



# Anxiety Trait and Psychosomatic Profile of Nursing Students Regarding the Risk of Depression in Times of COVID-19 Pandemic

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**Abstract:** *Objectives:* To evaluate the anxiety trait of nursing students and relate to the psychosomatic profile; To analyze anxiety trait, psychosomatic profile and relate to the risk of depression; Correlate anxiety trait, and psychosomatic profile of graduate students with sociodemographic and economic characteristics. *Method:* Correlational, quantitative, cross-sectional study, with the response variables the anxiety trait and the psychosomatic signs and symptoms of the students, and as predictors variables, the sociodemographic and economic characteristics of the students. Descriptive analysis (mean, standard deviation and median) and comparative analysis were performed using statistical tests. *Results:* The study sample consisted of 127 participants with a mean age of 25.9 years (standard deviation of 8.6); most were female 120 (94.5%) and lived in São Paulo 90 (70.9%). The mean Stai score was 51.29 (standard deviation of 11.27), with minimum and maximum values of 21 and 75, respectively. The mean Beck score was 14.26 (standard deviation of 9.03), the minimum and maximum values were 0 to 44. The median value was 12 [1<sup>st</sup> quartile: 8; 3<sup>rd</sup> quartile: 18]. The associations between the Stai and Beck scores revealed an increasing linear behavior, that is, as the Stai score increases, the Beck score increases. There is an association between age and Stai score: the highest means were observed in the youngest stratum of the sample. Scores were also significantly higher in females for the Beck score - the score was almost twice the male score. The highest scores were anxiety for those who performed some kind of work. *Conclusion:* There are significant correlations of the Stai anxiety trait and psychosomatic profile of the students with Beck anxiety inventory. There was a significant association between age, online learning, COVID-19 pandemic and current work for the Stai score. There is a significant association for the Beck score among females, which increases the risk of depression. There was a significant association between the Stai and Beck scores: as the Stai score increases, the Beck score increases. A positive and strong correlation was found between the Stai and Beck scores, in which the higher the Stai anxiety trait, the greater the risk of Beck depression.

**Keywords:** Anxiety, Anxiety Disorders, Depression, Students

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## 1. Introduction

Anxiety is an emotional state with physiological and psychological components, which are part of normal human experiences. It is a normal affective condition that, when in

excess, can cause mood changes, such as nervousness, changes in thought, behavior, and physiological activity [1].

It is a universal phenomenon experienced by every human being at various times in the life and, despite this, does not have an exact definition [2].

Spielberge [3] conceptualizes anxiety as an adaptive

phenomenon necessary for men as a stimulus for coping with daily situations, with varying duration and intensity from subject to subject and according to different situations. It is one of the most frequent psychiatric disorders in the general population, in addition to anxiety symptoms, being the most common, and can be found in any person at certain times of life [3].

The dualistic conception of anxiety as trait and state was first proposed by Cattell and Scheier [4] and is the basis of Spielberge's State-Trait Anxiety Inventory [3].

In the study of anxiety, we find two distinct concepts: the trait and state of anxieties, which constitute one of the factors that most interfere with interpersonal relationships [3].

According to Spierlberge [3], the anxiety state is conceptualized as a transient emotional state or condition of the human organism, which is characterized by unpleasant feelings of consciously perceived tension and apprehension, and by increased activity of the autonomic nervous system. The anxiety trait refers to the relatively unstable individual differences in anxiety propensity, that is, the difference in the tendency to react to situations perceived as threatening with anxiety elevations of the anxiety state [3].

Anxiety implies some form of impotence of the individual, occurring the establishment of an aversive or painful condition, and some degree of uncertainty or doubt [4].

It is a complex emotional condition that results in a pairing of anxiety-generating stimuli [5, 6]. These stimuli are a sign of self-preservation in the face of stressful situations [7, 8].

Admission to higher education is a significant moment for every student because it is something that will determine their professional future. It is the phase of constant change that coincides with the period of psychosocial development, marked by significant changes, such as the transition from high school to higher education and adulthood, increased responsibilities, marked by the age of possibilities and instabilities, in which students experience processes of constant transitions each semester at the university [9].

These changes and adaptation to all this academic routine can lead to the distancing of students from the family environment, close friends, that is, from the social network prior to their admission to higher education, provoking feelings of doubt, fear, concern, and anxiety regarding satisfaction and academic success [9].

Although anxiety is a natural reaction that encourages the human being to seek their goals, when experienced very intensely, can become dysfunctional and limiting, negatively influencing the quality of life of students, hindering the ability to adapt and cope with everyday situations [10]. These students, in turn, show greater difficulty in concentrating in classes, participating in group work, do not question, avoid asking questions of clarification during classes out of fear, do not ask for help, demand themselves more and, as a consequence, have a poor academic performance [8].

Academic activities in which students fail to achieve a satisfactory performance become a stressful experience and may contribute to the development of anxiety and depressive disorders. Fear causes the feeling of insecurity, involving

cognitive, neurological, behavioral and physiological factors that shape the perception of the student to the environment, generating specific characteristics directed to some type of behavior, such as the presence of autonomic (tachycardia, facial flushing, tremor and sweating), behavioral (avoidance, freezing and escape) and cognitive (negative evaluation and humiliation) symptoms. These behaviors during academic activities are present and alarming [9, 10].

Many students in this academic period develop not only anxiety disorder, but also other psychosomatic diseases, such as depression, panic disorder, among others [11].

The term psychosomatic is understood as the junction "psyche" and "sum", that is, the body and mind. The mind would be responsible for cognitive and emotional functions; the body would be the physical structure, but with an inseparability and interdependence of these psychological and biological aspects. These diseases are difficult to detect, because they cause physical symptoms, however, without organic causes. Psychosomatic disorders have emotional causes. Anxiety, for example, can generate uncomfortable discomfort, causing the physical body to present exhausting responses. A better explanation of anxiety would be of psychic basis, which would send a message to the physical body as a response to divide this feeling [11].

Currently, depression is discussed in studies as one of the most disabling psychiatric disorders, with high prevalence, reaching more than 121 million people, according to the World Health Organization (WHO), being considered a public health problem. Epidemiological studies estimate that, around 20 years, depression will occupy the second place among the causes of diseases and disability in the world, following only cardiovascular diseases [12].

From this perspective, it is possible to observe that, in Brazil, approximately 54 million people will have some type of depression at some point in their lives, and 7.5 million will have acute and severe episodes [12]. Considering the current context in which we live, related to the COVID-19 pandemic, these numbers may be even higher, related to signs such as fear of contracting the disease, fear of death, change in life habits and studies, insecurity and anxiety.

The research theme is justified as an investigation of the psychosomatic profile of nursing students, anxiety trait relating to sociodemographic and economic characteristics. Thus, the aim is to identify the psychosomatic profile of students concerning the anxiety trait compared to stressors such as changes in academic routines due to the COVID-19 pandemic and how these contribute to the increased risk of depression.

## 2. Objectives

To evaluate the anxiety trait of nursing students and relate to the psychosomatic profile; To analyze the anxiety trait, psychosomatic profile and relate to the risk of depression; To correlate and psychosomatic profile of students with sociodemographic and economic characteristics.

### 3. Method

Correlational, cross-sectional, quantitative study, with the response variables anxiety trait and psychosomatic signs and symptoms of the students, and as predictor variables, the sociodemographic and economic characteristics of the students. The convenience sample consisted of students from the first to the eighth semester of nursing graduation in the morning, afternoon and evening periods of the surveyed University. The research included 30 nursing students who met the criteria for inclusion in the research. This minimum number was chosen due to the characteristics of the study. A minimum sample size of approximately 30 participants was the recommendation. This recommendation of traditional and somewhat arbitrary sample size is related to the Central Limit Theorem, in which, even when the population is not normal, the sample distribution of the mean is closer and closer to the normal distribution as the sample size increases (Pett 1997). The participants were nursing students from a private higher education institution (HEI), located in the city of São Paulo (SP). The eligibility criteria included students regularly matriculated in the nursing graduate course, from the first to the eighth semester, aged 18 years or older. Participants were recruited indirectly. For indirect recruitment, an access link to the research was posted on the researchers' personal page, on the social networks Instagram, Facebook and public groups related to nursing students WhatsApp Web. For this, the collaboration of nursing students was requested to participate in the research.

To prevent other students who did not belong to the nursing course from answering the research instruments, the participant's identification was requested, with full name, student registration number (RN) which was later checked with the identification list of students matriculated in the nursing course through the Integrated System of Academic Administration (ISAA).

In the occurrence of divergence of the response (not being registered in the (ISAA) as nursing students or not being adequate to the inclusion criteria), the participant was excluded from the research. This did not occur, there were no disagreements. For this study, three research instruments were used: the participant characterization questionnaire built by the author himself, in which the variables questioned were: age, sex, naturalness, marital status, self-reported color, religion, family income, feelings of anxiety related to academic activities. The State-Trait Anxiety Inventory (Stai) is an instrument composed of two distinct scales of self-report that measures two distinct concepts of anxiety, the state of anxiety (A-State) and the trait of anxiety (A-Trait). It was developed as a research instrument that investigates anxiety phenomena in normal adults, that is, without psychiatric disorders, students, neuropsychiatric, surgical and medical clinic patients [10]. The scale consists of two questionnaires composed of 20 questions each, divided into two parts. Part I - Stai - State (A-State), with questions from 1 to 20, each question with score of 1 to 4 in order to assess how the person feels "now, at this moment", 1- absolutely not;

2- a little; 3- quite; 4- very much. Part II - Stai-Trait (A-Trait), with questions from 1 to 20, each question with a score of 1 to 4 in order to assess how the person "usually feels", 1- almost never; 2- sometimes; 3- often; 4- almost always, being a Likert scale x points, and, for each question, the person should indicate one of the four alternatives most adequate to their feeling. In this study, only Stai (A-Trait) was used. Part II of the Anxiety Inventory (A-Trait) consists of 20 questions, measured with 4-point Likert scale (1- almost never; 2- sometimes; 3- often; 4- almost always). The variation of the total score of the scale is 20 to 80: the higher the Stai score, the higher the degree of anxiety. This subscale presents 10 items defined as unpleasant feelings of tension and apprehension consciously perceived by increased activity of the autonomic nervous system. These items have reverse coding (items 3, 4, 6, 7, 9, 12, 13, 14, 17 and 18) [13]. The next instrument used was the Beck Depression Inventory: psychometric properties of the Portuguese version. The Beck Depression Inventory is possibly the most widely used measure of self-assessment of depression for clinical research, being translated into several languages and validated in different countries [14, 15].

The scale consists of 21 items, including symptoms and attitudes, whose intensity ranges from 0 to 3. Items refer to sadness, pessimism, sense of failure, lack of satisfaction, sense of guilt, sense of punishment, self-deprecation, self-accusations, suicidal ideas, crying crises, irritability, social retraction, indecision, distortion of body image, inhibition for work, sleep disorder, fatigue, loss of appetite, weight loss, somatic concern, decreased libido [14].

For samples of patients with affective disorder, the "Center for Cognitive Therapy" recommends the following cutoff points: less than 10 = no depression or minimal depression; from 10 to 18 = mild to moderate depression; from 19 to 29 = moderate to severe depression; 30 to 63 = severe depression [15].

However, for undiagnosed samples, the guidelines are different. Steer (personal communication) recommends scores above 15 to detect dysphoria and concludes that the term "depression" should only be used for individuals with scores above 20, preferably with concomitant clinical diagnosis [14].

Data were evaluated using the software R 3.5.1 (R Core Team, 2020). For the hypothesis tests, a significance level of 5% was considered. The quantitative data were entered into a database in Excel version 2019 for further statistical treatment in the software IBM SPSS (Software Package used for Statistical Analysis) version 21. The variables were described by means, standard deviations or absolute and relative frequencies. Beck and Stai scores were calculated by the sum of the scores. The linear correlation between the measures with linear Pearson correlation was evaluated. To assess whether the distribution of Beck and Stai scores differed according to socioeconomic and demographic characteristics, hypothesis tests were performed. In the case of continuous variables, the Mann Whitney or Kruskal-Wallis test was used. In the case of categorical

variables, Fisher’s exact was used (Bussab & Morettin, 2006).

The development of the study met the national and international standards of ethics in research involving human beings, and was approved by the Research Ethics Committee of the HEI under opinion number 4.557.663. All participants signed the Informed Consent Form (ICF).

### 4. Results

The study sample consisted of 127 participants with a mean age of 25.9 years (standard deviation of 8.6). Most of them were female 120 (94.5%) and lived in São Paulo 90 (70.9%). The marital status with and without partner was practically similar, with stable companion 63 (49.6%) and without stable companion 64 (50.4%).

The most frequent self-reported color was white 76 (59.8%), and evangelical religion 41 (32.3%). The majority of the sample 79 (62.2%) worked and the income was concentrated in up to three minimum wages 36 (28.3%) that is, BRL 3,300.00. There was a higher frequency of participants in the first semester of graduation 22 (27.6%) and in the morning period 81 (63.8%).

Regarding the description of anxiety feelings related to academic activities of students’ responses, the highest frequencies were for feelings of anxiety 60 (47.2%), 48 (37.8%) feel very anxious, feel some symptom of anxiety, such as chest tightness, insomnia, headache, irritability during academic activities such as exams, seminars and group work.

The symptom most present in the final exams period (Regimental A1) was headache 75 (59.1%). Regarding emotional tensions, 75 (59.1%) consider that they deal little with their tensions. Of the emotional tensions presented in different organs of the body, 84 (66.1%) reported pain and burning in the stomach and feeling nausea.

Of the symptoms of interpersonal sensitivity, 42 (33.1%) have already felt that others do not understand them or are unsympathetic. During group academic activities, 84 (66.1%) reported having a good relationship with colleagues.

Concerning remote online classes related to the COVID-19 pandemic, 67 (52.8%) have not adapted and feel unsafe with their learning, preferring face-to-face classes.

In relation to contracting COVID-19, 41 (32.3%) answered that neither they nor their family members contracted COVID-19. However, 81 (63.8%) are afraid of a family member contracting COVID-19. Of those who contracted the disease, 31 (24.4%) contracted the disease and 38 (29.9%) were family members.

The mean STAI score was 51.29 (standard deviation of 11.27), with minimum and maximum values of 21 and 75, respectively. The median value was 51.00, with values of first and third quartiles, corresponding to 43.50 and 59.00, respectively. The mean Beck score was 14.26 (standard deviation of 9.03), the minimum and maximum values were 0 to 44. The median value was 12 [1<sup>st</sup> quartile: 8; 3<sup>rd</sup> quartile: 18]. To evaluate the association between the Stai and Beck

Scores, we initially evaluated the behavior of the measurements in the dispersion plot. There is an increasing linear behavior, that is, as the STAI score increases, the Beck score increases (Figure 1). In fact, when we calculated the statistics for this purpose, we observed that the Pearson correlation was 0.7556 (p<0.001). As the correlation values vary from - 1 to + 1, we can say that the correlation was positive and strong (Figure 1).

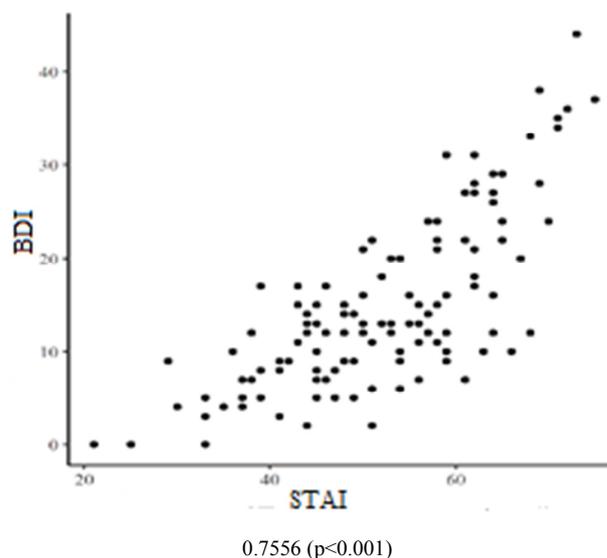


Figure 1. Scatter plot between STAI and BECK scores.

Table 1 shows the distribution of Stai or Beck scores in each category of economic and demographic variables. There was an association between age and Stai score. The highest means were observed in the youngest stratum of the sample. Scores were also significantly higher in females for the Beck score - the score was almost twice the male score. We did not observe differences in relation to place of birth or living with or without a partner. We also noticed higher anxiety scores among those who perform some type of work.

Table 1. Comparison of the means of STAI and Beck scores at each level of socioeconomic and demographic categories. São Paulo, SP, 2021. (N=127).

Variables	STAI Score	Beck Score
Age		
(18, 19]	57.3 ± 8.4 (n = 49)	16.3 ± 8.5 (n = 49)
(19, 22.3]	47.7 ± 11.2 (n = 36)	13.4 ± 9.5 (n = 36)
(22.3, 51]	47.4 ± 11.4 (n = 42)	12.5 ± 9.0 (n = 42)
p-value	< 0.001	0.051
Sex		
Female	52.1 ± 10.8 (n = 120)	14.6 ± 9.1 (n = 120)
Male	37.1 ± 9.8 (n = 7)	7.7 ± 4.6 (n = 7)
p-value	0.002	0.034
Place of birth		
São Paulo	51.2 ± 10.5 (n = 90)	14.2 ± 8.5 (n = 90)
Metropolitan region of São Paulo	52.5 ± 13.9 (n = 23)	15.0 ± 10.7 (n = 23)
Others	49.6 ± 11.9 (n = 14)	13.1 ± 9.8 (n = 14)
p-value	0.675	0.811
ESTM		
With partner	50.7 ± 11.2 (n = 63)	13.3 ± 7.9 (n = 63)
Without partner	51.8 ± 11.4 (n = 64)	15.2 ± 10.0 (n = 64)
p-value	0.765	0.530

Variables	STAI Score	Beck Score
<i>Color</i>		
White	51.8 ± 10.4 (n = 76)	14.4 ± 8.4 (n = 76)
Black	53.9 ± 9.9 (n = 15)	16.0 ± 9.5 (n = 15)
Yellow	54.0 (n = 1)	9.0 (n = 1)
Brown	49.0 ± 13.5 (n = 35)	13.3 ± 10.4 (n = 35)
p-value	0.516	0.416
<i>Religion</i>		
Catholic	50.5 ± 9.3 (n = 38)	12.3 ± 7.1 (n = 38)
Evangelical	49.6 ± 12.0 (n = 41)	13.8 ± 9.6 (n = 41)
Afro-Brazilian	51.6 ± 7.7 (n = 8)	13.2 ± 8.8 (n = 8)
Spiritist	48.8 ± 14.8 (n = 4)	13.5 ± 9.9 (n = 4)
Other	54.2 ± 12.5 (n = 36)	17.0 ± 9.9 (n = 36)
p-value	0.368	0.302
<i>Currently working</i>		
Yes	55.0 ± 10.4 (n = 48)	15.8 ± 9.4 (n = 48)
No	49.0 ± 11.2 (n = 79)	13.3 ± 8.7 (n = 79)
p-value	0.004	0.113
<i>Wage categories</i>		
Up to 2 minimum wages	53.5 ± 10.9 (n = 51)	15.8 ± 10.2 (n = 51)
Over 3 minimum wages	49.8 ± 11.4 (n = 76)	13.2 ± 8.1 (n = 76)
p-value	0.082	0.251
<i>Graduation semester</i>		
1	49.1 ± 12.4 (n = 35)	12.7 ± 9.4 (n = 35)
2	49.2 ± 7.1 (n = 8)	13.5 ± 4.0 (n = 8)
3	55.5 ± 9.9 (n = 24)	15.0 ± 9.4 (n = 24)
4	51.3 ± 8.7 (n = 19)	14.7 ± 8.0 (n = 19)
5	50.5 ± 12.5 (n = 29)	14.1 ± 9.2 (n = 29)
6	55.8 ± 11.6 (n = 4)	17.2 ± 12.3 (n = 4)
7	55.0 ± 13.7 (n = 6)	19.3 ± 12.5 (n = 6)
8	38.5 ± 3.5 (n = 2)	9.5 ± 0.7 (n = 2)
p-value	0.201	0.667
<i>Graduation period</i>		
Morning	51.1 ± 11.2 (n = 81)	15.0 ± 9.4 (n = 81)
Afternoon	50.6 ± 11.0 (n = 24)	12.0 ± 9.5 (n = 24)
Night	52.7 ± 12.4 (n = 22)	13.8 ± 7.0 (n = 22)
p-value	0.720	0.221

Source: Authors, 2021.

## 5. Discussion

In this study, most are female, young, white skin color, evangelical religion, work and with income up to three minimum wages. The main feeling was anxiety and they have not adapted with online classes; they prefer face-to-face classes, they feel headache during the final exams, among other emotional symptoms. They report pain, burning in the stomach and feeling sick. From interpersonal sensitivities, they feel that other people do not understand them or are unsympathetic; however, they have a good relationship with colleagues, are afraid of contracting COVID-19 or of some family member contracting.

As for the correlations, direct correlations of the anxiety trait with the risk for depression were found. There was a significant association of insecurity among the factors age, online learning, COVID-19 pandemic and current work. There are significant associations of the anxiety trait with higher risk of depression among females, i. e., the anxiety trait, age, online learning routine, pandemic situation, being female and current work were significant variables for the increased risk of depression.

Studies conducted between the years 2015 and 2018, with those entering the nursing course at the Association of Higher Education of Piauí and a state university in the interior of Ceará, showed a predominance of women with, respectively, 79.3% and 73.7% of participants, which corroborates the findings of this study. The prevalence of the female sex in the academic and professional context of nursing still happens frequently, which reproduces a historical allusion of nursing exercised mostly by women [16].

Regarding age, the subjects of this research are mostly young adolescents, as most were between 17 and 20 years 38.6%. This information leads to professional choice that occurs early, since the highest percentage of students in this study had not even completed the second decade of life [16].

The most frequent self-reported color was white. According to a survey conducted by the National Nursing Council in 2017, 57.9% of nurses were white. When seeking justification in history, there is recognition that, in colonial Brazil, at the time of 1500-1822, the practice of care and healing was attributed to black and brown women, described as “culture of care”. However, the process of professionalization, which occurred around 1860, there was denial of the space of action. To enter the School of Nurses of the National Department of Public Health in 1923, which was then named School of Nurses D. Anna Nery, a requirement was the diploma of normal course, as well as non-formalized prerequisite to be white race. In this context, the institutionalized Brazilian nursing began by the aegis of whitening, so that the selection criteria considered a nightingalean archetype of the so-called model nurse: white, young, middle class and conventionally instructed, related to the need for professional training to meet the demands of Brazilian public health, which required nursing schools to accept women who did not fit the standard of the time, the possibility of black women entering nursing schools, which reflects, once again, a historical mention of the professionalization of nursing being performed by non-white women [17, 18].

Most of the sample worked, and income was concentrated at up to three minimum wages. There is a higher frequency of participants of the first semester of graduation and the morning period. A research evidenced that, in academia, there is a considerable amount of students who keep working during the course period. A study conducted in 2018 at a university in São Paulo showed that only 5% of participants did not perform any type of work and about 39% were already practicing as a nursing technician, and the average salary was three which minimum wages, which contributes to the finding of this research [19].

As for anxiety symptoms, studies report that mood disorders have presented as the most important psychiatric comorbidities related to migraine. Studies show that staying in an alert state, concern for a certain period, is considered a stressor, which causes students to develop symptoms similar to those found in patients diagnosed with anxiety, such as migraine and, later, depression [19, 20]. A study with 782

patients in the general population who answered a self-administered questionnaire in which the demographic data, headache characteristics, anxiety and depression symptoms aimed to analyze how aspects of anxiety and depression are related to migraine [20]. The study concluded that anxiety was more strongly associated with increased risk of migraine than depression. Lack of ability to properly control worry and relaxation is the most distinct problem in psychiatric comorbidity, and physical symptoms in depression are more linked to migraine than emotional symptoms [20].

Of the emotional tensions presented in different organs of the body, studies report that one of the causes that makes these factors high is the high degree of excitability caused by emotional tensions caused by the various tasks performed by the students. A survey conducted with 464 students from the Medical Sciences College of Santa Casa of São Paulo of the courses of Medicine, Nursing and Speech Therapy, noted that, as well as in the general population, gastroesophageal reflux disease (GERD) is a common condition in the population of young university adults and contributes to impairing the quality of life of students [21]. Another study conducted by the American Gastroenterology Association with 225 participants studied observed that 147 had gastrointestinal problems, 78 had functional heartburn and 36, hypersensitive gastroesophageal reflux. Of those diagnosed with gastroesophageal reflux disease (GERD), an increase in anxiety and depression levels was found when compared to those who had lower scores for gastroesophageal reflux disease (GERD), contributing to a decrease in quality of life in general [22].

Among the academic activities in group studies conducted with students from the nursing course during clinical practice class, it was evidenced that students adhere to classes with high expectations and relate well with their colleagues, which is a positive factor, considering that these future professionals will exercise, in their professional function, the management and leadership of multiprofessional teams, being relevant, in their training process, to acquire communication skills and interpersonal relationships [23].

Regarding not adapting to remote classes and feeling insecure with their learning, preferring face-to-face classes, research conducted in the years 2020 and 2021 reported that, after the beginning of quarantine, imposed as a sanitary measure to contain the advancement of COVID-19, several students around the world had to change their daily habits. Many of the collegiate, fundamental and higher courses were reprogrammed for online classes, as a health protection measure for the population, due to the need for social isolation. This change made these students completely change their way of studying because not only would the student have to learn to study online, but also know how to deal with other eventual problems, such as lack of internet, instability of connection, lack of electronic equipment compatible with online classes, such as laptops, tablets, mobile phones, and absence of appropriate place for online study. A survey conducted by the Volta Redonda University

Center (UNIFOA) in 2020 showed that student-professor interaction has decreased considerably, even with students who would have demonstrated positive points with online classes. As the nursing course is a 100% face-to-face course due to the need to develop practical skills required for training, the social distancing imposed by the pandemic and the reprogramming of classes for the online model provided students with a great feeling of insecurity, not only because they felt that their learning would be impaired, but also because of the low expectation, whereas practical classes are highly expected by students [24].

As for the fear of contracting COVID-19 or that of some family member, the current study showed that most feel that this feeling has left them more anxious, which has hindered their learning. Studies report that the human being can deal with crises in various ways, some with more resilience and understanding, while other people can deal emotionally impaired and with a great level of concern. With the beginning of the pandemic that spread suddenly around the world, the population awakened feelings of fear, future uncertainties, helplessness, some of the many emotions felt during this period. Research published since the beginning of the quarantine caused by the pandemic shows that fear of the virus is the daily concern in the lives of the population. A study produced by the Front Psychiatry in April 2021 relates fear of death to anxiety during the pandemic. The result also reflected equally the fear related, often, to the loss of family members or close people [25].

The present study evaluated the association between the STAI and BECK scores, demonstrating that approximately 15% to 25% of students face some kind of psychiatric disorder in their academic training process. Among the existing disorders, anxiety and depression are the most present. A study in Dubai showed that 28.6% of medical students had depression, and 28.7% had anxiety. An observational study with a cross-sectional design conducted with students from the medical course of the Health College of Pernambuco (FPS) from the first to sixth year in the first half of 2012 observed that anxiety prevailed in 63 (26.9%) students, who had already undergone psychological treatment, and 60 (25.6%) would have already used some type of medication as treatment for anxiety. This study also observed that 45 (19.3%) graduate students presented false-positive symptoms for depression, and that 5.6% of these showed symptoms suggestive of depression [26].

The current study presented the distribution of Stai and Beck scores in each category of economic and demographic variables. In 2017, the WHO conducted studies that contributed to estimate that there were significant increases in cases of anxiety disorder in Brazil, compromising approximately 9.3% of the total population, which is estimated at 18,657,943 people. This importance occurred in the cultural, economic and technological fields, characterizing young people in late adolescence, a period characterized by important behavioral and emotional changes. The academic life of students since their admission university requires skills to transpose the processes and requirements

assigned during the entire period of their training, in addition to needing to be emotionally prepared to deal with academic adversities and move forward with their goals for their training. Students, specifically those in the health sciences, in periods when they are exercising their practical knowledge in internships, hospital, outpatient, laboratory fields, end up taking responsibility for caring for them. The requirements attributed to students in the health area direct them to fulfill complex objectives, related to the responsibility of taking care of someone's life, being these not accustomed to the responsibility of taking care of another, developing high expectations of their performance in the practical fields, leading them to present anxiety disorders [27]. Stressful academic practices can contribute to the manifestation of anxiety and depressive disorders, weakening the good performance of students, as well as interpersonal relationships. The manifestation of autonomous symptoms such as tachycardia, tremors, sweating, behavioral (avoidance, freezing and escape), cognitive (negative evaluation and humiliation) during academic activities that require presentations can relate to the practical action, which requires the student a communicative posture to be able to work as a team and guide patients and families, which often occurs and is alarming. Effectively, anxiety is a natural response that stimulates the human being to go in search of their goals. Nevertheless, when this response is very strong, it can become dysfunctional and limiting, impairing the ability to adapt and cope with usual situations [28].

A survey of psychology students from a private university in the interior of Ceará in 2019 used the same instrument as the current study, the Beck Depression Inventory. A total of 176 students participated in this study, the majority being 77.3% (n=136) female, and 27.3% (n=48) worked. The analysis of information through the Beck Depression Inventory showed that, of the total students surveyed, 39.77% had minimal symptoms of depression, 28.97% mild symptoms, 22.72% moderate symptoms and 8.52% severe symptoms. Regarding anxiety, measured by the Beck Anxiety Inventory, the highest frequencies were for severe symptoms 34.28%. When comparing the symptoms of anxiety and depression of the analysis of the results of anxiety classified as minimal, mild, moderate and severe symptoms, (n=53), 88.3% were female and (n=42) 70% performed some paid work, which corroborates the finding of this study [29].

The limitations of this research refer to the type of cross-sectional study, through which only associations are possible, not establishment of causality; to the sample number collected, which, by the proposed associations, could have been higher; distribution of the participants, which was not homogeneous in relation to the semesters of the course.

However, the present study provides strategic elements to provide institutional changes to teaching strategies employed by teachers to minimize the difficulties of students, while performing academic activities related to online classes, practices in the university environment and, therefore, contribute to the training of nurses.

## 6. Conclusion

Significant associations were observed between factors such as age, online learning, impact of the COVID-19 pandemic and current work, for the Stai score. It was noted that the higher the level of anxiety, the greater the difficulty in the online learning process. In addition, graduates had greater difficulty in dealing with the effects of the COVID-19 pandemic, including fear of death, fear of acquiring the disease, apprehension for the possibility of losing loved ones, and concern for economic uncertainties, such as job insecurity. At the same time, a significant association was observed in the Beck score in relation to the female gender, increasing the risk of developing depression in this group.

There was a significant association between the Stai and Beck scores; as the Stai score increases, the Beck score also increases. Showing that the higher the anxiety trait of the grading the greater the risk of developing depression. A positive and strong correlation between the Stai and Beck scores was identified, indicating that the greater the anxiety trait, the greater the risk of depression.

In summary, the current study reveals relevant results about anxiety traits and psychosomatic profile among nursing students, which are associated with the risk of depression. This suggests that although anxiety is a natural emotional response with physical and psychological components inherent in typical human experiences, when experienced in an uncontrolled manner, it can considerably impact the mental health of undergraduates. This impact translates into a reduction in performance in the teaching/ learning process, consequently hindering academic training.

The study additionally revealed that due to the demands inherent to the preparation of the Nurse, linked to academic activities that include hours of study, simulations in practical classes, supervised internships and nursing students tend to experience feelings such as uncertainty, fear, frustration, anxiety, anger, sadness and anguish. In addition, the COVID-19 pandemic further accentuated these emotions.

It is important to identify, throughout the formation process, the groups that have a greater potential for the emergence of significant symptoms of anxiety and offer early interventions in order to reduce the risk of developing depression. It is essential to increase the awareness of educational institutions about the relevance of monitoring more meticulously the performance of undergraduates, offering support and evaluation of mental health throughout this training process. This could be accomplished through the establishment of a support nucleus, created in partnership with other health courses, such as Medicine and Psychology.

These measures become relevant in order to allow graduates to acquire skills to face the various situations present in life and in the university scenario. This will contribute effectively to improving their academic performance and to becoming competent, confident and adequately prepared nurses to meet the demands of the professional career.

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