Stress in nursing students: study on sociodemographic and academic vulnerabilities

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Abstract
Objective: To analyze the association between the presence of stress in nursing students and sociodemographic and academic vulnerabilities.
Methods: Analytical research conducted with 455 nursing students, whose data were obtained by means of a questionnaire to identify sociodemographic and academic vulnerabilities, and by the Lipp’s Stress Symptoms Inventory. The association between variables was tested by Pearson’s chi-square (p <0.05), the strength of this association by odds ratio, and logistic regression (backward method) was used to fit the model.
Results: Among all students, 64% presented stress with the following associated factors: sex (p <0.010), age group (p <0.029), marital status (p <0.001), children (p <0.001), occupational status (p <0.001), cost of education (p <0.009) and current study period (p <0.001). In the final model these factors remained: sex, marital status and current study period.
Conclusion: Women, students with partners, and those in the senior year of college were more likely to present stress.

Keywords
Stress; Stress, psychological; Education, nursing; Students, nursing /psychology; Survey and questionnaires

Resumo
Objetivo: Analisar a associação entre a presença de estresse em estudantes de enfermagem e vulnerabilidades sociodemográficas e acadêmicas.
Métodos: Pesquisa analítica, realizada com 455 acadêmicos de Enfermagem cujos dados foram obtidos por meio de um questionário para identificar vulnerabilidades sociodemográficas e acadêmicas e pelo Inventário de Sintomas de Stress de Lipp. A associação entre as variáveis foi testada pelo qui-quadrado de Pearson (p<0,05), a força dessa associação pela razão de chance, sendo a regressão logística (método backward) utilizada para ajuste do modelo.
Resultados: Do total de discentes, 64% apresentou estresse, tendo como fatores associados: sexo (p<0,010), faixa etária (p<0,029), situação conjugal (p<0,001), presença de filhos (p<0,001), situação ocupacional (p<0,001), custeio dos estudos (p<0,009) e ano em curso (p<0,001), permanecendo no modelo final: sexo, situação conjugal e ano em curso.
Conclusão: As mulheres, os estudantes com companheiro e aqueles no último ano da faculdade tiveram maiores chances de apresentar estresse.
Introduction

The rate of mental disorders has increased considerably worldwide and their distribution differs between social classes, sex and different life stages. This condition has generated interest on these determinants, and stress is the most frequent among these disorders.\(^1\) Currently, the word stress is understood as an experience of tension, irritation, where an organism reacts to physical or psychological components when a situation that causes fear, excitement or confusion appears, which can trigger manifestations of depression, tachycardia, digestive disorder, among other things.\(^2\)

Biopsychosocial pressures are responsible for imbalances in the individual's homeostasis, impairing performance in the most varied circumstances.\(^3\) These stress-generating pressures are experienced at several moments in personal, social, professional and academic life.

Academic stress has been receiving significant national and international interest, as university students experience countless situations that contribute to their growth and development, but which also generate feelings such as frustration, fear and anguish. Thus, the environment that can be conducive to the development of professional knowledge sometimes becomes the trigger of pathological disorders.\(^4\)

Health care education generally has practical activities in the curriculum, where students often perceive limitations in their knowledge.\(^5\) Therefore, health students experience high levels of stress, especially those who are in an undergraduate program, because of the greater proximity and time spent with patients and their health problems.\(^6\) Although students do not have the same responsibilities as the nurses, they need to adapt to a new model of life, taking on responsibilities such as studying, tests, practical classes and internships.\(^7\) In addition, there is a lack of adequate support for the pressures experienced in daily practice, and coping with death, all of which contribute to high levels of stress.\(^8\)

Due to the complexity of nursing education and dealing with human boundaries, nursing students may develop feelings of inadequacy regarding the activities required during professional education. It is worth discussing this question, as stress causes negative cognitive repercussions. Caregivers also require care to maintain physical and mental health at appropriate and satisfactory levels.\(^8-10\)

Studies published in Brazil are focused on the sociocultural and environmental contexts of southern Brazil, with few publications referring to stress in undergraduate students from the northeast areas of the country. Knowing the profile of nursing students with predictive factors for the occurrence of stress is relevant, as the results can contribute to planning and programming of actions developed by the educational institution with regard to their real needs.

In this study, the objective was to analyze the association between the presence of stress in nursing students and their sociodemographic and academic vulnerabilities.

Methods

An analytical study, conducted in the nursing course of the Health Sciences Center, of a private Higher Education Institution (HEI), located in Fortaleza-Ceará-Brazil. The institution was chosen because it was the only private university in the State, inaugurated in 1973, and has a large number of students enrolled in the nursing course.

For education of the nursing professional, the HEI requires a minimum of five years, with courses conducted in the three periods of the day (morning, afternoon and night). Based on this information, the study population consisted of 455 students, distributed between the first, third and fifth years of the undergraduate course in nursing. We chose students in the first year (first and second semesters), because they are faced with the reality of academic life, starting
their education to work with their expectations and first impressions of the course; and of the third year because they are beginning their clinical practice activities (fifth and sixth semesters), with their first real contact with the patient and all his/her subjectivity; and in the fifth year, because they are finishing their nursing education, working within the health services in the modality of a supervised internship (ninth and tenth semesters) and are often dealing with fears and anxieties of entering the labor market and practicing as nurses, aware of their rights and duties.

The sample calculation was based on the number of students enrolled in the aforementioned semesters of the last year, totaling 700 students. Based on these data, the sample was calculated for finite population, with a confidence of 95%, error of 3%, and considering an estimate of the proportion equal to 50% (due to unknown prevalence); a sample size of 423 individuals was established to meet the statistical validity requirement.

The inclusion criteria were academics regularly enrolled in the first, third and fifth year of the undergraduate nursing course, in the face-to-face modality; from the diurnal, evening and night periods; and be 18 years of age or older.

Data collection occurred in the first four months of 2014, with two instruments: a questionnaire with sociodemographic and academic information to characterize the students (current semester, age in full years), sex, marital status (single, married, divorced, living with a partner), number of children, paid employment (work), with whom he or she lives (parents/relatives, alone, student residency, spouse), identification of the person responsible for paying for college (full or partial student financing), and the Lipp’s Stress Symptoms Inventory (LSSI), which evaluates the state of stress (presence or absence). The questionnaires were distributed to the participants in the classrooms during theoretical activities.

The Statistical Package for the Social Sciences (SPSS), version 18.0, was used for data storage, processing and statistical analysis. Categorical variables were summarized using descriptive statistics of frequencies (absolute and relative).

The association between the variables and the presence of stress was evaluated using the Pearson chi-square test, and a value of $p < 0.05$ was considered statistically significant; the strength of this association was evaluated using the Odds Ratio (OR) and backward logistic regression to fit the model. For input of the variables in the model, $p < 0.20$ was considered, with $p < 0.05$ for its permanence.

The project was approved by the Research Ethics Committee of the University of Fortaleza (No. 168,791), according to Resolution 466/2012 of the National Health Council.

Results

According to the period, the participants were stratified into 162, 142 and 151 individuals, respectively, in the first, third or fifth years of the course. Among the students studied during the three years of study, 64% presented stress (Figure 1).

In addition, sociodemographic and academic characteristics related to the state of stress were verified. Table 1 shows the sociodemographic characteristics and their relationship with the stress status.

The 455 academics evaluated were predominantly female (94.06%), and cases of stress were found in 64% of the students. There was a higher proportion of stress cases among women (65.4%), compared to men (40.7%). The age ranged from 18 to 49 years, with a mean of 22.25 ± 5.4 years; 86.2% of the individuals were in the age range between 18 and 29 years old. In the analysis of marital status, academics without partners were in the majority (81.3%).

The presence of at least one child was reported by 13.2% of the students, of whom 85% presented stress. Approximately 25.5% of the students were employed, and nearly 22% lived alone. A higher proportion of stress was identified in the last year of the course, and the presence of this condition was increasingly distributed when comparing students of the first, third and fifth years, with 46.9%, 62.7% and 83.4%, respectively.
When asked about how their studies were funded, payment by others was highest (91.9%), followed by total and partial student financing (24.4% and 13.4%, respectively), parents or guardian (51.6%), or others (2.4%). By demonstrating the relationship of cost to the state of stress, the experience of stress was higher among those who paid for the studies themselves.

Stress was associated with: sex (p<0.010), age range (p<0.029), marital status (p<0.001), children (p<0.001), occupational situation (p <0.001), cost of studies (p<0.009), and the year in the course (p <0.001).

Table 2 shows the logistic regression models of stress, considering sociodemographic and academic variables.

As shown in table 2, sex, marital status and year of study remained in the final regression model. This evidence shows that women, students with partners, and those in the final year of study were more likely to have stress.

**Discussion**

The prevalence of stress among the population is increasing, and this fact is also constantly observed among nursing students. The prevalence of stress reaches 82.6%, confirming the need to study the factors related to this psychological state.

From the data found, this profile was corroborated by other national and international studies, which verified the presence of stress in nursing students aged 18 to 25 years, predominantly female, without partners and children, without paid employment, and who were living with parents or guardians.

Analyzing the data regarding sex, the predominance of female students was verified. These data reinforce existing studies on the theme that evidence...
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The predominance of women in nursing undergraduate courses. This predominance is related to the existing prejudice around the image of the profession: historically, nursing is a feminine profession, because the idea of caring and protecting is linked to the history of women.\(^{(16,17)}\)

The relationship between stress and the other variables of the study showed a higher prevalence of stress in women academics. Studies demonstrate that this is related to responsibilities with compulsory university activities, work, care of the home, and family care.\(^{(4)}\) An overload of responsibilities increases the production of hormones, such as cortisol and adrenaline, which affects two women for each man, implying high levels of emotional exhaustion and onset of anxiety, panic and depression.\(^{(3,18)}\)

It is also important to mention that the sample consisted mainly of young adults, which is consistent with the literature. The predominance of young adults is a very grateful and new professional for young people, with many offers and possibilities in the labor market.\(^{(19)}\) This occurrence of stress can be attributed to feelings of insecurity, added to irresponsibility and immaturity, determining high level of stress. In addition, the most varied emotions are present during the clinical hospital practice, due to inexperience with the suffering and the pain of others.\(^{(20)}\)

Regarding the marital status and presence of children, the majority of students lived alone (81.3%), were without children (86.8%), indicating that some were not working and did not have family responsibilities.

Concerning marital status and presence of children, the majority of students lived alone (81.3%) and were childless (86.8%), indicating that some of them were not working and did not have family obligations, which makes it easier to dedicate time to the courses. Marriage or having a stable partner and having children is attributed to a lower propensity for chronic stress.\(^{(21)}\) However, students who reported having at least one child presented 3.66 more chances of having stress.

Regarding the type of residence, 78% of the students reported co-habitation status. This presupposes exemption from the responsibilities of assuming

### Table 2. Steps of the Logistic Regression Model

<table>
<thead>
<tr>
<th>Steps</th>
<th>B(Standard error)</th>
<th>Adjusted Odds ratio</th>
<th>95% Confidence interval</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inferior</td>
<td>Superior</td>
</tr>
<tr>
<td>1st</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-3.013 (0.698)</td>
<td>0.049</td>
<td>11.334</td>
<td>0.000</td>
</tr>
<tr>
<td>Sex</td>
<td>1.512 (0.467)</td>
<td>4.534</td>
<td>2.752</td>
<td>0.001</td>
</tr>
<tr>
<td>Age group (years)</td>
<td>0.264 (0.382)</td>
<td>1.302</td>
<td>0.616</td>
<td>0.490</td>
</tr>
<tr>
<td>Marital status</td>
<td>-0.655 (0.353)</td>
<td>0.519</td>
<td>0.260</td>
<td>0.063</td>
</tr>
<tr>
<td>Children</td>
<td>0.666 (0.425)</td>
<td>1.935</td>
<td>0.841</td>
<td>0.121</td>
</tr>
<tr>
<td>Occupational situation</td>
<td>0.599 (0.305)</td>
<td>1.820</td>
<td>1.000</td>
<td>0.050</td>
</tr>
<tr>
<td>Year of study</td>
<td>1.011 (0.220)</td>
<td>2.749</td>
<td>1.786</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Payment for school</td>
<td>1.034 (0.549)</td>
<td>2.813</td>
<td>0.959</td>
<td>0.060</td>
</tr>
<tr>
<td>2nd</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-2.838 (0.643)</td>
<td>0.059</td>
<td>11.592</td>
<td>0.001</td>
</tr>
<tr>
<td>Sex</td>
<td>1.532 (0.468)</td>
<td>4.629</td>
<td>1.849</td>
<td>0.076</td>
</tr>
<tr>
<td>Marital status</td>
<td>-0.614 (0.346)</td>
<td>0.541</td>
<td>0.274</td>
<td>0.076</td>
</tr>
<tr>
<td>Children</td>
<td>0.630 (0.422)</td>
<td>1.877</td>
<td>0.821</td>
<td>0.135</td>
</tr>
<tr>
<td>Occupational situation</td>
<td>0.556 (0.298)</td>
<td>1.743</td>
<td>0.972</td>
<td>0.062</td>
</tr>
<tr>
<td>Year of study</td>
<td>0.995 (0.218)</td>
<td>2.703</td>
<td>1.762</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Payment for school</td>
<td>0.947 (0.531)</td>
<td>2.579</td>
<td>0.911</td>
<td>0.074</td>
</tr>
<tr>
<td>3rd</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-2.258 (0.505)</td>
<td>0.105</td>
<td>11.970</td>
<td>0.001</td>
</tr>
<tr>
<td>Sex</td>
<td>1.567 (0.467)</td>
<td>4.794</td>
<td>1.920</td>
<td>0.010</td>
</tr>
<tr>
<td>Marital status</td>
<td>-0.826 (0.320)</td>
<td>0.438</td>
<td>0.234</td>
<td>0.010</td>
</tr>
<tr>
<td>Children</td>
<td>0.572 (0.297)</td>
<td>1.771</td>
<td>0.989</td>
<td>0.055</td>
</tr>
<tr>
<td>Occupational situation</td>
<td>1.026 (0.217)</td>
<td>2.789</td>
<td>1.821</td>
<td>0.001</td>
</tr>
<tr>
<td>Year of study</td>
<td>0.939 (0.528)</td>
<td>2.558</td>
<td>0.908</td>
<td>0.075</td>
</tr>
</tbody>
</table>

\(R^2 = 0.128\) (Cox e Snell); \(R^2 = 0.176\) (Nagelkerke); \(x^2\) of model= 62.537, \(p<0.001\)
the full expenses and daily tasks related to domestic
dynamics, favoring having more time available for
studies. However, this inference still needs research
that proves its validity.\(^{(16)}\)

Regarding funding of their studies, 91.9% of
the students reported that this was done by oth-
ers. This allows the attenuation of the stressors as-
associated with the need to work to pay for their
own studies, since the students who have engaged
in some paid activity are 3.14 more likely to have
stress when compared to those who did not need
to work.

The results showed the occurrence of stress of
students from the first year of the course (26.1%),
with a gradual increase during the undergraduate
years, and the highest among students of the fifth
year (43.3%), with a statistically significant dif-
fERENCE (p<0.006). The data show that, although
it is less intense, stress is present in the first se-
mesters of the nursing undergraduate course.
This may be related to the fact that the student,
when entering college, faces a process of adapta-
tion to adulthood, becoming more independent
and responsible.

A recent study, conducted in São Paulo, aimed
to identify the presence of stress and depression
among 88 students in the last year of two nursing
schools. The Perceived Stress Scale was adminis-
tered to this population, showing that 73.9% of the
students had an average stress position.\(^{(22)}\)

Another study aimed to investigate burnout
syndrome among undergraduate nursing students
from a public university in the south of Brazil. The
administration of the instrument evidenced that
students did not present burnout syndrome, how-
ever, there were high manifestations of emotional
exhaustion, low in disbelief in studies, and high in
professional effectiveness.\(^{(23)}\)

The dedication required by health care courses
and the assessment systems contribute to the occur-
rence of stress from the beginning.\(^{(10)}\) New require-
ments, skills and competencies appear and increase
in each period of the course, need to be developed
and, consequently, may be one of the factors that
demonstrate the differences presented between the
first year and the others.

Other factors are associated with stress, as
this psychological state is multideterminant and,
therefore, other variables must be investigated.
Despite the apparent momentum, stress carries
with it the potential for chronic impairment.\(^{(9)}\)
The negative consequences of this phenomenon
can be minimized if health and educational pro-
fessionals anticipate and identify these possible
stressors.

**Conclusion**

Nursing students experience the feeling of stress;
and women, students with partners, and those in
the last year of study are more likely to present with
this condition. Although the research was conduct-
ed in only one educational institution, the size of
the sample can reflect on the reality of other insti-
tutions. However, other investigations are necessary
that associate the profile of nursing students with
the presence of stress, in order to allow new infer-
ences. It is also important to emphasize the impor-
tance of Higher Education Institutions to support
students in a healthier academic life, as they are
exposed to transformations, growth, failure, mat-
uration, and experience feelings that can trigger
diseases. The data presented can provide support
for planning, development and implementation of
strategies seeking to improve the teaching-learning
process, through programs that offer better condi-
tions to cope with stress, contributing to prevention
and health promotion, and improving the quality
of life of students.

**Acknowledgements**

To the institution where the research was conducted
and all the students who participated in the study.

**Collaborations**

Cestari VRF, Barbosa IV, Florêncio RS, Pessoa
VLMP and Moreira TMM contributed to the
study design, analysis and data interpretation, ar-
ticle writing, relevant critical review of the intel-
lectual content, and final approval of the version
to be published.
References


