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Stress and resilience in nursing students from two public universities in the state of São Paulo

Estresse e resiliência em discentes de enfermagem de duas universidades públicas paulistas

Estrés y resiliencia en estudiantes de enfermería de dos universidades publicas paulistas

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Abstract: Objective: to verify the relationship between stress and resilience in nursing students from two public universities in the state of São Paulo. **Methods:** cross-sectional study conducted in March 2016 with 117 nursing students. A form for academic and demographic characterization, the instrument for Assessment of Stress in Nursing Students, and the Wagnild and Young's Resilience Scale were applied. Data were analyzed in the Statistical Package for Social Sciences, version 10.0. **Results:** there was a predominance of students with medium stress level. Time management and theoretical activities represented a high level of stress for 23.9% and 20.5% of the nursing students who were analyzed. From the sample, 11.1% had very high stress related to the environment. Resilience levels were reduced (51%). There was no significant correlation between stress and resilience. **Conclusion:** the nursing education environment has potential for the development of diseases in students, although part of them already has moderate resilience.
Keywords: Nursing; Nursing students; Psychological resilience

Resumo: Objetivo: verificar a relação entre estresse e resiliência em discentes de enfermagem de duas universidades públicas do Estado de São Paulo. **Método:** trata-se de um estudo transversal realizado em março de 2016 junto a 117 discentes de enfermagem. Aplicaram-se um Formulário para caracterização acadêmica e demográfica, o Instrumento para Avaliação do Estresse em Discentes de Enfermagem e a Escala de Resiliência de Wagnilde Young. Analisaram-se os dados no *Statistical Package for Social Sciences*, versão 10.0. **Resultados:**

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observou-se predomínio de discentes com médio nível de estresse. O gerenciamento do tempo e as atividades teóricas representaram alto nível de estresse para 23,9% e 20,5% da população. 11,1% apresentaram muito alto estresse relacionado ao Ambiente. Os níveis de resiliência foram reduzidos (51%). Não houve correlação significativa entre estresse e resiliência. **Conclusão:** o ambiente de formação em enfermagem apresenta potencial para o adoecimento dos discentes, embora parte deles já apresente resiliência moderada.
Descritores: Enfermagem; Estudantes de enfermagem; Resiliência psicológica

Resumen: **Objetivo:** verificar la relación entre estrés y resiliencia en discentes de enfermería de dos universidades públicas del Estado de São Paulo. **Método:** se trata de un estudio transversal realizado en marzo de 2016 con 117 discentes de enfermería. Se aplicó un formulario para caracterización académica y demográfica, el Instrumento para Evaluación de Estrés en discentes de enfermería y la escala de resiliencia de Wagnild y Young. Los datos fueron evaluados en el Statistical Package for Social Sciences, versión 10.0. **Resultados:** se observó el predominio de discentes con nivel medio de estrés. El gerenciamiento del tiempo y las actividades teóricas representaron alto nivel de estrés para 23,9% y 20,5% de la población. 11,1% presentaron muy alto el nivel de estrés relacionado al Ambiente. Los niveles de resiliencia fueron bajos (51%). No hubo correlación significativa entre estrés y resiliencia. **Conclusión:** el ambiente de formación en enfermería presenta potencial para el padecimiento de los discentes, aunque parte de ellos ya presente moderada resiliencia.
Descriptores: Enfermería; Estudiantes de enfermería; Resiliencia psicológica

Introduction

In the current scenario, people are under an increasing social pressure to always qualify and, in the higher education environment, the pressure is bigger due to factors such as the maturation of thought, the acquisition of knowledge and the search for a workplace in the area related to the undergraduate course. Factors that are external to academic education, such as the experience of frustration and maturity, financial difficulties, distance from family members when the student has moved to the city with the purpose of studying, and the need to use one or more public means of transportation, are constantly experienced by university students[1-2]. In addition, issues such as entry into adulthood, professional and personal relationships, socioeconomic pressures, and the labor market stand out[1-2]. The association of external factors with those of academic life, such as the higher degree of curricular demand, extracurricular activities and the need to deal with the suffering of others and the responsibility towards human life, may overload the adaptation resources of the students, leading them to stress[2].

Stress aroused medical interest first in Hippocrates (470-377 BC) and later in Cannon[3]. He was responsible for developing the concept of homeostasis - the capacity for self-regulation of

the systems present in the human body - and for relating stress to body and mind interaction. In the field of biological sciences in the twentieth century, the conceptualization of stress was developed by Hans Selye and the emphasis is on neuroendocrine manifestations that occur in the individual through internal or external stimuli[3]. In the interactionist model, stress is conceptualized as any stimulus that demands the external or internal environment and that overburden or exceeds the sources of adaptation of an individual or social system[4]. In the academic context, stress occurs when students perceive demands as excessive to the adaptive resources they have[2].

As a consequence of this phenomenon, it is possible that physical and psychological manifestations may be present, including headache, depression and anxiety that may compromise academic performance and the relationship between friends and family[5]. Furthermore, stress may lead to negative outcomes such as depressive symptoms; changes in sleep quality and quality of life, as verified in previous studies[5-6]. An example of this is a study conducted with 88 nursing students from a public university in São Paulo, which found a statistically significant correlation between stress and signs indicative of depression, especially severe depression[5].

However, even exposed to stress in the university academic environment, some students have lower stress levels when facing adversities. Resilience is the ability to recover from adversity and to positively adapt to life situations[7-8]. It comes from a sum of external and internal factors, including emotional, sociocultural, environmental, and cognitive aspects that interact and allow the individual to cope, overcome, strengthen, and transform from adversity and stress[7]. Accordingly, if being resilient, the individual is expected to have lower stress levels and, consequently, a lower chance of developing disorders such as burnout syndrome, depressive symptoms, stress and anxiety[7-8].

Nevertheless, although there are studies on student stress, few address this phenomenon in Brazilian higher education, especially in relation to the presence of resilience showed by them[1-2;4-8]. In this sense, from the assessment of resilient personality and its relationship with academic stress, it will be possible to develop and adopt actions to promote it and then minimize the health risks of the student[7-8].

As a hypothesis, it is argued there is a significant correlation between stress and resilience, so that increased resilience levels imply a lower level of academic stress. As a research question, it was defined: Is there a significant association between stress and resilience in university nursing students?

In this regard, this study aimed to verify the relationship between stress and resilience in nursing students from two public universities in the state of São Paulo.

Methods

This is a cross-sectional study with a quantitative approach, conducted with all first-year nursing students from a State and a Federal University, both located in the state of São Paulo, who voluntarily agreed to participate in the research by signing the Informed Consent Form (IC). Students enrolled in the first year of each institution and over 18 years old were included. Those who during the collection period, were prevented from performing all subjects of the following semester due to failures in the previous semester were excluded.

Data collection occurred through the use of a research protocol applied in March 2016. This protocol consisted of the following instruments: a form for academic characterization; an instrument for Assessment of Stress in Nursing Students (ASNS)[3] and the Wagnild and Youngs's Resilience Scale.[9]

The population characterization form addressed the following sociodemographic variables: date of birth, sex, having children or not, marital status, people in the household, performing leisure activities, playing sports. The academic variables were the following: means

of transport, number of subjects taken in the current semester, workload in the current semester, daily number of study hours, performance and type of extracurricular activities realized and labor activity.

The instrument for Assessment of Stress in Nursing Students (ASNS) was proposed by Costa and Polak[3] and consists of 30 items grouped into six domains: 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); Vocational training (Items 1,15,17,19,25 and 27); Theoretical activity (Items 2,10,13,14 and 28). Items are presented in a four-point Likert scale: zero - “I do not experience the situation”; one- “I don't feel stressed about the situation”; two - “I feel little stressed about the situation”; and three- "I feel very stressed about the situation"[3]. To identify stress intensity by ASNS factor, risk quartiles were used, as defined by the author of the instrument[3]. To verify the general stress level per student, the scores assigned to the 30 items of the instrument were summed, and the stress scores obtained at the beginning and end of the first school year of the course were compared. The alpha values obtained for the ASNS domains in the validation process were respectively: 0.806 (Practice activities), 0.768 (Professional communication), 0.717 (Time management), 0.866 (Environment), 0.772 (Vocational training), 0.720 (Theoretical activity)[3].

The resilience scale, developed by Wagnild and Young with adult women, was adapted and translated to the Brazilian reality with students (both sexes) of public schools in 2005[9-10]. This instrument measures the levels of positive psychosocial adaptation in the face of important life events. It has 25 items on a Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree), divided into 3 factors, namely: Stock and Value Resolutions (Items 1,2,6,8,10,12, 14,16,18,19,21,23,24 and 25), Independence and Determination (Items 5,7,9,11,13 and 22) and Self-Confidence and Ability to Adapt to Situations (Items 3,4,15, 17 and 20)[9]. These factors correspond to the attributes that support coping with life's problems, including

competence in social relations, problem-solving ability, the achievement of autonomy, and the meaning or purpose for life and the future[9-10]. Scale scores range from 25 to 175 points, and the higher the score, the higher the subject's resilience. A result below 121 is considered by the authors of the instrument as “reduced resilience”; between 121 and 145, as “moderate resilience”; and above 145, “high resilience”[10]. In the validation process, the instrument presented good psychometric properties, with Cronbach's alpha of 0.80 for the total sample[9].

During the collection period, these instruments were delivered in person in the classroom, after authorization and direct scheduling with the teachers of the disciplines to be taught in the nursing courses, and a date was scheduled for their collection. The recollection in the classroom was assisted by class representatives and students who proposed to assist in this process. Besides, to increase adherence to the survey, individual results were sent via email to the students who participated in the survey.

For data organization and analysis, an Excel database (Office 2010) was created and the Statistical Package for Social Sciences (SPSS) - version 10.0 was used. Instruments were analyzed as described above, advocating the analysis described by the authors of the instruments. To assess relationships between stress and resilience scores, Pearson's correlation test was used. Results were considered statistically significant if $p < 0.05$. Cronbach's alpha was applied to analyze the reliability of the applied instruments.

The research project was reviewed and approved on February 1, 2016 at the Research Ethics Committee (REC) of the state public institution, under opinion no. 1.363.890. Subsequently, an amendment was submitted to the REC to include the federal public institution as a data collection site, with approval under opinion no. 1.400.103. Additionally, this project was submitted to the Research Service of the state institution for consideration for feasibility and merit, and was also approved by the responsible committee. In compliance with the Guidelines and Regulatory Standards for Research Involving Human Beings (Resolution CNS

466/12), the research participants were given an Informed Consent Form, which was signed in two copies (one for the participant and one for to the researcher), authorizing voluntary participation in the research.

Results

In March, out of 183 students enrolled in the two institutions surveyed, 143 agreed to participate, but 117 returned the completed instruments.

In the analysis of the reliability of the instruments, Cronbach's alpha of 0.86 was observed for the 30 ASNS items and 0.85 for the 25 items of the Resilience Scale, values that attest satisfactory reliability to the instruments used[11]. Table 1 shows the sociodemographic and academic characterization of nursing students in both periods analyzed.

Table 1- Sociodemographic and academic characterization of nursing students. São Paulo, 2016.

Sociodemographic variables*		**n(%) or Mean (SD)**
Sex (Female)		99 (84.6%)
Age		20.73 (4.4)
Marital status (Single/No Partner)		98 (83.8%)
Children (No)		112 (95.7%)
Sport activities (No)		77(65.8%)
Leisure activities (Yes)		71(60.7%)
Academic Variables*		**n(%) or Mean (SD)**
Elapsed time to institution (minutes)	Institution A	68.3(26.1)
	Institution B	71.7(41.1)
Daily study hours		2.7 (1.3)
Number of subjects taken		11(2.9)
Extracurricular activities (Yes)		66 (56.4%)
Labor work (No)		109 (93.2%)
Semester workload (hours) **	Institution A	442.9(160.1)
	Institution B	848.6 (253.9)

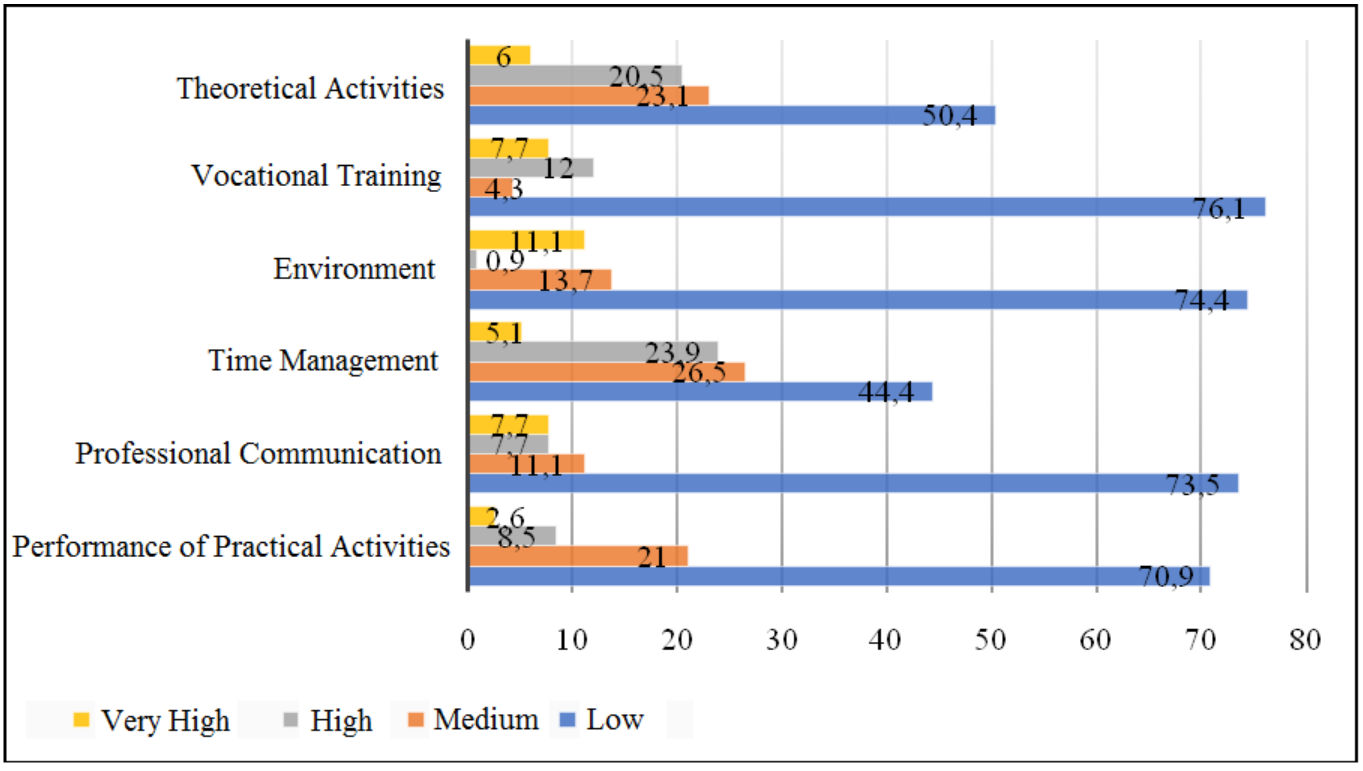
* Predominant categories for each variable are presented.

**Obtained mean from values informed by the students.

Table 1 shows a predominance of female students, young (approximately 20 years old), single, without children, who practice leisure activities, but do not practice sports activities. As for the academic variables, it was observed that students take approximately 1 hour to reach the educational institutions; do not perform labor activities, are enrolled in 11 subjects on average over the school year, with an average semester workload ranging from 442.9 (Institution A) to 848.6 (Institution B) and do perform extracurricular activities.

There was a predominance of students with medium stress level (72.60%), followed by those who reported high stress (17.9%). None of the students presented very high stress levels. Figure 1 shows the percentage of stress levels by factor of the ASNS instrument in nursing students.

Figure 1- Percentage of stress levels by ASNS factor in nursing students. São Paulo, 2016.



Overall, low stress predominated in all domains, followed by moderate stress. However, it is observed that time management and theoretical activities represent a high level of stress for

23.9% and 20.5% of nursing students. In addition, 11.1% of the students presented very high stress related to the environment.

Reduced resilience levels (51%) were predominant among students, followed by moderate levels (45%) of resilience. Besides, when analyzing the averages by domain of the instrument, it is observed that the Actions and Values domain (Mean = 5.06; Standard deviation = 0.84) is the one that most contributes to this characteristic among students. Table 2 presents the analysis of the association between stress and resilient personality.

Table 2- Analysis of the association between stress and resilient personality in nursing students. São Paulo, 2016.

X	Y	r	P-value
Resilience	Stress	-0.061	0.510
Resilience	PPA	-0.068	0.468
Resilience	PC	-0.149	0.108
Resilience	TM	-0.025	0.790
Resilience	ENV	0.074	0.431
Resilience	VT	-0.121	0.193
Resilience	TA	0.058	0.535

Note: PPA-Performance of Practical Activities; PC- Professional Communication; TM- Time Management; ENV-Environment; VT- Vocational Training; TA- Theoretical Activities

According to the table above, it is observed that there was no significant correlation between stress scores (general and domain) and resilience levels among the evaluated nursing students.

Discussion

Regarding the profile of respondents, there was a predominance of women, single, without children and who practice leisure activities Students usually take 1 hour to get to college, have no labor activities, attend 11 subjects during the year (on average) and participate in extracurricular activities. A survey of 214 nursing students from a public university in Rio Grande do Sul found a predominance of female students (89%), single (97%) and childless (99%). The predominance of women in the nursing field has a historical character due to the fact that

nursing, at its inception, was an exclusively female profession12. Today, despite the increase in the number of men who compose the undergraduate nursing courses and nursing teams of health services, there is still female supremacy.

Additionally to work, female students accumulate homework and childcare, which can lead to academic overload and stress. From this perspective, it is understandable that, in search of greater dedication to professional career and professional and financial stability, many women choose not to have children. In the case of health students, the closer proximity to knowledge related to contraceptive methods may contribute to the successful search for childlessness[12-13].

Regarding stress by ASNS domain, although with low stress predominance in the instrument factors, it was observed that time management and theoretical activities represent a high level of stress for 23.9% and 20.5% of nursing students. Besides, 11.1% of the students presented very high stress related to the environment. In a review of the literature conducted in 2014 in the Medical Literature onLine, Cumulative Index to Nursing and Allied Health Literature, Psychology Information and Pub Med databases, the stressors identified in first-year nursing students were: admission to a university course; the remarkable volume of activities in a short period of time; maintenance of good grades; assessments and exams; manage financial issues; commit mistakes with patients; and learn clinical procedures[14].

Such stressors are characterized when evaluating the stress factors of the ASNS, as questions related to assessments, exams and grades are described in the Theoretical Activities factor; the financial aspects and the transformations experienced upon entering the course are addressed in the Environment factor; Time Management involves issues related to the difficulty of managing academic demand to meet social, family and personal needs; and concerns about clinical aspects, such as procedures and patient management, relate to the Performance of Practical Activities[2]. Thus, previous studies[2,14] conducted with freshmen students confirm the presence of stressors found here. For this

reason, researchers recommend improvements in the scope of nursing curricula, based on the stressors evidenced in the literature, including: considering the time required to perform the proposed activities in order to avoid overload; and use alternative forms of assessment that go beyond expected skill and knowledge acquisition tests[14].

In the analysis of psycho-emotional stress levels, there was a predominance of students with medium stress level, followed by those who reported high stress. Through the Student-Life Stress Inventory, a survey of 283 health students from Pakistan, including nursing students, it was found a predominance of high stress among dental, medical and nursing students, with scores higher than the limit defined by the instrument[7].

Stress negatively impacts the student's physical and mental health and may lead to burnout syndrome, poor sleep quality, weight gain, absenteeism due to illness and dropout. In view of the above, besides the revision of the traditional curricular structure, it is suggested that managers of the educational institutions consider the possibility of regular evaluations of the students for an early identification of psychological disorders, especially those resulting from the formation process[15]. From this information, it would be possible to develop and apply interventions focused on student needs, such as individual counseling, strengthening strategies for coping with stressors and promoting resilient personality[16].

No significant correlation was observed between stress scores (general and domain) and resilience levels among the assessed nursing students. Still, there was a predominance of reduced levels of resilience among students, followed by moderate levels, with the Actions and Values domain contributing the most to resilience in the sample. In a study of 275 medical students from a private university in São Paulo, the predominance of moderate resilience was identified through all the academic period and in the sample assessment[17]. The findings of this research and studies with medical students show the presence of moderately resilient students, which indicates that these individuals have developed and strengthened resilient characteristics

through interaction with the typical adversities of academic education in undergraduate health courses, for example when caring for other people, dealing with death and the market demands of the profession[17-18]. Furthermore, it is important to consider those difficulties faced at the personal, family and labor levels, which are experienced outside the educational institutions, but mobilize and strengthen the coping resources of students in general[17-19].

In this context, from this frequent confrontation of adversity, the actions and values (domain of the resilience construct) already present higher scores than the others. It refers to actions related to energy, persistence, discipline and conception of values that, when performed, give meaning to life, such as friendship, personal fulfillment and satisfaction[9-10]. In this sense, when students perceive potential stressors as necessary and important challenges for development and learning, students come to understand academic and personal stressors positively and adopt behaviors and attitudes necessary to adapt to the academic environment, which leads to lower levels of stress, depression, burnout, among others, as well as improving course satisfaction and academic performance. For that reason, resilience is seen as a protective factor for health[17-19].

That being so, researchers have proposed the development and application of emotional, mental and behavioral skills training programs that strengthen the resilience of health students, especially nursing students (as this is considered a stressful profession in view of the labor demands), strategies already applied to high school students[18]. This still needs to be further explored taking into account factors that influence resilience in the specific context of university education[17-18].

In view of this, a systematic review conducted in 2014, with selection of cognitive behavioral interventions, such as the promotion of hardiness and resilient personality, showed their effectiveness to reduce stress, anxiety and depressive symptoms[16]. However, the authors point to the need for heterogeneous samples and to overcome the methodological limitations of

the included experimental studies[16,19]. Hence, it would be possible to plan and apply interventions that minimize health disorders in students, with the prevention of chronic processes such as burnout; as well as the drop in academic performance[15].

Conclusion

There was a predominance of medium levels of stress, and time management and theoretical activities represented a high level of stress for 23.9% and 20.5% of the sample. Besides, 11.1% of the students presented very high stress related to the environment. Nursing students had reduced levels of resilience, followed by moderate levels; and there was no significant correlation between stress and resilience levels among the assessed students.

The nursing education environment has potential for the development of diseases, although some students already have moderate resilience. For this reason, it is important that the educational institutions propose actions that allow a healthy training environment within their spaces and possibilities. The burden of theoretical activities, difficulties with time management between academic and personal demands, as well as the limitations regarding professional communication, are stressors that can be minimized through institutional actions, such as the review of curricular elements, proposing spaces for relaxation and integration, as well as the creation of spaces, with a multidisciplinary team, for disease prevention and health promotion of undergraduate students - experience already carried out with success in some developed countries.

The limitations of this research include the lack of studies, especially on the theme resilience with nursing students, which made it difficult to compare the findings of this research with others involving students from the same area. Furthermore, this research involved students inserted in the reality of a large metropolis belonging to federal and state public institutions. In this sense, it is suggested to conduct new research involving students from other

health courses, inserted in private training spaces and in smaller cities. This will allow to identify specific factors of the formative process or daily life that may interfere with stress levels and, consequently, on the student's quality of life.

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Contributions: Project design, data collection and analysis, as well as critical review of the final version of the research report.

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