

Assessment of stress in the inclusion of nursing students in hospital practice

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Objective. To verify the presence of stress among undergraduate nursing students in different stages of hospital practice. **Method.** Descriptive, cross-sectional study addressing 86 nursing students in their 6th, 7th, and 9th semesters in 2011. An instrument developed by Costa and Polak for the Assessment of Stress Among Nursing Students was used. It is composed of six domains: performance of practical activities, professional communication, time management, environment, professional training, and theoretical activity. **Results.** Most participants were women (95%) and the average age was 23 years old. A total of 84% of students passed the program's courses and 91% participated in extracurricular activities. Stressors are present during the entire program but intensify when students are introduced to care practice with an emphasis on the domain of professional training; related stress was high in all the semesters. The scores concerning the practical activity domain were higher only in the 6th semester. There were statistically significant levels at 0.01 and 0.10 in the difference in the averages in the domains of training and time management, respectively, between the semesters. As the students advance in the program, scores obtained in the domains presented by AEEE change. As stress can interfere in the performance and learning of nursing students, coping strategies should be devised to enable them to deal with stress during the program.

Key words: stress, psychological; students, nursing; clinical clerkship.

Evaluación del estrés en la inserción de los alumnos de enfermería en la práctica hospitalaria

Objetivo. Evaluar la presencia de estrés en estudiantes del pregrado de enfermería en diferentes escenarios de la práctica hospitalaria. **Metodología.** Estudio descriptivo de corte transversal, en el que participaron 86 alumnos de enfermería, del sexto, séptimo y noveno semestre en 2011. Se empleó la escala de Evaluación del Estrés de Estudiantes de Enfermería de Costa y Polak, que tiene

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Conflicts of interest: none.

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seis dominios: realización de actividades prácticas, comunicación profesional, gerenciamiento del tiempo, ambiente, formación profesional y actividad teórica. **Resultados.** Hubo un predominio del sexo femenino, 95%; la edad promedio fue de 23 años; aprobaron las asignaturas del curso el 84%; y participaron en actividades extracurriculares, 91%. Las situaciones de estrés están presentes en todo el tiempo de formación, pero se intensifican con la inserción del bienestar estudiantil en la práctica, con énfasis en el campo de la formación profesional que son altos en cada semestre. Sin embargo, las puntuaciones de la interpretación del campo de actividades prácticas fueron más altas sólo en el sexto semestre. Hubo nivel de significancia estadística de 0.01 y 0.10 en la diferencia de los promedios de los campos y entrenamiento de gestión de tiempo, respectivamente, entre los semestres. **Conclusión.** Se evaluó la presencia de estrés en los alumnos de los semestres participantes. A medida que el estudiante progresa en su formación cambian los dominios afectados en la escala de medición que se utilizó. Como el estrés puede interferir en el rendimiento y aprendizaje del alumno de enfermería, se deben proponer estrategias dentro de la formación para la reducción del mismo.

Palabras clave: estrés psicológico; estudiantes de enfermería; prácticas clínicas.

Avaliação do estresse na inserção dos alunos de enfermagem na prática hospitalar

Objetivo. Avaliar a presença de estresse em estudantes de graduação de enfermagem em diferentes palcos da prática hospitalar. **Metodologia.** Estudo descritivo de corte transversal, no que participaram 86 alunos de enfermagem, do sexto, sétimo e nono semestre em 2011. Empregou-se a escala de Avaliação do Estresse de Estudantes de Enfermagem de Costa e Polak, que tem seis domínios: realização de atividades práticas, comunicação profissional, gerenciamiento do tempo, ambiente, formação profissional e atividade teórica. **Resultados.** Teve um predomínio do sexo feminino (95%), a idade média foi de 23 anos. Aprovaram as matérias do curso o 84% e 91% participaram em atividades extracurriculares. As situações de estresse estão presentes em todo o tempo de formação, mas se intensificam com a inserção do bem-estar estudiantil na prática, com ênfase no campo da formação profissional que eram altos em cada semestre. No entanto, as pontuações da interpretação do campo de atividades práticas foram mais altas só no sexto semestre. Teve nível de significância estatística de 0.01 e 0.10 na diferença das médias dos campos e treinamento de gestão de tempo, respectivamente, entre os semestres. **Conclusão.** Observou-se a presença de estresse nos alunos dos semestres participantes. À medida que o estudante progride em sua formação mudam os domínios afetados na escala de medição que se utilizou. Como o estresse pode interferir no rendimento e aprendizagem do aluno de enfermagem, devem propor estratégias dentro da formação para a redução do mesmo.

Palavras chave: estresse psicológico; estudantes de enfermagem; Estágio Clínico.

Introduction

In recent years, there has been increased interest, in the phenomenon of stress, which is seen as the result of a clash between a given difficulty and one's ability to overcome it. The consequences of stress may be closely linked to an individual's response to a given demand, that is, whether a demand is seen as a stimulating challenge or a threat to be faced.¹ This psychobiological

phenomenon has been studied since the 1950s. Since that time, some associations have been established, such as its influence on the behavior and productivity of healthcare workers, indicating that nursing is one of the professions in which this event is more frequently observed.²⁻⁴ Stress is present in many routine situations and the way one reacts to the stressful stimulus determines its

consequences, possibly affecting one's personal and professional lives. Therefore, each individual responds differently to different stimuli. Studies^{5,6} show that there is already a certain level of stress in nurses' academic training, that is, there is stress during the undergraduate program and, more specifically, when students initiate supervised training at hospitals.

Undergraduate students are faced with various stressors in hospital practice, such as: the performance of technical procedures; the use of new technologies and equipment; constant supervision by professors; tests; practice evaluation systems; relationships established with patients; uncertainty in regard to the professors' expectations concerning their academic performance; and the hospital's dynamics itself. Stressors may make it difficult for learning and allow for errors, lack of concentration, or oscillating concentration levels.⁷ The most frequent stressors observed within the university curricular system include: professors, assessments, curriculum, academic demands, and practical activities performed with patients or in laboratories. Stress is more frequently observed among students at times such as tests and exams, and when facing certain situations, i.e. when being tested by a professor who has certain characteristics that lead students to feel pressured or nervous.⁸ There are various instruments or questionnaires available to assess levels of stress in the most diverse situations, especially instruments that enable individually assessing certain aspects of stress specific to the phenomenon. There is, however, a reduced number of instruments to assess stress levels and factors when specifically analyzing nursing students: the Student Nurse Stress Index⁹ relates stress among nursing students; the Bilingual Questionnaire of Nursing Students' Stressors in Clinical Practices (KEZKAK);¹⁰ and the Instrument for Assessing Stress among Nursing Students (AEEE).¹¹

In Brazil, the instrument for Assessing Stress among Nursing Students (AEEE) was developed and validated by Costa and Palak¹¹ in 2008 to assess the degree of stress among nursing students, having as its theoretical basis the understanding

of stress according to the interactionism model of stress proposed by Lazarus and Folkman and the Student Nurse Stress Index (SNSI).⁹ The AEEE is composed of 30 items subdivided into six domains, which are correlated to each other: performance of practical activities, professional communication, time management, environment, professional training, and theoretical activity. Its purpose is to allow assessing stress among nursing students as a variable in studies or for educational purposes.¹¹ The contribution of this study is to enable the identification of the main stressors in each semester and then provide data to develop strategies to reduce such stressors and induce a healthier academic life with better academic performance.

This study's objective is to assess the presence of stress among undergraduate students in the different contexts of hospital practice. Hence, considering the previous discussion, we believe that investigating the presence of stress among undergraduate nursing students is relevant because stress may lead to organic problems of a psychological nature, such as irritability, difficulty concentrating and social isolation. It is important that professors acknowledge the students' levels of stress and devise strategies to minimize stress, including preventive measures.

Methodology

Cross-sectional, descriptive study conducted with the nursing students of the Federal University of Ceará, Brazil. The nursing program is structured into nine semesters introducing students to hospital practice beginning in the 6th semester, in order to train generalist nurses to prevent health problems, and to promote, protect and rehabilitate health. There were 120 students enrolled in the program at the time of this study, 40 of which were in the 6th semester; 30 were in the 7th semester; and 30 were in the 9th semester. This study's population was composed of 86 students, 37 of which were in the 6th semester, 25 in the 7th semester, and 24 in the 9th semester based on the

calculation for finite population sampling with a confidence interval of 95%, a 90% success rate, and a margin or sampling error of 5%.

All the participants were attending courses with a mandatory hospital practice workload. Data were collected at the beginning and at the end of the semester in September and November 2011 with students attending the 6th, 7th, and 9th semesters, all of which include a mandatory hospital practice workload. Students begin developing procedures of varied complexity directly with inpatients in the 6th semester. The 7th semester includes basic obstetrical, gynecological and pediatric techniques to be employed in emergency services and in nursing wards. And finally, the 9th semester includes supervised training, in which students perform practical activities under the supervision of clinical nurses from the hospital service without the constant presence of professors. For data collection we employed one questionnaire addressing social and school data such as: sex, age, current semester, participation in extension activities and school records and one scale assessing stress among nursing students (AEEE).¹¹ Both instruments were filled out by the participants themselves and collected by the authors.

After the AEEE was completed, the scores were computed as recommended by its authors, observing that the domain with the highest score was considered predominant and represented the highest intensity of stress for the respondent. The domains are classified according to the AEEE as: Domain 1 – performance of practical activities (6 items): it refers to technological knowledge acquired by the student to perform procedures and feelings involved in the delivery of care to patients; Domain 2 – professional communication (4 items): it portrays communication and relationship difficulties in the professional environment; Domain 3 – time management (5 items): Difficulties in reconciling academic activities with one's emotional and personal spheres; Domain 4 – environment (4 items): it is related to difficulty in accessing fields of practice; Domain 5 – professional training (6 items): it

includes a concern with acquired knowledge and its impact on one's future professional life; and Domain 6 – theoretical activity (5 items): it refers to the degree of difficulty experienced with the program's content, activities, and methodologies.

The interpretation of scores classifies the level of stress according to the domains: Domain 1: 0-9 low level of stress; 10-12 average level of stress; 13-14 high level of stress; 15-18 very high level of stress. Domain 2: 0-5 low level of stress; 6 average level of stress; 7-8 high level of stress; 9-12 very high level of stress. Domain 3: 0-10 low level of stress; 11-12 average level of stress; 13-14 high level of stress; 15 very high level of stress. Domain 4: 0-7 low level of stress; 8-10 average level of stress; 11 high level of stress; 12 very high level of stress. Domain 5: 0-9 low level of stress; 10 average level of stress; 11-12 high level of stress; 13-18 very high level of stress. Domain 6: 0-9 low level of stress; 10-11 average level of stress; 12-13 high level of stress; 14-15 very high level of stress.¹¹

The Statistical Package for the Social Sciences-SPSS version 15.0 for Windows was used for the statistical analysis. It performed the calculation of frequencies and means while the Kruskal-Wallis test was used to analyze the variance of scores among the students. A level of significance of 5% was considered for the statistical analysis of data. Data are presented in tables and figures, direct description of information, and discussion based on related literature. The coordination of the nursing program authorized this investigation and the study was approved by the Institutional Review Board at the university (Protocol 191/11). All the study's participants signed free and informed consent forms in accordance with Resolution 196/96, the National Council of Ethics.¹²

Results

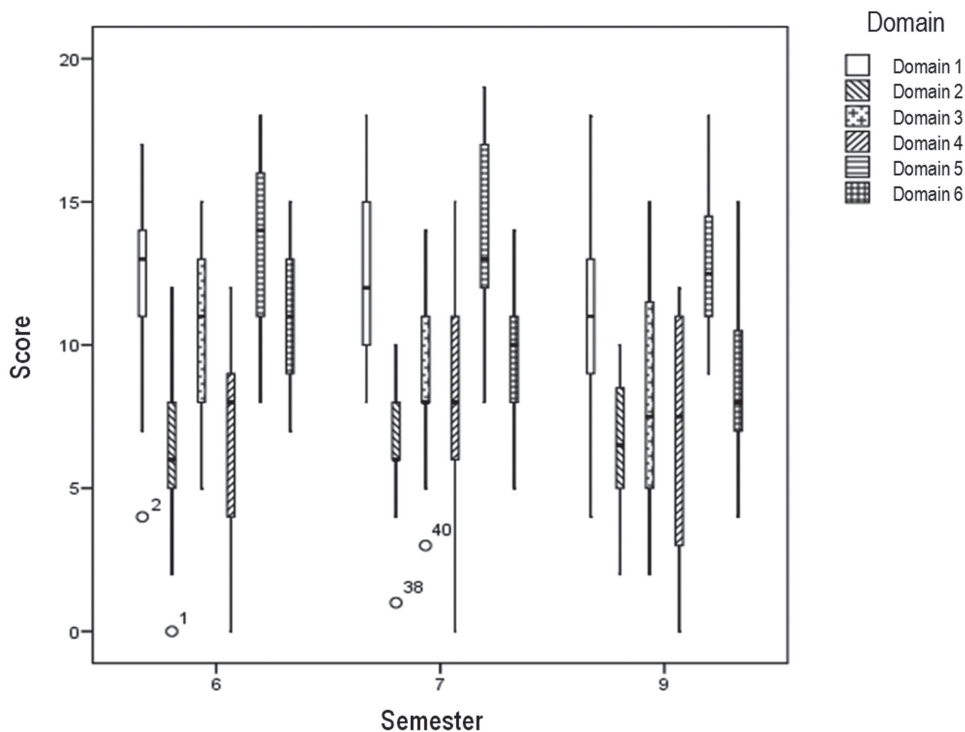
Students from the 6th, 7th, and 9th semesters of study participated in the study, totaling 71% (86) of nursing students from a population of 120.

Women were the majority with 95.3% (81) and those who passed in all the program's courses predominated with 84.3% (75). In regard to extracurricular activities, 91% (81) participated in research projects; 40.4% (36) participated either in the Tutorial Educational Program (PET) or in the monitoring program while 22.1% (19) participated in representative associations. Students were 23.1 years old on average; the youngest students were aged 20 years old and the oldest ones were 31 years old.

In regard to the AEEE domains, analysis of the variance of scores obtained between the groups of students in their respective semesters provided asymmetric distributions in the scale's domains in regard to each semester because the medians were not positioned equally from the boxes' extremes. The highest scores, greater than 15,

were obtained by students attending the 6th and 7th semesters; in both semesters, the highest scores were in domain 5 – professional training. In the 6th semester, the score obtained in domain 4 showed low and average stress; this was the box presenting the greatest symmetry. There are two atypical values in this semester, represented by two students who reported no experience with situations in domains 2 and 4 (Graph 1).

Data from the 7th semester present greater asymmetry in domains 2 and 3. These values were represented with atypical values in the graph. The distribution of data concerning the 9th semester presented an asymmetry less than that presented in other semesters and did not show atypical values. Lower scores were also observed in this semester, showing a lower level of stress among students from the 9th semester in comparison with the other semesters.



Graph 1. Median, maximum and minimum values of scores in each domain per semester. Fortaleza, CE, Brazil. 2011

In regard to domain 1 – performance of practical activities – we observed the presence of a high level of stress among 6th semester students and average stress among 7th and 9th semester students, without statistical significance in regard to the variance of means ($p= 0.059$). In domain 2 – professional communication – the 6th semester students were proportionally similar in regard to the results obtained by the 7th semester students, who presented average levels of stress and the 9th semester students who presented low levels of stress, without statistical significance in regard to the variance of means ($p= 0.878$).

Students from all the semesters presented low levels of stress in domain 3 (time management) and in domain 4 (environment), however, statistically significant differences ($p=0.01$) among the students' means was found only in regard to domain 3. All the students presented very high level of stress in domain 5 (professional training), though with no statistically significant difference in regard to the obtained means. Only the 6th semester students presented average levels of stress in the regard to the last domain (theoretical activity); the 7th and 9th semester students presented low levels of stress in this domain with significant difference in regard to the groups' means (Table 1).

Table 1. Relationship between the domains of the Stress in Nursing Students Scale and the semester the student is attending. Fortaleza, CE, Brazil. 2011

Domains	Semester			p^*
	6 th	7 th	9 th	
1 Performance of Practical Activities	High	Average	Average	0.059
2 Professional Communication	Low/Average	Average	Low	0.878
3 Time management	Low	Low	Low	0.010
4 Environment	Low	Low	Low	0.686
5 Professional Training	Very high	Very high	Very high	0.565
6 Theoretical Activity	Average	Low	Low	0.001

*Kruskal-Wallis

Discussion

The predominance of female students in nursing programs is a characteristic frequently found in various studies addressing this population.^{5,8} The reason nursing is a profession predominantly populated with females is found in its historical roots. The expressive participation of students in extracurricular activities did not hurt their academic performance, which corroborates data from a Chilean study concluding that experience with extracurricular activities positively impacts the students' development of social and communication skills and of critical reasoning and organization of academic life.¹³ Regardless of the semester in which the nursing students were enrolled, situations of stress were always present

during the undergraduate period such as, when entering the university, when attending courses with laboratorial practice never before performed, as well as when administering the weekly workload distributed in two shifts.

The students experienced stressful situations in the last semester similar to those experienced by professionals. These stressors arise from administrative demands of the institution, the need to undertake leadership activities within the nursing staff, together with care delivery, often to patients in critical condition.^{14,15} The acquisition of technical skills to perform nursing procedures seen as stressor factors in domain 1 was scored

with greater emphasis in the 6th semester and decreased in the 7th and 9th semesters. These findings are in agreement with the behavior observed in another study¹⁶ that verified that, as students advance in the program, the fear and insecurity they experience decreases when performing activities typical to the profession and that involve direct care to patients with a certain degree of complexity, showing greater commitment and a logical sequence of the program's pedagogical plan.

Domain 2, which shows the difficulties experienced by students in communicating with the professionals in the sector where they have their supervised training, was not considered a factor that induces a high level of stress. A potential explanation is that the hospital activities students perform take place in a university hospital where the professionals are prepared and trained to deal with students in order to create a more friendly relationship. A very high level of stress was observed in all the studied semesters in regard to the domain of professional training. This finding differs from what is found in the literature, showing that this domain was more determinant of stress only in the last semester: as the end of the program approaches, the students' expectations increase, no longer as students, but as future nurses.¹⁷ This transitional phase from student to nurse is considered a stressor, as well as the challenge to be faced in the job market and in regard to professional responsibility.¹⁸

The 6th semester presented a high level of stress in the domain performance of practical activities, which may be explained by the fact that it is when students begin their practice in a hospital environment. Most studies related to psychological disorders among nursing students associate the beginning of symptoms with the inclusion of students in the hospital context.¹⁹ The practical learning of a profession such as nursing, which deals with one of the most explicit demonstrations of humankind's limitations – disease and death – means for nurses to live their own limitations: it is the encounter of fragilities between rational and emotional. The routines of students become

marked by feelings of doubt, disappointment, anxiety, fear, sadness, anger and distress.²⁰

Observing the circumstances faced by students with the beginning of hospital practice shows that there might be various conditions in which they can experience hospital practice as a situation of stress. It is, in the studied facility, in the 6th semester that students have their first direct contact with the hospital. In this new environment, students experience a universe of responses such as anxiety, fear and tension due to an abrupt entry into a unknown situation and difficulties of relationships sometimes experienced with colleagues, professors, professionals of the hospital services or patients. In this sense, some strategies should be rethought to reduce the possibility of stress that may interfere in the students' performance and learning such as: humanization of the learning-teaching process; extending the period of training in laboratories with anatomical equipment and with simulations of situations similar to those faced in a hospital; and encourage professors and the students' families to develop coping strategies to deal with stress.

Conclusion

Because nursing is a profession that seeks to provide care to people, often in critical situations, the presence of varied levels of stress was observed in the studied semesters. As the students advance in the program, scores obtained in the domains presented by AEEE change. The instrument was easy to apply and collected expressive results. Stressors are presented over the course of the undergraduate program whenever the inclusion of students in care practice is intensified, especially in the professional training domain, which induced high levels of stress in students attending all the semesters. The scores in the performance of practical activities domain, however, were high only in the 6th semester. Statistically significant levels of 0.10 and 0.01 were verified in the difference of means in the domains time management and

professional training, respectively, among the studied semesters.

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