

ORIGINAL RESEARCH

Correlations between stress and anxiety levels in nursing students

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Abstract

Objective: Transversal, descriptive, and correlational study with 71 professionalizing Nursing students, with the purpose of describing social-demographic data, to verify and to correlate stress and anxiety levels.

Methods: Data collection was performed on January 2011, from Vasconcelo's List of Stress Symptoms and Spielberger's Inventory of Trait and State Anxiety.

Results: There were 90.44% female students with an average 28.87 years of age; 32.39% obtained average stress score and 64.79% high score; 43.66% for high score in Trait and State Anxiety; 43.66% and 36.62% for moderate score respectively for Trait and State Anxiety. At Pearson correlation the following coefficients were obtained: LSS/Trait-Anxiety ($r=0.656/p=0.000$); LSS/State-Anxiety ($r=0.512/p=0.000$).

Conclusion: Students presented high levels of stress and anxiety and correlations between these variables were positive. Future studies are necessary with higher samples.

Key words

Stress, Anxiety, Nursing

1 Introduction

The word stress has been associated to sensations of discomfort, with an increasingly higher number of people defining themselves as stressed. Stress is almost always seen as something negative that results in impairment of the individual's global performance. Therefore, the stressor element may be a situation or experience which generates feelings of tension, anxiety, fear, or threat being of internal or external origin ^[1]. It is a psycho-physiological process initiated by the contact with the stressor agent and is a physiological reaction from the organism seeking homeostasis and recapture of balance ^[2]. But depending on how each individual is capable of responding and adapting to stressful situations (coping), negative stress or distress may onset the development of numerous illnesses, bringing great harm to the human being's quality of life and production, reason for which, it has been great interest to companies, school and society determining its causes and seeking methods for its reduction ^[3].

One of the main stress prognostics may be anxiety, apprehension deflagrated by something the individual understood as a threat to his or her integrity. Anxiety is an emotional experience opposing the possibility of living future situations which

may be unpleasant to the individual. Anxiety would be one of the affective components from the stress process's, which ends up occurring when the individual's response capacity is exceeded.

Anxiety does not have a precise definition and there is little agreement between scholars. It may be perceived, however, as an emotion characterized by tense and physically exhausting alert, focusing a sensation of imminent and inevitable danger ^[4]. At the anxiety study, we find two distinct concepts: anxiety-state, referring to a transitory emotional state, characterized by subjective emotions of tension which may vary in intensity through time, and anxiety-trait, referring to a personal disposition, fairly stable, to answering with anxiety to stressful situations and a tendency of perceiving a greater number of situations as threatening ^[5].

Throughout a Nursing academic course, students are confronted by situations that generate psychological pressure and anxiety, thus bringing relevance to the study of these aspects amongst them. Students from professionalizing Nursing courses are especially demanded at practical skills, such as performing invasive procedures with venous punctures, bandaging, hygiene, and comfort care in patients with different degrees of illness ^[6].

The learning-teaching process demands from the students, an adaptation to the constant social changes, such as the evolution of technology and human knowledge. In this context, the students from nursing technician courses need to prepare themselves with specialized technical knowledge and necessary abilities for the development of their competences, in order to become a professional with distinguished potentials and conditions to face a competitive labor market ^[6].

For these students, anxiety and stress levels may render learning difficulty, as high levels of stress and anxiety present a substantial effect over attention, with the possibility of leading to errors, lack of concentration and oscillation of attention levels. Besides, stress influences acquisition, manipulation and consolidation of the received information. This way, one can affirm that such behavioral alteration may negatively affect student learning and performance ^[6].

The present research was developed at São Joaquim Nursing School. This school adopts a social constructivist method, a differentiated and innovative proposal that privileges a "problematizing" posture, demanding education guided by competencies, making use of procedural evaluations, performed in the course of the teaching-learning process. It seems to offer as such, apparently less stressing conditions in regards to the evaluating aspects for students.

According to such, the present work's intention is evaluating and describing stress and anxiety levels in students from professionalizing nursing course, observing if there are relations between anxiety and stress scores, and establishing their magnitude, from correlation coefficients. Correlational studies allow for the analysis of conditions which co-vary or correlate, one to the other, helping to understand determined events, conditions, and behaviors that could be common to stress and to anxiety, to enable determining if stress levels vary in a similar manner to anxiety levels.

Objectives

Describe social-demographic data; verify stress and anxiety levels from professionalizing Nursing students from a school with social constructivist method and correlate stress and anxiety levels.

2 Materials and method

This is a transversal, descriptive, and correlational study of stress and anxiety levels and of various social-demographic variables on 71 professionalizing Nursing students from Sao Joaquim Nursing School at Beneficencia Portuguesa Hospital of São Paulo.

Data were collected after approval by the Beneficência Portuguesa Hospital of São Paulo Research Ethics Committee, protocol number 672-11 and CONEP/CAAE 0107.0.360.000-11. There was explanation to and consent from the subjects, by means of signature of the Free and Informed Consent Form.

Sample calculation was not performed for the present study, as the population was small and it was decided that all school's nursing students would be invited to take part in the essay. The inclusion criteria were: being a Nursing student at the institution's Technical Professional Education Courses for Nursing Assistant and Technician, and voluntary participation in order to answer questionnaires (List of Stress Symptoms and Spielberger's State-Trait Anxiety Inventory for Adults). The collection was performed during the period of January 2011, at the school.

As for instruments, the first version of Inventory on State of Stress was developed based on Vasconcellos stress inventory (1984), and later adapted and complemented by Covolan's "Psychologist's Stress Questionnaire at Professional Exercise", (1989) ^[7]. The inventory so denominated Stress Symptoms List (LSS) is composed of 59 psychophysiological and psychosocial stress symptoms, where respondents must mark the presence and frequency of each symptom, through a score varying from 0 to 3 points. This inventory's total score may vary from 0 to 177 points, with lower scores indicating absence or low frequency of symptoms manifestation, while higher scores indicate high frequency of such manifestation. The LSS was validated to the Brazilian population with excellent internal ($r=0.91$; $p=0.001$) and temporal ($r=0.94$; $p=0.001$) consistencies ^[8].

The State-Trait Anxiety Inventory (STAI) was developed by Spielberger (1979), translated and validated in Brazil by Biaggio and Natalício (1979) ^[5]. It is composed of two distinctive scales: the Anxiety-Trait Scale consisting of 20 statements describing how people generally feel, and the Anxiety-State Scale with also 20 statements, through which one obtains scores of how people are feeling at the present moment. It allows for the evaluation of anxiety transitory state, subjective emotions of apprehension, tension, and preoccupation which vary in magnitude and fluctuation at each moment. STAI was revalidated in others studies ^[9-11], through which were obtained moderate anxiety trait scores from Brazilian population, and has been the basis for studies which were selected subjects according to anxiety trait level.

Students were invited to participate on the research, from a classroom explanation performed by the researcher. Those demonstrating interest filled the social-demographic form, LSS and STAI Trait and State instruments. At a later moment, tests were calculated so as to examine those presenting minimal scores to participate in the research.

For data analysis, a MS-Excel spreadsheet was used for database elaboration, and afterwards the Statistical Package for the Social Sciences (SPSS) software version 17.0, for descriptive and inferential statistical analysis of data was also used. Parameters of mean and standard deviation were utilized for descriptive analysis, the Mann Whitney test for comparative analysis between student's variables and gender, the Kolmogorov-Smirnov test in order to verify data normality, the Pearson Correlation Test between stress (LSS) and anxiety trait and state levels, with test's descriptive level for $p < 0.05$.

3 Results

The general age average was 28.87 years old (DP=7.049). There were 90.44% students of the female gender (7 men and 64 women). From the 71 participating subjects, 32.39% (23) obtained average stress score 64.79% (46) corresponding to high score and 2.8% (2) presented very high score. Anxiety scores are referred at Table 1. The general mean and standard deviation for stress (LSS) were 71.86(24.719), 51.06(9.038) for anxiety trait, and 51.92(11.027) for anxiety state, according to Table 2.

Table 1. Nursing Students Distribution according to Anxiety Trait and State Scores. Sao Paulo, 2011

Score	A-T	%	A-E	%
Very High	7	9.86	10	14.08
High	31	43.66	31	43.66
Moderate	31	43.66	26	36.62
Low	2	2.71	4	5.63
Total	71	100	71	100

Table 2. Descriptive of LSS mean and standard deviation, STAI trait and state, and data normality test. Sao Paulo, 2011

		LSS	STAI trait	STAI State
N		71	71	71
Normal Parameters	Mean	71.86	51.06	51.92
	Std. Deviation	24.719	9.038	11.027
Kolmogorov-Smirnov Z		0.624	0.463	0.658
Asymp. Sig. (2-tailed)		0.831	0.983	0.779

At the Mann-Whitney test, the statistics for stress and anxiety levels according to gender were respectively: $p=0.893$ (LSS), $p=0.099$ (STAI trait), and $p=0.251$ (STAI state), demonstrating that there was no statistical difference between men and women as for variables evaluated. Thus, the variable gender did not exert effect over stress and anxiety levels.

According to the Kolmogorov-Smirnov test, data distribution was normal for LSS, STAI trait and STAI State, thus it was possible to perform the Pearson Correlation test amongst these variables. During the analysis of correlations (see Table 3), the following correlations were obtained: LSS/Anxiety-trait ($r=0.656/p=0.000$); LSS/Anxiety-state ($r=0.512/p=0.000$). The correlations showed themselves positive, that is, the higher the stress level, the greater the anxiety levels found. The strongest correlation, as expected, was between anxiety-trait and state ($r=0.726/p=0.000$), according to Figure 1.

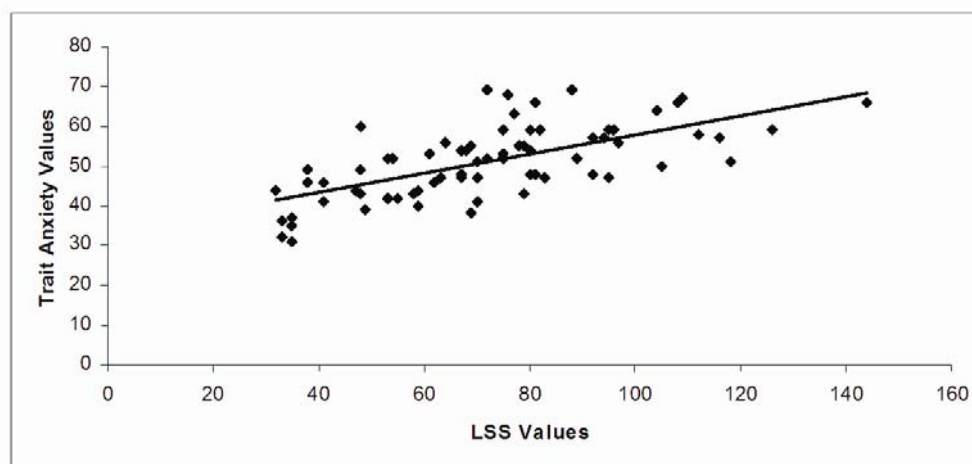
**Figure 1.** Correlation between the stress (LSS) and anxiety (STAI-Trait) levels in Nursing students. São Paulo, 2011

Table 3. Pearson Correlation Coefficient between Stress Symptoms, Anxiety trait and Anxiety state Levels. São Paulo, 2011

		LSS	STAI trait	STAI State
LSS	Pearson Correlation	1	.656**	.512**
	Sig. (2-tailed)		.000	.000
	N	71	71	71
STAI trait	Pearson Correlation	.656**	1	.726**
	Sig. (2-tailed)	.000		.000
	N	71	71	71
STAI State	Pearson Correlation	.512**	.726**	1
	Sig. (2-tailed)	.000	.000	
	N	71	71	71

** Correlation is significant at the 0.01 level (2-tailed).

4 Discussion

Around 87% of the subjects at the present research were included into moderate and high scores for anxiety trait and 80% for anxiety state. As for stress levels, 97% of the subjects were inserted into medium and high scores, and around 65% presented high stress scores. Student stress and anxiety scores were considerably high. At the present study, the level was considered elevated for anxiety state (51.92) and anxiety trait (51.06) and such results were comparatively higher than the other studies.

It was verified in a study with 38 Nursing graduate students in Oncology internship that 42.10% presented anxiety, according to instrument evaluating anxiety and depression ^[12]. This was also observed at another study on anxiety and emotions from Nursing professionals in situations of terminality in Oncology. Fifty nursing assistants and technicians answered the Anxiety Inventory and results revealed that the level of anxiety was considered elevated amongst such professionals ^[13]. In another research with nursing graduate students it was possible to observe that 52.3% of the subjects found themselves at moderate anxiety-trait and state levels. They presented a general average of 41.7 for anxiety state and 40.8 for anxiety trait, corresponding to moderate score (between 35 and 49) ^[14].

Compared to those studies, this research has shown a higher incidence of moderate and high anxiety and stress levels, and a higher mean anxiety score. It is important to emphasize, however, that the evaluated students in the present study did not originate from graduation, but from a professionalizing Nursing course. More studies with this kind of students are necessary towards such aspect.

At professions from the field of health, anxiety and stress among professionals are prevailing, as they are in direct and unceasing contact with pain, suffering, anguish, fear, loss, and death, which may unleash physical, emotional consequences, besides interfering with the quality of care ^[15]. This may extend to students, who are still unprepared technical and psychologically for dealing with such issues ^[16].

However, other reasons may underlie the elevated anxiety and stress levels in nursing technician course students. Most of the students from this particular school present a high workload, being forced to divide their time between study, work, and caring for their family and home. Another study with the same kind of population has concluded that one of the most stress related factors are of psychosocial nature, derived from the school context and their difficulty in combining studies with their personal lives. This points out a necessity of creating alternatives to prevent these stress factors perceived by nursing students ^[6].

Furthermore, as Brazilian education in general is still guided over reproduction of knowledge and not exactly over their creation or construction, technical professionalizing course students are exposed to different realities and the new may

generate a mix of anxiety and uncertainty emotions. It is important to emphasize that at education by competencies, which is characteristic in social-constructive methods, some skills are strongly stimulated in students: the decision making capacity, the mobilization of resources, and knowing how to act. So, decision making implies coordinating perspectives at a given direction, organizing all at the complexity of something that may express itself as conflict, ambivalence, and doubt. This may cause anxiety, as with the present educational proposal, the paths are not fully outlined and ready, the student is part of the knowledge building process. The individual needs to mobilize affective and cognitive resources in order to face new situations, developing competencies that are indispensable to professionals nowadays, such as the flexibility skill, the search for knowledge and creativity to find solutions and ultimately “knowing how to act”^[17].

As for the correlation between stress and anxiety, indeed there is a complexity of conceptualizing anxiety and stress, as these are lived in a personal manner, determined by individual traits which move according to the degree of uncertainty, self-esteem, self-concept, and internal resources available for problems solving^[18].

However, the positive correlations between anxiety and stress resulting in the present study accept the hypothesis that when there is increase in stress level, anxiety levels are also increased (LSS/Anxiety trait: $r=0.656/p=0.000$ and LSS/Anxiety-state: $r=0.512/p=0.000$). Actually, these results end up emphasizing the narrow correlation existing between anxiety and stress, so as many authors come to consider them synonyms, or stress as an exaggerated or pathological anxiety, or as a group of somatic modifications which accompany the feeling of anxiety^[14].

Negative correlations were found between levels of anxiety and self-concept in students^[12], positive correlations between anxiety, depression, and stress in users of primary Health^[19], and negative correlation between levels of “anxiety, depression, stress” and physical exercise^[20].

The Nursing student in a professionalizing course is exposed, therefore, during his/her education, to an unknown context, contributing for the appearance of tensions, persistent sensations of fear, apprehension, tension, and discomfort, increasing stress levels. Support services for students from educational institutions, in general, have offered attention restricted to pedagogical-administrative information. Attention has been defective towards the student in difficulty of experiencing negative situations, be it at physical, psychic, or social-economic scope and, therefore, studies on anxiety and stress among students, forms of confrontation and coping have become necessary^[21].

The present descriptive study on student stress and anxiety conditions had the purpose of executing a previous survey which would be basis for the execution of auriculotherapy Clinical Essay for treatment and control of stress and anxiety symptoms. The set of results enabled the proposition of a second stage, of utilization of auriculotherapy as coping and strategy of confrontation of student stress. The biggest limitation for the present study was, however, the small number of the Nursing student population. Therefore, other comparative studies are proposed in different schools, with distinct pedagogical proposals, so questionings on what would be the main factors elevating levels of stress and anxiety in the professionalizing Nursing courses are deepened.

5 Conclusion

The 71 people sample was composed of more female gender students (90.44%), with general age average of 29 years, with 64.79% of high score and 32.39% of medium stress score; 43.66% of high anxiety trait and state score and 43.66% and 36.62% for moderate score, respectively for anxiety trait and state. Strong positive correlation was verified between stress and anxiety trait ($r=0.656$) and positive correlation for stress and anxiety state ($r=0.512$). These results reassure that when there is increase in stress levels, anxiety levels also tend to increase. The elevated anxiety and stress levels in Nursing technician course students was verified in a social constructivist school. New studies are suggested with greater samples, and with students from different professionalizing Nursing schools.

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