situations that may come to experience when they become professionals. In turn, the domain 6 (D6), Theoretical Activity, measures the degree of difficulty of the students to deal with the content of the program, the activities developed and the teaching methodology adopted(20).

The interpretation of scores classifies the stress levels for each of the six domains of the SANS questionnaire as follows: D1 - 0-9 low stress level; 10-12 medium stress level; 13-14 high stress level; 15-18 very high stress level; D2 - 0-5 low stress level; 6 medium stress level ; 7-8 high stress level; 9-12 very high stress level; D3 - 0-10 low stress level; 11-12 medium stress level; 13-14 high stress level; 15 very high stress level; D4 - 0-7 low stress level; 8-10 medium stress level; 11 high stress level; 12 very high stress level; D5 - 0-9 low stress level; 10 medium stress level; 11-12 high stress level; 13-18 very high stress level; and D6 - 0-9 low stress level; 10-11 medium stress level; 12-13 high stress level; 14-15 a very high stress level(20).

Data analysis was performed using the statistical software SPSS (Statistical Package for Social Sciences) Statistics, version 20.0. A database was initially developed in the Microsoft® Office Excel® 2010 software, for organization of data through double typing in a validation process. After processing, data were described in tables and figures by means of numerical proportions, percentages, means and standard deviation. The Kolmogorov-Smirnov test was applied to the continuous numerical variables to verify the assumption of normality and the Kruskal-Wallis test to analyze differences in the distribution of scores among the six domains investigated. The homogeneity of variances was checked by the Levene test, whereas linearity was evaluated through dispersion plots. The Mann-Whitney test was used to compare the scores between two groups categorized in qualitative variables, with a significance level of 5% ($p < 0.05$).

The inclusion of individuals in this study followed the ethical-legal recommendations that rule the norms of research with human beings(21). The research project was approved by the Research Ethics Committee, in compliance with Resolution 466/12 of the National Health Council, under the Certificate of Presentation and Ethical Assessment (CAAE) nº 49410915.9.0000.5210 and Opinion no. 1,262,795, on October 6, 2015.

Results

The distribution of the sample in socioeconomic and demographic variables revealed that the majority of the individuals were female (84.5%), in the age group of 20-29 years (84.0%), single (75.7%), brown/mulatto (60.2%), Catholic (70.2%), from the capital city Teresina (49.2%) followed by cities in the countryside of Piauí (34.8%), and had family income between 1 and 4 minimum wages (63.0%), as described in Table 1.

Table 1 – Distribution of study participants according to socioeconomic and demographic variables. Teresina, PI. Brazil, 2015. (n = 181)

Socioeconomic and demographic variables	n	%
Sex		
Male	28	15.5
Female	153	84.5
Age group		
18 to 19 years	2	1.1
20 to 29 years	152	84.0
30 to 39 years	23	12.7
40 to 49 years	4	2.2
Marital status		
Not married	137	75.7
Married	37	20.4
Widowed	2	1.1
Separated/divorced	2	1.1
União consensual	3	1.7
Color		
White	47	26.0
Black	15	8.3
Yellow/Eastern	10	5.5
Brown/Mulatto	109	60.2
Religion		
Catholic	127	70.2
Evangelical	37	20.4
Spiritist	5	2.8
Other	1	0.6
Without religion	11	6.1
Origin		
Teresina	89	49.2
Other cities in the state of Piauí	63	34.8
Other cities in other states of Brazil	29	16.0
Family Income (MW)*		
< 1 MW*	12	6.6
1-2 MW*	49	27.1
3-4 MW*	65	35.9
5-6 MW*	30	16.6
7-8 MW*	12	6.6
> 8 MW*	10	5.5
Não informou	3	1.7

*MW: minimum wage (R$788.00)

Table 2 presents the minimum, maximum, mean and standard deviation of stress scores among students of the research, in addition to the absolute (n) and relative (%) frequencies of the six domains investigated through the SANS instrument. We observed that the domain that presented the highest levels of stress, classified as high and very high, was D5 (vocational training) with 53.0%; followed by D2 (professional communication) with 34.3%; D4 (environment) with 25.4%; D1 with 21.0%; D3 with 14.4% and D6 with 11.0%.

Table 3 below shows the results of the analysis mean scores obtained in the six domains investigated through the SANS instrument, according to the socioeconomic and demographic variables. We observed that there was a statistically significant association between the mean scores obtained in the D1, D4, D5 and D6 domains and the sex, p = 0.000, p = 0.002, p = 0.000 and p = 0.009, respectively. In the other variables, age, marital status, religion and income, there was no statistically significant association.

Table 2 – Minimum, maximum and mean values ± standard deviation (SD) of stress scores obtained according to the six domains. Teresina, PI. Brazil, 2015. (n = 181)

Domains	n	%
(D1) Realization of practical activities		
Very high stress level	21	**11.6**
High stress level	17	**9.4**
Moderate stress level	52	28.7
Low stress level	91	50.3
Min - Max	4 - 18	
Mean ± SD	9.96 ± 3.2	
(D2) Professional communication		
Very high stress level	21	**11.6**
High stress level	41	**22.7**
Moderate stress level	33	18.2
Low stress level	86	47.5
Min - Max	0 - 12	
Mean ± SD	5.92 ± 2.3	
(D3) Time Management		
Very high stress level	1	**0.6**
High stress level	25	**13.8**
Moderate stress level	34	18.8
Low stress level	121	66.9
Min - Max	1 – 15	
Mean ± SD	8.75 ± 3.2	
(D4) Environment		
Very high stress level	27	**14.9**
High stress level	19	**10.5**
Moderate stress level	40	22.1
Low stress level	95	52.5
Min - Max	0 – 12	
Mean ± SD	7.35 ± 3.3	
(D5) Vocational training		
Very high stress level	58	**32.0**
High stress level	38	**21.0**
Moderate stress level	25	13.8
Low stress level	60	33.1
Min - Max	3 – 18	
Mean ± SD	10.98 ± 3.1	
(D6) Theoretical activity		
Very high stress level	6	**3.3**
High stress level	14	**7.7**
Moderate stress level	37	20.4
Low stress level	124	68.5
Min - Max	2 – 15	
Mean ± SD	8.38 ± 2.5	

Table 3 - Mean scores obtained in the six domains according to socioeconomic and demographic variables. Teresina, PI. Brazil, 2015. (n = 181)

	D1		D2		D3		D4		D5		D6	
	M[(a)]	p[(b)]	M[(a)]	p[(b)]	M[(a)]	p[(b)]	M[(a)]	p[(b)]	M[(a)]	p[(b)]	M[(a)]	p[(b)]
Sex		**0.000**		0.056		0.065		**0.002**		**0.000**		**0.009**
Male	7.7		5.2		7.7		6.0		8.6		7.3	
Female	10.4		6.1		9.0		7.6		11.4		8.6	

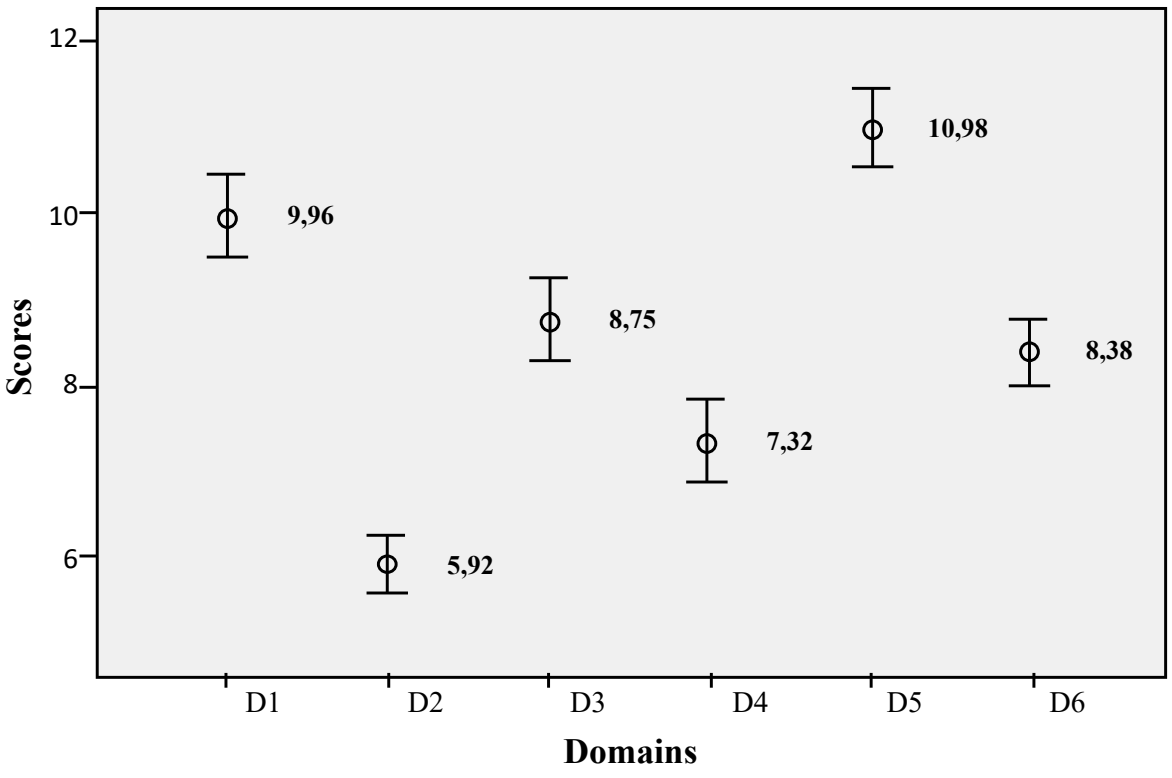
(continue...)

Table 3 – *continuação*

	D1		D2		D3		D4		D5		D6	
	M[a]	p[b]	M[a]	p[b]	M[a]	p[b]	M[a]	p[b]	M[a]	p[b]	M[a]	p[b]
Age Group		.613		.854		.503		.827		.570		0.794
18-29 years	10.0		5.9		8.8		7.3		11.0		8.4	
30-49 years	9.7		5.8		8.3		7.2		10.6		8.4	
Marital status		0.712		0.876		0.725		0.272		0.171		0.831
Without partner	9.9		5.9		8.7		7.5		10.8		8.4	
With partner	10.1		5.9		8.8		6.8		11.5		8.2	
Religion		0.337		0.344		0.217		0.184		0.076		0.399
Yes	9.9		5.9		8.7		7.2		10.9		8.3	
No	10.8		6.6		10.0		8.6		12.5		9.2	
Income		0.674		0.553		0.216		0.444		0.362		0.576
≤ 2 MW[c]	10.0		6.1		9.1		7.6		10.7		8.5	
> 2 MW[c]	9.9		5.9		8.6		7.2		11.1		8.3	

(a)Mean scores, (b)Mann-Whitney test, (c)MW: minimum wage (R$788.00)

Figure 1 represents the mean stress scores obtained and the analysis of variants obtained in the boxplot among the six domains investigated through the SANS questionnaire. Asymmetric distributions were observed between the stress scores obtained in relation to the six domains investigated, since the medians are not positioned equidistantly from the ends of the boxplot boxes. We also observed that the highest mean and median scores were obtained in domains D1 (realization of practical activities) and D5 (vocational training), with means of 9.96 and 10.98 and medians of 9 and 11, respectively. In the D2 domain (professional communication), with a mean of 5.92 and a median of 6, atypical values were very far from most of the scores.



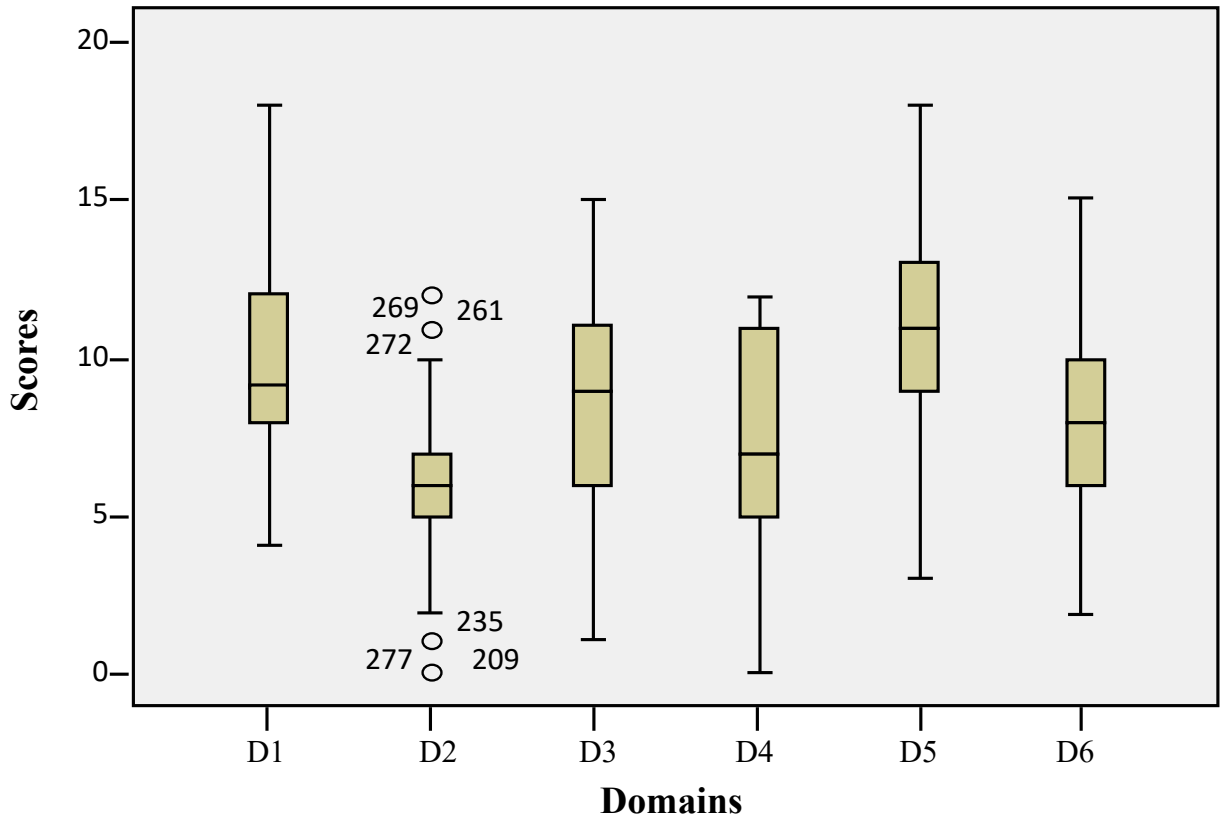


Figure 1 - 95% Confidence Interval and Boxplot portraying the stress scores by domains. Teresina, PI. Brazil, 2015

As to stress levels in the six domains investigated in nursing students in their respective semesters in progress, it is noteworthy that the level of stress was very high (35.5%) and high (46.6%) in the D1 domain (realization of practical activities) among nursing students of the 6th semester. In general, it was noticed that the D2 domain (professional communication) was the second worst domain with respect to stress because of the relative frequencies of high and very high stress levels, which was behind only the D5 domain (vocational training), with a highlight of 42.3% and 20.0% of the students with very high and high levels of stress in the 6th semester, respectively. On the D3 domain (time management), a higher frequency of low level of stress was observed when compared to moderate, high and very high stress (Table 4).

Also in Table 4, we notice that during the semesters of the course, the frequencies of low level of stress increased in the D6 domain (theoretical activity).

Table 4 - Absolute (n) and relative (%) frequencies of stress levels in the six domains investigated versus semester in progress. Teresina, PI. Brazil, 2015. (n = 181)

Domains	Semester				
	5th	6th	7th	8th	9th
	n (%)	n (%)	n (%)	n (%)	n (%)
(D1) Realization of practical activities					
Very high	2 (6.3)	**16 (35.6)**	4 (13.8)	5 (10.6)	1 (3.6)
High	4 (12.5)	**21 (46.6)**	2 (6.9)	5 (10.6)	2 (7.2)
Moderate	9 (28.1)	4 (8.9)	8 (27.6)	15 (31.9)	9 (32.1)
Low	**17 (53.1)**	4 (8.9)	**15 (51.7)**	**22 (46.9)**	**16 (57.1)**

(continua...)

Tabela 4 – *continuação*

Domains	Semester				
	5th	6th	7th	8th	9th
	n (%)	n (%)	n (%)	n (%)	n (%)
(D2) Professional communication					
Very high	2 (6.3)	7 (15.6)	6 (20.7)	5 (10.6)	1 (3.6)
High	9 (28.1)	12 (26.7)	3 (10.3)	10 (21.2)	7 (25.0)
Moderate	3 (9.4)	10 (22.1)	7 (24.1)	8 (17.1)	5 (17.8)
Low	**18 (56.2)**	**16 (35.6)**	**13 (44.9)**	**24 (51.1)**	**15 (53.6)**
(D3) Time management					
Very high	-	1 (2.2)	-	-	-
High	1 (3.1)	7 (15.6)	6 (20.7)	6 (12.8)	5 (17.8)
Moderate	6 (18.8)	11 (24.4)	8 (27.6)	5 (10.6)	4 (14.3)
Low	**25 (78.1)**	**26 (57.8)**	**15 (51.7)**	**36 (76.6)**	**19 (67.9)**
(D4) Environment					
Very high	4 (12.5)	7 (15.6)	6 (20.7)	7 (14.9)	3 (10.7)
High	4 (12.5)	5 (11.1)	1 (3.4)	6 (12.8)	3 (10.7)
Moderate	6 (18.8)	8 (17.7)	8 (27.6)	10 (21.2)	8 (28.6)
Low	**18 (56.2)**	**25 (55.6)**	**14 (48.3)**	**24 (51.1)**	**14 (50.0)**
(D5) Vocational training					
Very high	8 (25.0)	**19 (42.3)**	8 (27.6)	15 (31.9)	8 (28.6)
High	6 (18.8)	**9 (20.0)**	6 (20.7)	9 (19.14)	8 (28.6)
Moderate	5 (15.6)	6 (13.3)	5 (17.2)	7 (14.9)	2 (7.2)
Low	**13 (40.6)**	11 (24.4)	**10 (34.5)**	**16 (34.1)**	**10 (35.6)**
(D6) Theoretical activity					
Very high	2 (6.3)	2 (4.4)	1 (3.4)	1 (2.1)	-
High	3 (9.4)	4 (8.9)	2 (6.9)	4 (8.5)	1 (3.6)
Moderate	8 (25.0)	11 (24.4)	4 (13.8)	7 (14.9)	7 (25.0)
Low	**19 (59.3)**	**28 (62.3)**	**22 (75.9)**	**35 (74.5)**	**20 (71.4)**
Total	32 (100)	45 (100)	29 (100)	47 (100)	28 (100)

Discussion

The results showed that the majority of nursing students were female, mainly in the age group of 20-29 years, single, brown/mulatto, Catholic and with family income up to four minimum wages. It is worth mentioning that female predominance demonstrates that nursing is still a profession dominated by women and it is currently perceived an increase in the search for the course by the male sex(22-24).

Researchers developed a study at the Federal University of Paraíba (UFPB) regarding the evaluation of stress in Nursing undergraduate students and found that the majority of lived away from the family, in student houses or boarding houses. This finding corroborates the present study, whose majority of participants (50.8%) came from other cities of the state of Piauí and Brazil(25).

As for family income, 69.6% of the students earned up to 4 minimum wages. This quantity is not enough to cover the expenses related to the permanence of a student in a higher education institution, because there are expenses with transportation, food, educational material and clothing. Thus, it is necessary to foster research projects, outreach projects, and monitoring projects aimed at providing scholarships to students as well as the construction of internal lodgings and dining rooms(26). All these strategies are fundamental to ensure the students stay in the University and guarantee favorable conditions to the teaching-

learning process. However, we recognize that there are divergences between the reality of HEIs of a private or public nature.

Regardless of the semester in which the nursing students were enrolled in this study, stress situations were always present during the whole undergraduate period, from the time of graduation in an HEI, practical disciplines not previously performed, weekly workload distributed in two distinct environments, students who are involved in research groups, outreach projects, monitoring activities, events or even extra refresher courses.

Last-semester students experience similar stress situations to professionals caused by the administrative requirements of the work institution, the obligation to perform leadership activities in the nursing team, as well as to provide care for, most of the time, critical patients(23,27).

The acquisition of technical skills to perform nursing procedures evaluated as stressors in the D1 domain (realization of practical activities) was scored with greater emphasis in the sixth semester, decreasing in the eighth and ninth semesters. A progression in the academic training of students is observed, where fear and insecurity in carrying out practical activities of the profession that involve direct care to the patients, with a certain degree of complexity, diminish, denoting greater commitment on the part of students and a logical sequencing of the pedagogical plan of the course. This study confirmed that the eighth semester of the undergraduate program was the one where the students showed greater confidence in practical activities. This is because at this point they already experience the practice of curricular internship, acquiring better training on technical skills and capacity to carry out the necessary activities in the hospital routine(28).

Still with regard to the D1 domain, the very high and high levels of stress of nursing students of the 6th semester in this study can be justified by the absence of a hospital practice in the 5th semester, with practical traineeship only in primary care. In this sense, a semester without contact with the hospital practice may be responsible for the high levels of stress in the 6th semester, when practical activities in the hospital scope start. Studies related to psychic disorders in nursing students, for the most part, associate the onset of symptoms with the student's insertion in the hospital field(29).

The D2 domain, portraying the difficulties experienced by students in communicating with the professionals in the sector where the internships are held, found a high level of stress in the fifth and sixth semesters, which remained relatively high in the eighth semester. The explanation for the high level of stress still in the eighth semester may be related to the fact that the hospital activities performed by the students in the supervised traineeship are carried out in a public hospital, where the professionals of the service do not have enough time to deal with students and patients to the point of being able to pass on the basic knowledge during the practices or even for the brief passage in the traineeship field, hindering the creation of (mutual) relationships with the transmission of experiences.

On the D3 domain (time management), there was a low level of stress in all semesters of the undergraduate course. The researched HEI offers internships in just one shift, allowing students to better distribute the student, professional and family timetable in an equivalent way, thus facilitating the positive adaptation according to the aspects related in this field. On the other hand, the overload of academic activities carried out in a same semester can be stressful for the students, since they students have to adapt to the schedules of professional activities, internship schedules, extracurricular activities, so that there is no time for leisure and for family relations, resulting in a stressful situation(24).

In the D4 domain (environment), a high level of stress is observed especially in relation to situations experienced in the hospital environment, since it is usually possible to provide care and assist new cases and patient who require greater care. For nursing students, the hospital is an environment that causes moments of shock during the daily routine and fear, restlessness, doubts and anguish resulting in a high level of stress(10).

It is also worth noting that the students have practical classes in different neighborhoods away from the HEI. Therefore, most of them need to use public transportation for locomotion; this situation may have contributed to evaluation of the environment as ranking third as a stressor, considering the issues raised in the instrument used.

Among all the semesters investigated, a greater prominence of very high level of stress was observed in the D5 domain (vocational training). This domain was more determinant for stress only in the last semester of the course, where the proximity to the end of the course increased expectations no longer as students, but rather as nurses. This student-nurse phase is represents a stressor, as well as a challenge regarding the job market and professional responsibility(30-31).

Thus, recent research revealed that in the last year of the undergraduate nursing course, students face the fear of their professional future amid an increasingly

competitive and demanding job market(24). In face of this uncertainty, doubts may arise if they are really prepared to lead a team without the supervision and support of a teacher and whether the experience during the undergraduate course was sufficient for their training(23).

Low level of stress was perceived in the Domain D6 (theoretical activity). A study affirms the level of stress decreases with the advance of the course, that is, the degree of difficulty felt by the students toward the program content, the activities developed and the teaching methodology decreases, which are perceived as less stressful as the student progresses(25).

In this sense, the practical learning of a profession such as nursing, which deals with one of the most explicit demonstrations of the limit of man (illness and death), is also to live the limit itself: it is the encounter of fragilities between the rational and the emotional sides(10).

In general, we perceived that the daily life of these nursing students is marked by feelings of doubt, disappointment, anxiety, fear, sadness, anger and anguish(32). In this way, we can see that the various situations faced in academic training, especially in the fields of practice, in the hospital context or not, allow considering that there may be several conditions or stressors that may compromise learning.

The identification of stress factors should provide students with a reflection process in their academic and professional activities, contributing to the creation of management strategies, providing a better academic performance, improvement in quality of life and preparation for future professional challenges.(23,27).

It is worth mentioning the need to guide teachers to encourage the creation and/or participation of students in preventive and therapeutic action programs that allow an arrangement of healthy solutions to their anxieties and fears in order to lead to better performance and academic knowledge as nursing students(33).

Based on the discussion of the results of this study, it is fundamental to stimulate Higher Education Institutions that offer nursing undergraduate courses to develop comfortable means to lead the students to experience a healthier academic training, favoring the construction of knowledge in the environments of practice fields such as classrooms, contributing to the prevention of mental disorders or even more complex pathologies.

Conclusion

The university academic environment contributes to the development of conditions that prompt the onset of stress, as it was observed in this study. Through the participation of nursing students, this study evaluated the factors that were associated with the appearance of stress in a Higher Education Institution, as well as to classify the stress levels according to the evaluated semesters. It was verified that the progression of the students in their professional training promotes a change in the scores of domains investigated by the SANS questionnaire.

Stressful conditions are present throughout the undergraduate nursing course and are intensified with the insertion of the students in the practice fields, especially when they start carrying out practical activities associated to very high and high levels of stress, which takes place in the sixth semester. On the field of professional communication, there was an increase of stress in the eighth semester. We also observed that the environment and vocational training domains were stress factors during the academic experience, with a greater emphasis on vocational training which posed a great challenge regarding the expectations toward the labor market and professional responsibility.

However, nursing students presented low levels of stress in the time management domain throughout all semesters. This is because the vacancies of the nursing course of the HEI researched are offered in one shift, morning or afternoon, allowing a better distribution of academic, professional and family activities. We found that there was a statistically significant association between the mean scores obtained in the domains D1 ($p = 0.000$), D4 ($p = 0.002$), D5 ($p = 0.000$) and D6 ($p = 0.009$) and the sex of the participants.

It is important to emphasize that the results presented in this research should be considered from the perspective of some limitations, such as the data collection in a single specific local reality. We recommend that this study design be reproduced in other Higher Education Institutions, Brazilian regions and countries with different cultures. Moreover, the questionnaires were applied at the end of classes or traineeship hours; this situation may have caused discomfort to respond to questionnaire items due to a long day of academic activities.

In view of the results found, it is necessary to stimulate Higher Education Institutions that offer

nursing undergraduate courses to develop comfortable means to lead the students to the experience of a healthier academic training, favoring the construction of knowledge both in the environments of practice fields and in classrooms. We encourage conducting research related to these topics, so that it is possible to improve the proposals aimed at reducing the stressors in this population.

References

1. Birks Y, McKendree J, Watt I. Emotional intelligence and perceived stress in healthcare
2. students: a multi-institutional, multi-professional survey. BMC Med Educ. 2009;9(1):61-8.
3. Krantz DS, Thorn B, Kiecolt-Glaser J. How stress affects your health. American Psychological Association; 2013.
4. Selye H. Stress in health and disease. Sydney: Butterworth; 1976.
5. Gibbons C, Dempster M, Moutray M. Stress, coping and satisfaction in nursing students. J Adv Nurs. 2011;67(3):621-32.
6. Ferreira LRC, Martino MMF. Estresse do enfermeiro: análise das publicações sobre o tema. Rev. Ciênc. Méd. 2006;15(3):241-48.
7. Girondi JBR, Gelbcke FL. Percepção do enfermeiro sobre os efeitos do trabalho noturno em sua vida. Enfermagem em Foco 2011;2(3):191-4.
8. Ferreira RG. Estresse do profissional de enfermagem no serviço noturno: uma questão de saúde. Revista Saúde e Desenvolvimento 2015;7(4):147-65.
9. Corral-Mulato S, Baldissera VDA, Santos JL, Philbert LAS, Breno SMV. Estresse na vida do acadêmico de enfermagem. (Des)conhecimento e prevenção. Invest Educ Enferm. 2011;29(1):109-17.
10. Bublitz S, Guido LA, Freitas EO, Lopes LFD. Estresse em estudantes de enfermagem: uma revisão integrativa. Rev Enferm UFSM. 2012;2(3):530-8.
11. Pereira FGF, Caldini LN, Miranda MC, Caetano JA. Assessment of stress in the inclusion of nursing students in hospital practice. Invest Educ Enferm. 2014;32(3):430-7.
12. Zyga S. Stress in Nursing Students. Int J Caring Sci. 2013;6(1):1-2.
13. Dias EP, Stutz BL, Resende TC, Batista NB, Sene SS. Expectativas de alunos de enfermagem frente ao primeiro estágio em instituições de saúde. Rev. Psicopedag. 2014;31(94):44-55.
14. Monteiro CFS, Freitas JFM, Ribeiro ASP. Estresse no cotidiano acadêmico: o olhar dos alunos de enfermagem da Universidade Federal do Piauí. Esc Anna Nery Rev Enferm. 2007;11(1):66-72.
15. Bublitz S, Guido LA, Freitas EO, Lopes LFD. Estresse em estudantes de enfermagem: uma revisão integrativa. Rev Enferm UFSM. 2012;2(3):530-8.
16. Marisol TM, Martín GEJ, David LPJ, Gujardo LC, Cadena DMG. Alteraciones de salud en estudiantes de licenciatura en enfermería. Revista Electrónica de Investigación en Enfermería. 2012;1(1):16-21.
17. Carneiro AM, Baptista MN. Saúde geral e sintomas depressivos em universitários. Salud & Sociedad. 2012;3(2):166-78.
18. Gonçalves A, Freitas P, Sequeira C. Comportamentos suicidários em estudantes do ensino superior: factores de risco e de protecção. Millenium. 2011;40:149-59.
19. Pereira CA, Miranda LCS, Passos JP. O estresse e seus fatores determinantes na concepção dos graduandos de enfermagem. Rev. Min. Enferm. 2010;14(2):204-9.
20. Botti NCL, Monteiro AMC, Benjamim MLN, Queiroz LC. Depressão, uso de drogas, ideação e tentativa de suicídio entre estudantes de enfermagem. Rev enferm UFPE on line. 2016;10(7):2611-6.
21. Costa ALS, Polak C. Construção e validação de instrumento para Avaliação de Estresse em Estudantes de Enfermagem (AEEE). Rev Esc Enferm USP 2009;43(esp):1017-26.
22. Ministério da Saúde (BR), Conselho Nacional de Saúde. Resolução nº 466, de 12 de dezembro de 2012. Diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. Diário Oficial da União [da] República Federativa do Brasil. 2013 Jun;150(112 Seção 1):59-62.
23. Monteiro CFS, Freitas JFM, Ribeiro AAP. Estresse no cotidiano acadêmico: o olhar dos alunos de Enfermagem da Universidade Federal do Piauí. Esc Anna Nery R Enferm. 2007;11(1):66-72.
24. Silva VLS, Chiquito NC, Andrade RAPO, Brito MFP, Camelo SHH. Fatores de estresse no último ano do curso de graduação em enfermagem: percepção dos estudantes. Rev Enferm UERJ. 2011;19(1):121-6.
25. Dias AN, Hoepers NJ, Poluceno GAS, Ceretta LB, Schwalm MT, Soratto MT. Ocorrência de estresse entre acadêmicos de enfermagem de um curso noturno. RevSaúde.Com. 2014;10(21):129-39.
26. Soares MH, Oliveira FS. A relação entre álcool, tabaco e estresse em estudantes de enfermagem.SMAD, Rev. Eletrônica Saúde Mental Álcool Drog. (Ed. port.) 2013;9(2):88-94.
27. Souza NVDO, Penna LHG, Cunha LS, Baptista AAS, Mafra IF, Mariano DCA. Perfil socioeconômico e cultural do estudante ingressante no curso de graduação em enfermagem. Rev Enferm UERJ. 2013;21(esp.2):718-22.
28. Benavente SBT, Costa ALS. Respostas fisiológicas e emocionais ao estresse em estudantes de enfermagem: revisão integrativa da literatura cientifica. Acta Paul Enferm. 2011;24(4):571-6.
29. Ramírez AV, Angelo M, González LAM. Vivencia de estudiantes de enfermería de la transición a la práctica profesional: un enfoque fenomenológico social. Texto Contexto Enferm. 2011;20(esp):66-73.

30. Soeiro RL, Souza AC. A relação entre o início da vivência no campo de prática hospitalar e o desenvolvimento de sintomas de distúrbios psicossomáticos em graduandos de enfermagem. R Pesq: Cuid Fundam Online. 2010;2(supl):438-40.
31. Kirchhof RS, Guido LA, Freitas EO, Benetti ERR, Lopes LFD. Stress among emergency nurses. J Nurs UFPE on line. 2012;6(12):2927-33.
32. Reeve KL, Shumaker CJ, Yearwood EL, Nancy A, Riley JB. Perceived stress and social support in undergraduate nursing students educational experiences. Nurse Educ Today. 2013;33(4):419-24.
33. Barboza MC, Soares MH. Analysis of stress-causing factors in the final undergraduate year of the nursing course. Acta Scientiarum. Health Sci. 2012;34(2):177-83.
34. Moreira DP, Furegato ARF. Estresse e depressão entre alunos do último período de dois cursos de enfermagem. Rev. Latino-Am. Enfermagem. 2013;21(Spec):155-62.

Received: Apr 23rd 2016
Accepted: Jan 23rd 2017