Biosocial-academic profile and stress in first- and fourth-year nursing students

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Objective. To compare the biosocial and academic profile and stress levels between first- and last-year nursing students from a public university in Sao Paulo. **Methods.** This is an analytic and quantitative study. A biosocial and academic form and the instrument for Assessment of Stress in Nursing Students by Costa and Polak were applied to 83 students between February and March 2016. **Results.** Insufficient income and extracurricular activities contribute to higher levels of stress in both groups of students assessed. Fourth-year students showed higher levels of general stress, particularly generated by the factors: performance of practical activities, professional communication, environment and professional training. Time management produces higher stress in first-year students. **Conclusion.** Few biosocial and academic features equally contribute for the stress levels in first- and last-year nursing students, but those in last-year present higher stress than students who are starting the course.

Perfil biosocial y académico y nivel de estrés en estudiantes de Enfermería de primero y cuarto años

Objetivo. Comparar el perfil biosocial y académico y el nivel de estrés entre estudiantes del primero y cuarto año del curso de graduación en enfermería de una universidad pública de São Paulo, Brasil. **Métodos.** Estudio analítico y cuantitativo. Entre febrero y marzo de 2016 se aplicó un formulario con datos biosociales y académicos y el Instrumento para Evaluación de Estrés en Estudiantes de Enfermería de Costa y Polak en 83 alumnos. **Resultados.** La renta insuficiente y las actividades extracurriculares contribuyen para un mayor nivel de estrés en ambos años. Los estudiantes del cuarto año presentan mayores niveles de estrés general en los siguientes factores: realización de actividades prácticas, comunicación profesional, ambiente y formación profesional. La gestión del tiempo representa

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el mayor nivel de estrés en estudiantes del primer año. **Conclusión.** Algunas características del perfil biosocial y académico contribuyen igualmente al nivel de estrés en los estudiantes de primero y cuarto año, pero para los de cuarto año representan mayor estrés que para los alumnos en el inicio del curso.

Descriptores: estrés psicológico; estudiantes de enfermería; educación superior; estudio comparativo.

Perfil biossocial e acadêmico e nível de estresse em estudantes de Enfermagem do primeiro e do quarto ano.

Objetivo. Comparar o perfil biossocial e acadêmico e o nível de estresse entre estudantes do primeiro e do quarto ano do curso de graduação em enfermagem de uma universidade pública de São Paulo, Brasil.

Métodos. Estudo analítico e quantitativo. Entre fevereiro e março de 2016 se aplicou um formulário com dados biossociais e acadêmicos e o Instrumento para Avaliação de Estresse nos Estudantes de Enfermagem de Costa e Polak em 83 alunos. **Resultados.** A renta insuficiente e as atividades extracurriculares contribuem para um maior nível de estresse em ambos anos. Os estudantes do quarto ano apresentam maiores níveis de estresse em geral e nos fatores: realização de atividades práticas, comunicação profissional, ambiente e formação profissional. A gestão do tempo representa o maior nível de estresse nos estudantes do primeiro ano. **Conclusão.** Algumas características do perfil biossocial e acadêmico contribuem igualmente ao nível de estresse nos estudantes do primeiro e do quarto ano, mas para os do quarto ano representam maior estresse que para os alunos no início do curso.

Descritores: estresse psicológico; estudantes de enfermagem; educação superior; estudo comparative.

Introduction

Undergraduate training in the nursing area is complex. It involves a large academic load distributed into theoretical lessons and practical traineeship that put students in contact with daily situations of the nursing practice that require dedication, commitment and balance.[1] In this course, students interact with sick individuals under distress and vulnerability, and this requires skills beyond those developed in the classroom.[2-4] On this, previous research carried out in Brazil cite some situations frequently experienced by nursing students, namely: the extensive curricular load; the obligation to perform extraclass work; little time left for academic activities and social and family life; insufficient content addressed in class; personal and family problems; dissatisfaction with public transport; inflexible schedules in the institutions; and difficulties with interpersonal relationships such as conflicts with classmates and professional staff in the fields of practice.[1]

Faced with this, students may perceive the academic demands as stressors. According to the interactionist model, stress is defined as any and all situations that tax or exceed the sources or adaptive resources of an individual or social system.[5] In this context, the number of studies on stress among nursing undergraduates has increased, and they have reported a frequent occurrence of stress. A study with university students of a Colombian educational institution showed that 73.9% of them had high level of stress. Also, the research revealed that frequent exposure to stressors is linked to depressive and anxious symptoms, with negative effects on the academic performance.[6]

In addition, stress can have an impact on the students' health, leading to anxiety and depression. The levels of these conditions have already proved to be higher among students than in the general population in Brazil.[7] At the international context, a study carried out with 700 university students from Spain found that 65.9% had symptoms of anxiety and depression, 42% were predisposed to mental exhaustion, 52.1% were socially dysfunctional, and 64% showed signs of emotional hardening, with an impact on students' interaction with patients, peers and professors.[8] This can interfere with the quality of care provided during the internships and in professional practice, when individuals should be able to evaluate and make their own decisions.[9]

In this context, although different researches available in national and international literature have already identified stress levels and factors among nursing students, it is important to consider that in the interactionist model, stress is an individual experience and depends on the relationships established with other people and with the environment. In this process, the individual defines the meaning of the situation based on a series of evaluative categories, which is called cognitive evaluation.[10] The students who are in the initial phase of the course experience situations different from those in the final phase, which may involve different levels of stress. In the first year, they face adaptation to the academic environment, and new responsibilities and requirements. In the fourth year, we must deal with increased decision-making responsibility, the feeling of unpreparedness and the end-of-course written paper.[9] In addition to academic aspects, last-year students experience insecurity and inexperience, competitiveness of the labor market and the fear of not getting a job after the end of the course.

However, few studies have evaluated and compared the stress factors and levels of this phenomenon among students at the beginning and end of the course. This investigation would allow identifying the variation of stress levels and the factors that contribute the most to this phenomenon throughout the course of nursing. It would also make it possible to develop preventive actions to minimize stress and its negative outcomes to the students' health. Thus, the present study aimed to compare the biosocial and academic profile and the stress level of first- and fourth-year students of the undergraduate nursing course at a public university in São Paulo, Brazil. Considering that, besides academic aspects, the students experience stressors related to the training and future professional performance,[9] we hypothesize that fourth-year students experience higher level of stress than first-year students.

Methods

This is a cross-sectional, analytical and quantitative study developed at a public institution in the state of São Paulo, Brazil. The study population was represented by all students enrolled in the first and fourth years of the institution's nursing course and who were over 18 years of age. The exclusion criteria were: students who participated in the research as collaborators in the data collection and students who could not be enrolled in all courses of the current semester because they failed to be approved in previous courses. First, the undergraduate service was contacted in order to obtain the list of courses to be taught and the list of students enrolled in the first and fourth years. Based on these lists, the objectives of the research and the operational flow of collection were presented to the professor responsible for one of the specific courses of the semesters. After authorization of this professor, the day and time to present the objectives of the research to the students and to have over the IC forms to those who accepted to participate were scheduled. The protocols were then sent by e-mail, with a deadline of 10 days to reply the researcher by e-mail. Subsequently, due to technical difficulties with some e-mail addresses, the face-to-face approach was carried out in the classroom. For this, a new schedule was established with the responsible professor. Questionnaires were distributed in the classroom and collected at a later moment.

Data collection took place between February and March 2016 through a research protocol consisting of a form for biosocial and academic carachterization and the instrument for Assessment of Stress in Nursing Students (ASNS). The characterization form included the following biosocial variables: e-mail, telephone, birth date, sex, children, ethnicity, marital status, city of residence, place of residence, people in the household, type of institution where high school was completed for the most part, admission way to the institution's undergraduate course, leisure activities, sports practice, income sources, financial dependents, total monthly income in minimum salaries, monthly expenses in minimum salaries, sufficiency of monthly income for the maintenance, use of oral or injectable contraceptive, use of drugs or substance (tea, coffee, energizing drinks, etc) to inhibit sleep

and to get to sleep; smoking habits, number of cigarettes consumed per day, consumption of alcoholic beverages, frequency of consumption of alcoholic beverages. The academic variables were: time spent to get to the institution, University City and field of internship, means of transport, month and year of beginning of the course, current academic semester, number of courses in the current semester, hourly load in the current semester, number of daily hours dedicated to study, presence and type of extracurricular activities carried out, participation in research groups, time dedicated every week to the research group, work activity, professional experience in the health area, further higher education degrees, satisfaction with the course and intention to give up the Nursing course.

The instrument for Assessment of Stress in Nursing Students (ASNS) was proposed by Costa and Polak in 2009[2] and consists of 30 items grouped into six areas: Performance of practical activities (Items 4,5,7,9,12 and 21); Professional communication (items 6,8,16 and 20); Time management (Items 3,18,23, 26 and 30); Environment (Items 11,22,24 and 29); Professional training (Items 1,15,17,19,25 and 27); and Theoretical activity (Items 2,10,13,14 and 28). The items are presented in a Likert-type scale with four points, where: zero - "I do not experience this situation"; one - "I do not feel stressed about the situation"; two - "I feel a little stressed about the situation"; and three- "I feel very stressed about the situation". The Alpha values obtained for the ASNS domains in the validation process by the authors were: 0.806 (Performance of Practical Activities), 0.768 (Professional Communication), 0.717 (Time Management), 0.866 (Environment), 0.772 (Professional Training), 0.720 (Theoretical Activity).[2]

Data were organized in a database in Excel software (Office 2007) and the Statistical Package for Social Sciences (SPSS, version 10.0) was used for analysis. The instruments were analyzed as previously described, recommending the analysis described by the authors of the instruments. Qualitative variables were presented in absolute and percentage values. The quantitative variables were exposed in descriptive measures: minimum and maximum values, mean and standard deviation. We used ANOVA (Test F) models to compare stress scores among first- and fourth-year students. The effect of the biosocial and academic profile on the stress between the groups was compared through regression models, two-way ANOVA in cases of two categorical predictors and Factorial ANCOVA when there were categorical and numerical predictors.

This project was submitted to the Research Ethics Committee (REC) of the researched university, since students of this institution were involved, and was approved under nº 1,363,890. Concomitantly, the project was submitted to the Research Service of the specific unit (School of Nursing) to be assessed as to feasibility and merit. Furthermore, in compliance with the Guidelines and Norms Regulating Research Involving Human Beings (Resolution NCH 466/12),[10] an Informed Consent Form was sent along with the instruments with information related to the research. Two copies of the IC were signed (one for the subject and the other for the researcher), expressing authorization and voluntary participation in the research. Students were assured that individual personal data that could facilitate the identification of subjects would not be disclosed.

Results

The initial population of the study consisted of 151 nursing students; 86 were enrolled in the first year and 65 in the fourth year. Fourty-six of the first-year students and 37 of the fourth-year students accepted to participate in the study and returned the completed protocols, totaling 83 nursing students as access population. The alpha value found for the 30 items of the ASNS was 0.873, enough to attest the satisfactory reliability of the instrument. In the reliability analysis per domain, the following values were observed: 0.873 for Performance of Practical Activities; 0.810 for Professional Communication; 0.497 for Time management; 0.703 for Environment; 0.759 for Professional Training; and 0.516 for Theoretical Activity.

Insufficient monthly income for maintenance and realization of extracurricular activities contributes to increased levels of stress, both in the first and the fourth year. Age had a differentiated impact on the stress level of nursing students ($p = 0.018$); age led to higher level of stress in fourth-year students. The regression analysis showed that age and stress interact in different ways in the two gorups of students; the relation was positive in first-year students ($\beta = 0.533$) and negative in fourth-year students ($\beta = -0.622$). Thus, younger students have lower levels of stress at the beginning of the course and higher levels at the end of the course when compared to older students.

There is a predominance of a moderate level of stress (80.4%) among first-year students and high level of stress (54.3%) among fourth-year students. Stress level was significantly higher in the students of the last year (44.50; SD = 10.85) than in the first-year students (61.00; SD = 10.14) ($p<0.001$). Table 2 presents the comparison of the means of stress according to ASNS factors among first- and fourth-year students.

It is observed that the performance of practical activities, professional communication, environment and professional training cause greater stress to the fourth-year students than first-year students. In turn, time management implies a higher level of stress for first-year students.

Although the mean stress in the factor theoretical activity was higher in first-year students, no statistically significant difference was observed between groups.

Table 1. Comparison of the effect of the biosocial and academic profile on the stress among first- and fourth-year students. São Paulo, 2016

Variable*		Stress				*p* value	
		1rst year	4th year	General	Between groups	Intragroup
Sufficient Income	Yes	43.38	59.74	51.93	0.785	0.047
	No	48.79	63.86	54.34		
Extracurricular Activities	Yes	43.18	60.57	54.88	0.308	0.025
	No	48.28	74.00	49.94		

(*) Only variables with significant difference in at least one of the analyses were presented.

Table 2. Comparison of the means of stress according to ASNS factors among students of the first and fourth years of the undergraduate nursing course. São Paulo, 2016

Stress Factor	1rst year Mean (SD*)	4th year Mean (SD*)	*p* value
Performance of Practical Activities	6.83 (3.94)	11.00 (3.17)	< 0.001
Professional Communication	3.59 (2.94)	6.95 (2.51)	< 0.001
Time Management	12.13 (1.93)	11.16 (2.33)	0.042
Environment	5.91 (2.64)	8.68 (3.18)	< 0.001
Professional Training	7.54 (2.84)	12.49 (2.96)	< 0.001
Theoretical Activities	10.39 (2.32)	9.86 (1.98)	0.278

*Standard deviation

Discussion

Population growth has turned the labour market more competitive, requiring a dynamic posture and frequent updating of professionals to act in various scenarios.[11] Because undergraduate courses must also be able to respond to market trends, they may overwhelm students with the amount of knowledge and methods presented for them to learn during training. Individual characteristics and economic factors are associated with this and contribute to exhaust the students' adaptive resources and drive them to stress.[12]

Insufficient monthly income for maintenance and realization of extracurricular activities contributes to increased levels of stress, both in the first and the fourth year of the course. Income influences, to different degrees, factors that contribute to reducing stress levels such as access to cultural and leisure activities and sports. This relationship was evident in a study with 160 nursing students in São Paulo where higher stress levels were seen in students who did not share in leisure activities and sports.[4] In this sense, by limiting the access of individuals to socio-cultural and sports activities, insufficient income contributes to higher levels of stress, reducing the students' academic performance and quality of life.[13]

As for age, it was observed that this variable causes higher level of stress in fourth-year students. Younger students experience lower levels of stress at the beginning of the course and higher levels at the end of the course. Lowest level of stress at the beginning of the course is probably due to fewer burdens from social and family responsibilities of students. In general, these students live with the parents, who are responsible for the financial maintenance of the student. Over time, many students move in with friends or classmates, becoming responsible for their own financial maintenance.[13] Also, these younger students experience for the first time the closeness to the end of the course, concern for their professional future and the competitiveness of the labor market; these elements explain the higher levels of stress in younger students at the end of the course.[2,4]

It was verified that the students of the last year present a higher level of stress when compared to those of the first year. First-year students had moderate level of stress (80.4%), while fourth-year students had high level of stress (54.3%). This finding confirms the hypothesis of this research, that is, that students' level of stress is higher at the end of the course the than at the beginning. A study with 562 medical students from the northeastern region of Brazil had a similar result, with predominant stress among students of the fifth (51.7%), sixth (41.3%) and seventh (41.0%) semesters.[14] In the last year of the Nursing course, besides the typical stressors of academic training (theory classes, tests and extraclass activities), students face aspects of the practice of nursing care itself, including lack of human and material resources, professional responsibility with the health of other people, and competitiveness imposed by the labor market.[1,3,14] All of these are factors that promote high levels of stress in this semester.

It is observed that the performance of practical activities, professional communication, environment and professional training cause greater stress to the fourth-year students than to the first-year students. At the end of the course, nursing students experience greater internship workload in addition to theoretical activities, tests and individual studies. This involves greater interaction with patients and multiprofessional teams, contact with the difficulties of nursing assistance, and more demands and responsibility in decision-making procedures.[1,3,14] Thus, feelings of anxiety and distress become common and contribute to higher levels of stress related to practical activities and professional communication at the end of the course. Furthermore, the contact with health service limitations and competitiveness allied with insecurity about their own preparation to act may explain the higher level of stress in the Professional Training domain. Faced with this overload of theoretical and practical activities,

students need to move to different fields of traineeship and to the educational institution, where they attend theoretical classes and carry out case studies.[1,9,15,16] Consequently, they spend much time commuting every day to meet the academic demands. This must explain the fact that Environment represented a greater source of stress to the fourth-year students.

In turn, time management implies a higher level of stress for first-year students. Since they are young students who have not attended another undergraduate course, the beginning of the course may represent an adaptive phase. During this period, students enter a new environment, filled with new experiences. This period has also the largest number of courses, tests and extra-curricular work per semester.[2] In addition, full-time dedication to study and the frequent displacement to the different institutes for curricular activities are typical of this phase.[1,4] In this transition to the academic environment, the overload experienced by new students and their greater difficulty to manage time in order to meet the academic, personal and social demands is understandable.[1,4]

Although the mean stress in the factor theoretical activity was higher in first-year students, no statistically significant difference was observed between groups. Research conducted with Colombian university students identified that oral presentations and the amount of content to be studied were the variables that caused most stress to the sample.[6] A study carried out with 28 nursing students from São Paulo showed that the most frequent stressors were: obligation to carry out extraclass work and activities, the extensive workload, lack of time for rest, and insecurity at theoretical activities.[1] It is important to emphasize the role of institutions in this aspect, since preparation for professional practice should not be emphasized exclusively in the domain of theoretical and practical content offered, but also in stimulating self-knowledge as a personal and professional development tool for the student.[12] In this sense, the practice of extensive lectures and without open dialogue with students may reduce

the interest in learning and in the performance of students, as well as lead to a lack of link between training and the reality of the profession.[17]

The data presented showed that nursing students are vulnerable to stressors that come from living situations and experiencing feelings of responsibility for the life and health of people. Thus, stress can be considered inherent in professional activities of nurses, as well as in academic training in this area.[18] If stress in nursing care is found to affect the health professionals' performance and health, stress-related illnesses and lower level of learning may occur in students who experience stress during academic nursing education.

Conclusion. It was found in this study that some biosocial and academic features contribute to the levels of stress in first- and fourth-year students. The stressors included the insufficient monthly income for maintenance and extracurricular activities. In turn, age interacts differently with stress. Younger students have lower levels of stress at the beginning of the course and higher levels at the end of it when compared to older students. The level of stress of fourth-year students is higher than that of first-year students at the beginning of the course, which is classified as moderate at the beginning of the course and high at the end. The performance of practical activities, professional communication, environment and professional training represent greater stress to the students at the end of the course. In turn, time management implies a higher level of stress for first-year students.

Based on the profile found, it is necessary that teaching institutions and faculty be attentive to the occurrence of stress among nursing students, since this affects the health, quality of learning and performance of students. Furthermore, it is important to strengthen discussions on the health of nursing students in educational spaces with a view to develop actions of prevention, control and reduction of the level of stress in this population.

As limitations of this research, we highlight the use of cross-sectional sampling because this does

not allow the analysis of causality between the academic environment and the stress presented by the student, as well as the variation of stress throughout the course. Also, the limited sample size obtained in this research requires that the findings be interpreted with caution. In this sense, further studies with larger samples and longitudinal design are suggested to provide more accurate information about the variation of stress and its outcomes in the same group of subjects throughout the course, as well as the effects of nursing training on the students' health.

References

1. Costa ALS. Estresse em estudantes de enfermagem: Construção dos fatores determinantes. REME Rev. Min. Enferm. 2007; 11(4):414-9.

2. Costa ALS, Polak C. Construção e validação de instrumento para avaliação de estresse em estudantes de enfermagem (AEEE). Rev. Esc. Enferm. USP. 2009; 43(Spe):1017-26.

3. Moreira DP, Furegato ARF. Estresse e depressão entre alunos do último período de dois cursos de enfermagem. Rev Latino-Am Enferm. 2013; 21(Spec):155-162.

4. Costa ALS, Guido LA, Silva RM, Lopes LFD, Mussi FC. Stress intensity of a nursing students regarding to biosocial and academic characteristics – A cross sectional study. J. Nurse Educ. Pract. 2014; 4(2):29-37.

5. Folkman S, Lazarus RS. Stress, Appraisal, and Coping. New York: Springer Publishing Company; 1984.

6. Montoya LM, Gutiérrez JA, Toro BE, Briñón MA, Rosas E, Salazar LE. Depression in university students and its association with academic stress. CES Med. 2010; 24(1):7-17.

7. Cerchiari EAN, Caetano D, Faccenda O. Prevalência de transtornos mentais menores em estudantes universitários. Estud. Psicol. (Natal). 2005; 10(3):413-20.

8. Balanza Galindo S, Morales Moreno I, Guerrero Muñoz J, Conesa Conesa A. Academic and psycho-socio-familiar factors associated to anxiety anddepression in university students. Reliability and validity of a questionnaire. Rev. Esp. Salud Pública. 2008;82(2):189-200.

9. 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.

10. Resolução Nº 466 do Conselho Nacional de Saúde, de 12 de dezembro de 2012(BR). Aprova as diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. Diário Oficial da União. 2012.

11. Oliveira R, Caregnato RCA, Câmara SG. Síndrome de Burnout em acadêmicos do último ano da graduação em enfermagem. Acta Paul. Enferm. 2012; 25(Esp 2):54-60.

12. Gervásio SMD, Kawaguchi LYA, Casalechi HL, Carvalho RA. Análise do estresse em acadêmicos de Enfermagem frente ao primeiro estágio da grade curricular. J. Health Sci. Inst. 2012; 30(4):331-5.

13. Wetterich NC, Melo MRAC. Perfil sociodemográfico do aluno do curso de graduação em enfermagem. Rev. Latino-Am Enferm. 2007; 15(3):404-10.

14. Souza FGM, Menezes MGC. Estresse nos Estudantes de Medicina da Universidade Federal do Ceará. Rev. Bras. Educ. Méd. 2005; 29(2):91-6.

15. Monteiro CFS, Freitas JFM, Ribeiro AAP. Stress in the Academic Daily: A Nursing Student View from the Federal University of Piauí-Brazil. Esc. Anna Nery Rev. Enferm. 2007; 11(1):66-72.

16. Pereira CA, Miranda LCS, Passos JP. O estresse e seus fatores determinantes na concepção dos graduandos de enfermagem. REME Rev. Min. Enferm. 2010; 14(2):204-9.

17. Moura EC, Mesquita LFC. Estratégias de ensino-aprendizagem na perspectiva de graduandos de enfermagem. Rev. Bras. Enferm. 2010; 63(55):793-8.

18. Hirsch CD, Barlem ELD, Almeida LK, Tomaschewski-Barlem JG, Figueira AB, Lunardi VL. Estratégias de coping de acadêmicos de enfermagem diante do estresse universitário. Rev. Bras. Enferm. 2015; 68(5):783-90.