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Original article

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Stress among nursing undergraduate students of a Brazilian public university

Objective. To determine the level of stress among students of an undergraduate course in nursing of a Brazilian public university. **Methods.** Cross-sectional study involving 111 students who responded to the 30 item questionnaire of Costa and Polak for the Assessment of Stress among Nursing Students, with Likert type response options of 0-3 (0 = I have not experienced the situation; 1 = I do not feel stressed with the situation; 2 = I feel a little stressed with the situation, and 3 = I feel very stressed with the situation). **Results.** Participants were predominantly single (82.9%), female (83.8%), young adults (mean 23.3 years) and performing some kind of paid work (76.6%). The main stressors were related to the lack of time for: leisure activities (2.6); spending time with family members (2.5) and; completion of extracurricular activities (2.3). The highest levels of stress among students were found in the domains of professional training (52.2%), professional communication (33.3%) and time management (32.4%). **Conclusion.** The majority of the students presented low levels of stress in the general activities of the course, however, the activities related to time management, especially time for academic activities and social and family life, were identified as permanent stress factors during the graduation course.

Key words: stress, psychological; students, nursing; mental health; education, higher.

Estrés de los estudiantes del pregrado de Enfermería de una universidad pública brasilera

Objetivo. Determinar el nivel de estrés entre los estudiantes en un curso de pregrado en Enfermería de una universidad pública brasilera. Métodos. Estudio de corte transversal en el que participaron 111 estudiantes que respondieron la escala de 30 ítems de Costa y Polak para la Evaluación del Estrés en Estudiantes de Enfermería, con opciones de respuesta tipo Likert de 0-3 (0 = no ha vivido la situación; 1 = no se siente estresado; 2 = se siente un poco estresado y, 3 = Me siento muy estresado). **Resultados.** Los participantes fueron predominantemente solteros (82.9%), mujeres (83.8%), adultos jóvenes (edad media 23.3 años) que realizaron algún tipo de actividad remunerada (76.6%). Los principales factores de estrés se relacionaron con: el poco tiempo para actividades de ocio (2.6), vivir con los miembros de la familia (2.5) y la entrega de actividades extracurriculares (2.3). Las mayores proporciones de estudiantes con estrés se encontraron en los dominios de formación profesional (52.2%), comunicación profesional (33.3%) y gerencia del tiempo (32.4). **Conclusión.** La mayoría de los estudiantes de pregrado en Enfermería de la universidad estudiada presentó un nivel de estrés bajo en las actividades generales del curso, mientras que las actividades relacionadas con el gerenciamiento del tiempo, en especial entre el tiempo necesario para las actividades académicas y para las de convivência social y familiar, fueron identificadas como factores de estrés permanentes durante el pregrado.

Palabras clave: estrés psicológico; estudiantes de enfermería; la salud mental; enseñanza superior.

Estresse entre graduandos de Enfermagem de uma universidade pública brasileira

Objetivo. Determinar o nível de estresse entre estudantes de um Curso de Graduação em enfermagem de uma universidade pública brasileira. Métodos. Estudo transversal em que participaram 111 estudantes que responderam ao questionário de 30 itens de Costa e Polak para Avaliação de Estresse em Estudantes de Enfermagem, com opções de resposta tipo Likert de 0-3 (0 = não vivencio a situação; 1 = Não me sinto estressado com a situação; 2 = Me sinto pouco estressado com a situação e; 3 = Me sinto muito estressado com a situação). **Resultados.** Os participantes eram predominantemente solteiros (82.9%), do sexo feminino (83.8%), adultos jovens (média 23.3 anos) que exerciam algum tipo de atividade remunerada (76.6%). Os principais estressores se relacionaram ao pouco tempo para: atividades de lazer (2.6); conviver com os familiares (2.5) e; entrega de atividades extraclasse (2.3). Os maiores níveis de estresse entre estudantes se encontraram nos domínios formação profissional (52.2%), comunicação profissional (33.3%) e gerenciamento do tempo (32.4%). **Conclusão.** A maioria dos graduandos apresentou nível baixo de estresse nas atividades gerais do curso, entretanto, as atividades relacionadas com o gerenciamento do tempo, em especial o tempo para atividades acadêmicas e convivência social e familiar, foram identificadas como fatores de estresse permanente durante a graduação

Palavras chave: estresse psicológico; estudantes de enfermagem; saúde mental; ensino superior.

Introduction

The changes in the socioeconomic scenario are marked by the relentless pursuit of improving quality and increasing productivity at work, combined with the inclusion of new technologies. Thus, there is increasing demand for excellence in the performance of labor and social functions, and the development of new skills and competencies.[1,2] In response to the demand and pressure to which the worker is exposed, there has been an increase in cases of mental illness, especially stress-related disorders, which, in our times, is considered a public health problem.[3] This is because stress is characterized as an adaptive reaction of the body to new situations, the evolution of which occurs in three phases: alarm, resistance and exhaustion.[4]

In contact with a stress agent, in an attempt to return to the equilibrium point, the body tries to adjust to or eliminate the problem,[4] however, if the agent is not eliminated and/or managed, impairments of a physical and/or psychological nature, such as anxiety, depression, insomnia, high blood pressure, extreme changes in appetite and ulcers, may occur.[4] Stress agents are present in the various segments of society and are determined by critical situations that may occur in the life of any individual. Such situations require adaptive reactions that cause responses

Verusca Soares de Souza • Maria Antonia Ramos Costa • Anderson Carlos Rodrigues •
Jéssica de Freitas Bevilaqua • Kelly Cristina Inoue • João Lucas Campos de Oliveira • Laura Misue Matsuda

to the stress which are products of essentially human actions and reactions.[3,5] In the context of education, especially in higher education institutions, the teaching and learning process, alone, can be considered a major stressor. This is because the pursuit of the development of skills and the acquisition of knowledge required by the labor market, requires the student/undergraduate to be able to deal with diverse present and future situations,[2] which can generate adaptive crises and consequently high level of stress.

In line with that explained, in the period of training of nurses, at certain stages, stress tends to be present as the nursing teaching is focused on the human being, which can configure intense emotional stimuli due to the characteristics of the profession that, in essence, deals directly with care and not infrequently with pain, completion of life and the suffering of the individual and family members.[6] The importance of investigating stress in the professional training period of nurses is based on studies that have identified serious signs of depression among nursing students[7,8] and highlight time management, with regard to the difficulties reconciling academic activities with personal, emotional and social demands, as the main stressor.[2,6]

Considering the importance of the subject, this study is justified because the results may provide knowledge for coordinators of nursing undergraduate courses to (re)plan their respective pedagogical projects, in order to establish preventive and/or coping measures aimed at reducing the stress factors during the training process of nurses. Based on the above, the following question arose: Are Nursing undergraduate students stressed? To answer this question, this study aimed to determine the level of stress among students of a Nursing Undergraduate Course.

Methods

This descriptive, cross-sectional, quantitative study was carried out, in 2014, in a public higher education institution of the state of Paraná - Brazil. To be included in the study, the following criteria were considered: to be a student of nursing, regularly enrolled in the institution in 2014 and aged 18 years or over. The students were informed about the purpose of the study, their voluntary participation and preservation of their anonymity and agreed to participate by reading and signing the consent form.

For the data collection, a self-report instrument consisting of two parts was used. The first part contained sociodemographic questions and the second was made up of the questionnaire "Assessment of Stress in Nursing Students" (AEEE),[7] consisting of 30 questions/items, grouped into six domains: (1) Performance of practical activities (6 questions); (2) Professional communication (4 questions); (3) Time management (5 questions); (4) Environment (4 questions); (5) Professional training (6 questions); and (6) Theoretical activity (5 questions), in which the answers are organized on a Likert scale of four levels, scored: 0 = "No experience of the situation"; 1 = "I do not feel stressed with the situation"; 2 = "I feel a little stressed with the situation" and; 3 = "I feel very stressed with the situation".[7] Data analysis was performed by domains and the means of the response to the AEEE questions, to identify the levels of stress among the students. Thus, for the analysis of the questions, the Weighted Mean (WM) of each question by Course Year was calculated. For assessing the level of stress by domains, the sum of the values of the answers to the questions corresponding to each domain was calculated and then the score was classified according to the values listed in Table 1.

The analysis by descriptive statistics (measures of dispersion, frequencies and percentages) was carried out using the Statistical Package for the Social Sciences (SPSS) 20. The presentation of the results will be in the form of tables and the discussion will focus on the leading causes of stress in each Course Year, with emphasis on results that indicate a higher level of stress, by Domain and Course Year. All ethical and legal aspects governing research with human subjects were fulfilled and the Project of this investigation was registered under CAAE No. 30706414.0.0000.0092.

Table 1. Classification of the stress level for each domain, according to the AEEE questionnaire score

Domain	Stress level Low	Medium	High	Very high
1. Performance of practical activities	0 – 9	10 – 12	13 – 14	15 – 18
2. Professional communication	0 – 5	6	7 – 8	9 – 12
3. Time management	0 – 10	11 – 12	13 – 14	15
4. Environment	0 – 7	8 – 10	11	12
5. Professional training	0 – 9	10	11 – 12	13 – 18
6. Theoretical activity	0 – 9	10 – 11	12 – 13	14 – 15

Results

Of the 134 nursing students, 111 students (83%) of the various course years participated in this study, considering that 23 of the subjects approached refused to answer the questionnaire.

It can be observed (Table 2) in all course years, the majority of the participants were young adults (mean=23.3 years; DP=6.7 years), predominantly single (82.9%) and female (83.8%).

Table 2. Characterization of the participants by Year of an Undergraduate Course in Nursing. Paraná, Brazil, 2014

Year Characteristic	1st (n=40) Freq.	%	2nd (n=24) Freq.	%	3rd (n=20) Freq.	%	4th (n=27) Freq.	%	Total (n=111) Freq.	%
Gender										
Male	9	22.5	4	16.7	1	5.0	4	14.8	18	16.2
Female	31	77.5	20	83.3	19	95.0	23	85.2	93	83.8
Marital status										
Married	5	12.5	4	16.7	1	5.0	3	11.1	13	11.7
Single	32	80.0	18	75.0	19	95.0	23	85.2	92	82.9
Others	3	7.5	2	8.3	-	-	1	3.7	6	5.4
Paid activity										
Yes	22	55.0	22	91.7	16	80.0	25	92.6	85	76.6
No	18	45.0	2	8.3	4	20.0	2	7.4	26	23.4

Table 3 contains the weighted means by item and domain of the AEEE questionnaire and course year. It can be observed that the time management-related questions obtained responses that indicate higher levels of stress among all course years. Furthermore, the second year showed the worst results in questions of this domain, noting as stressors little rest time (WM 2.8); little leisure time (WM 2.6); reduced time to spend with family members (WM 2.5); and for completion of extracurricular activities (WM 2.3).

Table 4 shows that in general, the students presented low levels of stress in all years of the course.

Verusca Soares de Souza • Maria Antonia Ramos Costa • Anderson Carlos Rodrigues •
Jéssica de Freitas Bevilaqua • Kelly Cristina Inoue • João Lucas Campos de Oliveira • Laura Misue Matsuda

Table 3. Weighted Mean (WM) of the responses to the questions regarding stress, according to the Year of an Undergraduate Course in Nursing. Paraná, Brazil, 2014

Domain/Question	1st	2nd	3rd	4th	Total
Performance of practical activities					
1. New situations that could be experienced	0.98	1.71	1.50	1.67	1.39
2. Environment of the clinical unit of internship	0.88	1.71	1.75	1.60	1.39
3. Fear of making mistakes in the care	1.73	1.33	2.55	2.00	2.03
4. Feeling of little knowledge for the practical test	1.73	2.08	2.10	2.22	1.99
5. Performance of care procedures	0.95	1.46	1.55	1.37	1.27
6. Performance of certain procedures	0.88	1.21	1.50	1.41	1.18
Professional communication					
7. With the professionals of the unit	0.73	1.21	1.15	1.15	1.01
8. With professionals of other units	0.73	1.38	1.25	1.30	1.04
9. Relationship difficulties	1.33	1.38	1.55	1.78	1.49
10. Conflicting attitudes among other professionals	1.45	1.67	1.75	1.85	1.65
Time management					
11. Reduced time for family members	1.80	2.45	2.45	2.19	2.15
12. Withdrawal from social life / loneliness	1.58	2.00	2.30	1.89	1.87
13. Little time for leisure	1.80	2.58	2.55	2.04	2.16
14. Little time to rest	1.88	2.79	2.40	2.15	2.23
15. For completion of extracurricular activities	1.93	2.25	2.25	2.11	2.10
Environment					
16. Distance between the university and residence	2.05	1.50	1.45	1.70	1.74
17. Public transport to the internship	1.13	1.17	1.00	1.22	1.13
18. Public transport to the university	1.25	0.71	0.50	1.11	1.13
19. Distance from most of the internship locations and place of residence	1.63	1.67	1.60	1.81	1.68
Professional training					
20. Concern for the professional future	2.23	2.04	2.15	2.15	2.15
21. Similarity between internship situations and those you may experience as a professional	1.65	1.38	1.25	1.63	1.51
22. Situations you may experience when you become a nurse	1.93	1.54	1.90	1.74	1.79
23. Professional responsibility in the internship	1.80	1.58	1.90	2.04	1.83
24. Experiences as a nurse in training, in the internships	1.70	1.17	1.55	1.59	1.53
25. Relationship between theory and the future professional performance	1.70	1.25	2.00	1.85	1.77
Theoretical activity					
26. Form of evaluation of the theoretical content	1.68	1.54	1.80	1.93	1.73
27. Insecurity / fear of taking tests	1.95	1.88	1.90	2.07	1.95
28. Difficulty in performing extracurricular activities	1.73	1.83	1.55	1.70	1.71
29. Requirement for extracurricular activities	2.00	1.67	1.15	1.85	1.85
30. Assimilation of theoretical and practical content	1.70	1.67	1.75	1.96	1.77

Table 4. Stress level of students of an Undergraduate Course in
Nursing by domain of the AEEE questionnaire, by Course Year. Paraná, Brazil, 2014

Year Level	1st Freq. (%)	2nd Freq. (%)	3rd Freq. (%)	4th Freq. (%)	Total Freq. (%)
Performance of practical activities					
Low	32 (80.0)	11 (45.8)	6 (30.0)	11 (40.7)	60 (54.1)
Medium	7 (17.5)	7 (29.2)	8 (40.0)	11 (40.7)	33 (29.7)
High	-	4 (16.7)	6 (30.0)	4 (14.8)	14 (12.6)
Very high	1 (2.5)	2 (8.3)	-	1 (3.7)	4 (3.6)
Professional communication					
Low	27 (67.5)	12 (50.0)	9 (45.0)	10 (37.0)	58 (52.3)
Medium	3 (7.5)	5 (20.8)	4 (20.0)	4 (14.8)	16 (14.4)
High	9 (22.5)	5 (20.8)	6 (30.0)	8 (29.6)	28 (25.2)
Very high	1 (2.5)	2 (8.3)	1 (5.0)	5 (18.5)	9 (8.1)
Time management					
Low	28 (70.0)	3 (12.5)	5 (25.0)	11 (40.7)	47 (42.3)
Medium	5 (12.5)	11 (45.8)	4 (20.0)	8 (29.6)	28 (25.2)
High	7 (17.5)	6 (25.0)	9 (45.0)	6 (22.2)	28 (25.2)
Very high	-	4 (16.7)	2 (10.0)	2 (7.4)	8 (7.2)
Environment					
Low	27 (67.5)	17 (70.8)	15 (75.0)	18 (66.7)	77 (69.4)
Medium	5 (12.5)	3 (12.5)	2 (10.0)	2 (7.4)	12 (10.8)
High	5 (12.5)	2 (8.3)	2 (10.0)	2 (7.4)	11 (9.9)
Very high	3 (7.5)	2 (8.3)	1 (5.0)	5 (18.5)	11 (9.9)
Professional training					
Low	15 (37.5)	13 (54.2)	8 (40.0)	10 (37.0)	46 (41.4)
Medium	2 (5.0)	2 (8.3)	2 (10.0)	1 (3.7)	7 (6.3)
High	6 (15.0)	4 (16.7)	4 (20.0)	5 (18.5)	19 (17.1)
Very high	17 (42.5)	5 (20.8)	6 (30.0)	11 (40.7)	39 (35.1)
Theoretical activity					
Low	19 (47.5)	13 (54.2)	11 (55.0)	13 (48.1)	56 (50.5)
Medium	15 (37.5)	2 (8.3)	3 (15.0)	9 (33.3)	29 (26.1)
High	4 (10.0)	8 (33.3)	6 (30.0)	4 (14.8)	22 (19.8)
Very high	2 (5.0)	1 (4.2)	-	1 (3.7)	4 (3.6)

Discussion

Consistent with other studies carried out with nursing students,[8,9] the characterization data of the students of this investigation show that, given the expansion of public policies, adults have more access to universities. Nursing has historically been a profession permeated by the figure of the woman, which has always been associated with

Verusca Soares de Souza • Maria Antonia Ramos Costa • Anderson Carlos Rodrigues •
Jéssica de Freitas Bevilaqua • Kelly Cristina Inoue • João Lucas Campos de Oliveira • Laura Misue Matsuda

the provision of family care. This information is relevant because women, in addition to possible stress experienced in the training period, can also be influenced by other factors present in today's society that, despite advances, maintains historical remnants of the hegemony of man as the figure of support provider for the family and, consequently, for society itself.

Also based on the data of this study, the fact is highlighted that the majority of the students performed some kind of paid work (76.6%), with this indicating that a large portion of the sample was not devoted exclusively to study. In this regard, the literature indicates that students who work tend to report difficulty in concentration,[8] low quality sleep[1] and also deficits in learning.[10] The influence of stress on the sleep quality of the nursing students was analyzed by a recent study,[9] which found that employment causes negative interference in the rest of the students because they use the period/time that should be allocated to the rest to fulfill their academic obligations (teaching and research activities) and social life.[9]

The analysis of Table 3 shows that the questions that deal with time management obtained responses indicative of higher stress level in all course years. It is noteworthy that the institution investigated offers the nursing course, with four-year duration, full-time, providing lectures at night and supervised practical, laboratory and internships during the day. Furthermore, although the course has mandatory daytime activities, evening lectures are not suspended or delayed and this may be reflected in the time management difficulty experienced by the majority of the subjects.

The difficulty in time management for the fulfillment of academic activities at the expense of leisure and recreation can cause physical and psychological consequences of stress in nursing undergraduate students. As an example, one clinical trial[11] that investigated the effects of yoga exercises on stress and blood sugar levels of nursing students, showed significant reductions in the indicators of stress and glycemia, with the performance of weekly yoga exercises.

Given the above, it is recommended that the training institutions of nurses and other professionals should be aware of the time available to the undergraduate students for leisure activities and sport, so that the academic life does not become a factor opposed to the quality of life of the individuals. To minimize this reality the redistribution of classes is suggest, alternating them at times of the day and excusing students from lectures during the period of compulsory internships. It needs to be considered that time management is also a crucial skill for the planning and organization of nursing care,[12] so that care actions are appropriately prioritized. In this sense, the stress brought about by the deficit in time management for the student can be reproduced in his/her professional performance and possibly have a negative effect on the care management practice.

Furthermore, it was noted that among undergraduate students in all years, concern for the professional future was identified as a worrying factor, with those of the first year having the worst perception of the question. This may be the product of increasing the requirements for skills among nurses who, as well as being part of the general population, which is under pressure to increase productivity at work,[1,2] also experience the need to incorporate skills and competencies beyond the technical dimension of health work[12] and can, therefore, show signs of anxiety and/or concern early in the undergraduate course.

The anxiety highlighted by the students, with regard to their professional future, reflects the requirement of the current job market, which requires trained professionals to perform their functions with excellence. From this perspective, the literature[13] shows that the pressure from social and economic factors, in addition to imposing the development of new skills and competencies, allows for few mistakes and that, in our view, may present as an important stressor in the period of the undergraduate course. Regarding the fourth year and/or last year of the Nursing Course in the literature[8,14] it appears that this phase has the characteristics of an increase in academic

assignments, insecurity regarding the future profession and facing the labor market, factors highlighted by the students of the fourth year.

The concern with the practical knowledge acquired was in line with the results of a recent study,[15] which aimed to identify stress predictors and coping strategies used by nursing students and found that the greater the perception of deficit in the practical knowledge acquired, the greater the occurrence of stress among the students. From another perspective, a study that aimed to analyze the perception of graduates in nursing, regarding the contribution of the course for the development of competences necessary for professional practice, concluded that the course was important for the professional preparation, particularly with regard to the ethical and legal aspects of the profession.[16] The students of the third and fourth years highlighted the fear of making mistakes as a stress factor. It is thought that this was because, in the final years of the course, given the experience in practice (internships) and discussions in real environments, the student has more knowledge about the potential damage that health care can cause. It should also be noted that there is a gradual increase in stress related to feelings of little knowledge for the practical assessment throughout the course years. In the same direction as the previous point, this may also be due to the possibility that the students, with the practical exercise, feel more anxious because the practice, although simulated, can signify proximity with the professional exercise that is notoriously full of risks and uncertainties.[17]

Although the students highlighted some specific items, related to time management, professional future and evaluations, as stressors, the analysis by domain showed that, in general, the students presented low stress levels in all the undergraduate years, highlighting only the concern with professional training domain. Again, the fact is highlighted that the perception of the training as stressful may have been a consequence of the decrease in quality of sleep.[9] Furthermore, when the pressure generated by the expectation of the family regarding the professional future of the

student is added to that condition, situations of adaptive crisis arise for some undergraduates,[18] which interfere with their way of coping with stress situations.

Although other studies[2] present time management as a major factor of deterioration among undergraduate nursing students of all years, only those of the third year presented high levels of stress in this domain (high=45%, very high=10%). It is conjectured then, that this fact may be associated with the possible transition that this year in the course represents for the undergraduate students, who must devote themselves exclusively to the specific training in nursing, which is usually associated with a greater amount of practical activities (internships); theoretical work; case studies; and theoretical and practical assessments, which represent common pedagogical tools in this stage.

Although the lack of time for social interaction may be caused by the overload of activities common to undergraduate courses in nursing, the domains "Performance of Practical Activities" and "Theoretical Activity" obtained lower stressor ratings in all course years. This finding differs from a previous study,[15] which aimed to associate stress predictors with coping strategies among nursing students and found that the low perception of practical knowledge acquired during the course, was the cause of higher incidence of stress among the students.

It was found that the "Environment" had the highest number of responses that classified the item as a low stress agent among the years, namely: 67.5%; 70.8%; 75%; 66.7% of students of the first, second, third and fourth years, respectively. The result for this domain, which addresses the perceptions of the students regarding the difficulties in access to the university, the internship locations and the use of public transport,[7] was in line with a study that aimed to relate stress and sleep quality among nursing students and did not find a positive relationship between the Environment domain and the students' rest.[9]

Verusca Soares de Souza • Maria Antonia Ramos Costa • Anderson Carlos Rodrigues •
Jéssica de Freitas Bevilaqua • Kelly Cristina Inoue • João Lucas Campos de Oliveira • Laura Misue Matsuda

Regarding the level of stress among students by domain of the AEEE questionnaire, it was noted that the nursing students presented reduced stress levels in relation to the general activities of the course. However, activities related to time management, in particular regarding the time required for academic activities and that required for the social and family life activities, were identified as stress factors present in the quotidian of the undergraduate course.

The nursing students investigated presented low stress levels in the Realization of Practical Activities, Professional Communication, Environment and Theoretical Activity domains. However, the Professional Training domain stood out for being the only one that was awarded a "Very High" stress level. The absence of inferential statistical analysis, the cross-sectional sample and the single study location are possibly the most significant limitations of this research. However, it is believed that the study helps to highlight the important factors that generate stress among nursing students, which can undoubtedly favor the decision making of managers and educators who defend the health and quality of life of the students.

The need for new studies with different methodological approaches is evident, for example, qualitative studies focusing on the perception of undergraduate students faced with stress and analytical investigations that enable the measurement of the stress level in association with other variables of interest in the professional training.

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