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Article

# Level of Anxiety In Nursing Students Using The State-Trait Anxiety Inventory Questionnaire

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## Abstract

**Introduction:** Anxiety is an emotional response characterized by excessive tension, worry, and physiological changes that interfere with academic performance and well-being. In university students, especially those in the health sciences, its prevalence is high due to factors such as academic load, pressure for performance, and job uncertainty. **Methods:** A cross-sectional descriptive study was conducted using non-probabilistic sampling in 109 nursing students. **Results:** The STAI-State questionnaire was used to measure anxiety levels, which were differentiated according to gender. The mean anxiety level was 23.75 points (standard deviation = 8.54), with medium-high levels predominating in both sexes, with a higher prevalence in women (31.9%). Most students had low-to-moderate levels of anxiety, although a significant percentage had high levels of anxiety. **Conclusion:** The high prevalence of anxiety among nursing students reinforces the need for clinical practice preventive and management programs to improve well-being, performance, and professional preparation.

**Keywords:** mental health; anxiety; nursing student; university; nurse

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## 1. Introduction

Anxiety is defined as an emotional response characterized by feelings of tension, worried thoughts, and physiological changes, such as increased heart or breathing rate [1]. Although it constitutes an adaptive mechanism to face real or perceived threats, its excessive, persistent, or disproportionate manifestation can transform into a disorder that interferes with social, academic and occupational functioning [2]. This condition has become especially relevant in the university environment, given that students are in a transition stage that involves continuous academic, social, and personal demands [3].

Studies [4,5] suggest that 20%–40% of college students experience clinically significant levels of anxiety. The prevalence may be even higher in certain groups, such as first-year students, students in highly demanding academic programs, or those with careers in health [6,7]. We found different factors associated with high levels of anxiety, such as work overload, pressure for performance, competitiveness, economic difficulties, interpersonal problems, and uncertainty regarding the future of work [8,9].

The university stage also coincides with a critical period for the onset of mental disorders, since most mental health problems begin before the age of 25 [10]. Similarly, anxiety not only impacts the mental health of university students but is also associated with decreased academic performance, absenteeism, dropping out of school, and decreased quality of life [11,12].

In recent years, the COVID-19 pandemic has increased this problem. An increase in anxiety levels in university students has been documented as a result of confinement, unplanned virtual teaching, reduced social contact, and concern for their own and family health [13,14]. In 2023, the Ministry of Science, Innovation and Universities published the results of a study entitled “mental

health in Spanish university students" where they concluded that during 2022, one in two students had moderate/severe anxiety in 2022 [15].

This has motivated our growing interest in investigating the prevalence, risk factors, and possible intervention strategies in this population group. Understanding anxiety in university students is crucial for the design of prevention and early intervention programs, as well as for the implementation of institutional policies aimed at promoting mental health. Therefore, our objective is to describe the anxiety of nursing students at the University of XXXX.

## 2. Methodology

### 2.1. Design

A cross-sectional descriptive study was carried out, following the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guideline. This study has received the approval of the ethics committee of the University of XXXX (Reference: 20241002/OCT. PRY)

### 2.3. Population

The study population were nursing students who attended one of the laboratory practices. All participants voluntarily agreed and signed the informed consent prior to participation in the study. Participants who suffered from a visual disorder that makes it difficult to read the questionnaires or those who did not have a mobile device to fill out the questionnaire online were excluded.

### 2.4. Data Collection

Data collection was carried out in February 2025 using an online form. The students completed the questionnaire autonomously before the start of a practical seminar on practical skills in cardiopulmonary resuscitation, the students did not have any theoretical or practical exam afterwards so that it did not influence their anxiety levels.

### 2.5. Variables and Collection Instruments

Both sociodemographic variables such as age and gender were collected using an "Ad hoc" questionnaire. Age was grouped into 18 to 24 years / 25 to 34 years / 35 to 44 years / 45 years or older.

The study variable was Anxiety, collected using the State-Trait Anxiety Inventory (STAI State) questionnaire [16]. In the Spanish validation of this questionnaire [17], a Cronbach's alpha was obtained between 0.90 and 0.93 in anxiety/state and between 0.84 and 0.87 in anxiety/trait. This questionnaire consists of 20 items with four Likert-type response options; where we find: 0 or "none", 1 or "somewhat", 2 or "Quite a lot" and 3 or "A lot".

The total score varies between 0 and 60 points. The scores of 10 items (1, 2, 5, 8, 10, 11, 15, 16, 19, 20) must be reversed. Following the recommendations of Spielberger et al., 1982 [16]; We divided the anxiety results into five levels and differentiated according to gender.

For the evaluation of anxiety in women, the scores obtained are classified into five ranges: from 0 to 14, very low level; from 15 to 19, medium low level; from 20 to 22, average level; from 23 to 31, medium high level; and from 32 to 60, a very high level. However, in men the scores are classified as follows: from 0 to 13, very low level; from 14 to 18, medium low level; 19, average level; from 20 to 28, medium-high level; and from 29 to 60, very high level

### 2.6. Analysis

For the treatment of the information, a descriptive statistical analysis was carried out with the aim of characterizing the anxiety levels in nursing students. The absolute and relative frequencies (percentages) were calculated for each anxiety category, differentiating by gender. Measures of central tendency and dispersion, including mean, Standard Deviation (SD), and mode, were

determined to describe the distribution of the scores obtained. The analyses were conducted using the SPSS Statistics 23 program.

### 3. Results

A total of 109 university nursing students participated in the study (Table 1), of which 91 were women and 18 were men (83.5% of the participants were women). Regarding age, 82.5% (n = 90) were between 18 and 24 years old, 9.1% (n = 10) were between 25 and 34 years old, 5.5% (n = 6) were between 35 and 44 years old, and only 2.7% (n = 3) were over 45 years old.

**Table 1.** Sociodemographic data of the participants (n = 109).

Sociodemographic variable		N (%)
Gender	Woman	91 (83,5%)
	Man	18 (16,5%)
Age (years)	18 – 24	90 (82,6%) Males: 12 (11.0%) Females: 78 (71.5%)
	25 - 34	10 (9,1%) Males: 2 (1.82%) Female: 8 (7.28%)
	35 - 44	6 (5,5%) Males: 2 (1.83%) Female: 4 (3.67%)
	> 45	3 (2,8%) Males: 2 (1.86%) Female: 1 (0.93%)

Source: Authors.

Table 2 presents the answers to each question. As previously mentioned, the STAI-state questionnaire has 20 questions and four answer options. In all but five questions (questions 4, 6, 9, 14, and 18), the most frequent value is 1.

In the inversely formulated items (I), which evaluate positive states such as calm, security, or comfort, most participants were placed in the intermediate categories ("Somewhat" and "Quite a lot"). For example, in question 1 "I feel calm", 45% answered "Quite a lot" and only 2% "A lot"; similarly, in question 8 "I feel rested", 46% chose "Quite a lot" and 10% "A lot". These results indicate feelings of moderate tranquility, although they are not generalized at maximum levels.

In direct anxiety items such as, "I am tense" (Question 3); "I feel altered" (Question 6); "I am worried" (Question 17), the most frequent category was "Somewhat", followed by "Nothing", suggesting a low-to-moderate level of anxious arousal. In question 7 "I am worried now about

possible future misfortunes”, 20% answered “Quite a lot” and 8% “A lot”, evidencing a subgroup with high concern.

We would like to highlight question 14, “I feel very tied down (like oppressed)” where 73% answered “Not at all” and only 2% “A lot”, indicating a low prevalence of this specific state. Conversely, items such as 15 “I am relaxed” and question 8 “I feel rested” presented higher proportions in the high categories (“Quite a lot” and “A lot”) compared to other positive items.

**Table 2.** Breakdown of responses by question (n = 109).

	<b>Question</b>	<b>0 (Nothing)</b>	<b>1 (Something)</b>	<b>2 (Quite a lot)</b>	<b>3 (A lot)</b>
<b>Question 1 (I)</b>	I feel calm.	21	41	245	2
<b>Question 2 (I)</b>	I feel safe.	20	51	31	7
<b>Question 3</b>	I’m tense.	32	50	26	1
<b>Question 4</b>	I’m upset.	56	47	6	0
<b>Question 5 (I)</b>	I feel comfortable (I am comfortable).	20	58	25	6
<b>Question 6</b>	I feel upset.	59	38	11	1
<b>Question 7</b>	I am worried now about possible future misfortunes.	27	54	20	8
<b>Question 8 (I)</b>	I feel rested.	5	48	46	10
<b>Question 9</b>	I feel distressed.	59	38	12	1
<b>Question 10 (I)</b>	I feel comfortable.	5	59	38	7
<b>Question 11(I)</b>	I have confidence in myself.	18	52	33	6
<b>Question 12</b>	I feel nervous.	24	61	21	3
<b>Question 13</b>	I am uneasy.	46	53	9	1
<b>Question 14</b>	I feel very “tied” (as if oppressed).	73	31	3	2
<b>Question 15(I)</b>	I’m relaxed.	8	42	49	10
<b>Question 16(I)</b>	I feel satisfied.	14	53	34	8

	Question	0 (Nothing)	1 (Something)	2 (Quite a lot)	3 (A lot)
Question 17	I'm worried.	35	52	17	5
Question 18	I feel dazed and overexcited.	58	39	11	1
Question 19 (I)	I feel joyful.	23	51	32	3
Question 20 (I)	At the moment I feel good.	24	50	31	4

Note: I: Inverted. Source: Authors.

In the STAI assessment applied to the 109 participants, the scores ranged from 8 to 50 points. The mean was 23.75 (SD = 8.54), with a first quartile of 17 and a median of 23. This indicates that the central 50% of the sample had values between 17 and 29, suggesting a predominance of low-to-moderate anxiety levels.

A total of 91 female students were analyzed. According to the STAI scale, the total score range for females is 8–50 points. The most frequent scores were 21 and 26 points, with 7 students in each case. For the male group, made up of 18 students, he obtained global anxiety scores ranging from 11 to 42 points on the STAI scale. According to the results, most of the scores are between the “medium-low” and “medium-high” levels, according to the criteria established by Spielberger et al., 1982 [16].

In the group of nursing students evaluated and according to gender (Table 3), it was observed that, within the female gender (n = 91), the highest proportion was concentrated in the “medium-high” level of anxiety (n = 29, i.e., 31.9%), followed by “very high” (n = 19) and “medium-low” (n = 17), while the “average” and “very low” levels were less frequent (n = 15 and n = 11, respectively). In the case of male students (n = 18), the distribution showed a predominance at the “medium-high” (n = 6) and “medium-low” (n = 5) levels, followed by “very high” (n = 3) and “average” (n = 1), with the “very low” level being the least represented (n = 3).

Table 3. STAI-status results by gender (n = 109).

Rank	Female (n = 91) n (%)	Male (n = 18) n (%)
<i>Very low</i>	11 (12,1)	3 (16,7)
<i>Medium Low</i>	17 (18,7)	5 (27,8)
<i>Average</i>	15 (16,5)	1 (5,6)
<i>Medium High</i>	29 (31,9)	6 (33,3)
<i>Very high</i>	19 (20,9)	3 (16,7)

Source: Authors.

#### 4. Discussion

The results of our study indicate an overall mean STAI score in a sample of 23 undergraduate nursing students. Regarding gender, most of the scores were at medium-high levels of anxiety in both women and men. Of every 100 women who study nursing at the University of XXXX, 32 have medium-high anxiety levels.

Anxiety is an emotional predictor of academic performance. A recent systematic review established a consistent negative correlation between elevated levels of anxiety and lower levels of educational achievement, highlighting clear implications for cognitive functioning, motivation, and student engagement [18]. In addition, studies have shown how anxiety negatively affects key areas, such as concentration, time management, and study ability, contributing to noticeable academic decline [19].

As previously mentioned, anxiety is frequent and high among university students. A meta-analysis reported a combined rate of anxiety symptoms of 39% in this population, with even higher prevalences in health science students, such as those studying medicine or nursing, as well as in university students in lower-middle-income countries [20]. Other studies have found that approximately 31%, 18.3%, and 14.1% of students had mild, moderate, and severe anxiety, with women being the most affected [21].

Different interventions, such as those that combine cognitive behavioral therapy (CBT) and training in study techniques, have been shown to be effective in reducing anxiety levels in this population, thus improving academic performance in university students [22,23]. In addition, studies on different complementary and integrative therapies, such as music therapy, aromatherapy, guided breathing, and balneotherapy, have shown significant reductions in state anxiety measured with STAI, for example before exams [24,25].

These findings highlight the need to implement intervention programs in the university environment, especially considering that approximately 25%–40% of students have anxiety about exams that can impair their concentration and memory [26].

Similarly, recent research conducted in Saudi Arabia provides complementary evidence on the factors associated with stress and anxiety in students studying health science. A qualitative study identified multiple psychosocial stressors in mental health nursing students, such as clinical context, discrimination toward the profession, interpersonal difficulties, and financial problems, all of which are linked to a deterioration of well-being and academic performance [27].

A cross-sectional study found that although the emotional intelligence levels of most students were medium or high, they were inversely correlated with perceived stress, suggesting that strengthening emotional competencies could act as a protective factor against academic stress [28].

These findings reinforce the importance of considering not only interventions focused on reducing anxiety but also strategies aimed at developing EI and addressing the psychosocial factors that affect nursing students.

The main limitation of this study is its design. First, the descriptive design of the study prevents the establishment of causal relationships and the evaluation of anxiety evolution or development during university studies. The next limitation is the convenience of using non-probability sampling. Future studies should use longitudinal designs and probability sampling to strengthen the results.

Identifying high levels of anxiety in this population allows for the implementation of early interventions that favor healthy coping strategies and reduce the risk of more serious emotional disorders. An adequate approach to anxiety in the academic context can improve interaction with teachers, optimize academic performance, and prevent dropout. Likewise, the timely management of this problem helps future professionals to face the demands and pressures of their working life with greater resilience, thus strengthening their personal and professional development.

#### 5. Conclusion

University students with a nursing degree have high levels of anxiety, with female students being more prevalent. The findings show the need to integrate anxiety detection and management strategies in university health promotion programs to promote emotional well-being and enhance the academic and professional success of this population. Implementing preventive and intervention measures from clinical practice in nursing not only contributes to improving the quality of life of students but also strengthens the development of future professionals who are more resilient and prepared to face the challenges of their career.

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