








Anxiety among undergraduate Nursing students with mandatory curricular internship during the COVID-19 pandemic

Ansiedade entre acadêmicos de Enfermagem de estágio curricular obrigatório na pandemia da COVID-19

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ABSTRACT

Objective: to compare the average anxiety among undergraduate Nursing students during the COVID-19 pandemic. **Methods:** it was a cross-sectional study conducted with 101 undergraduate Nursing students. Data collection took place through WhatsApp®, by sending a link containing a consent form, a Google Forms® instrument and State-Trait Anxiety Inventory. The analysis was carried out through central tendency, absolute and relative frequency, and analytical tests. **Results:** trait anxiety and state anxiety presented medium (52.5%) and high (67.3%) levels, respectively, with mean state anxiety (48.1) higher than the mean trait anxiety (42.3) and positive correlation ($r=0.479$) between the two scales ($p<0.000$). They were high among students who lived with family members with risk factors for COVID-19 aggravation, underwent social isolation, without confirmatory tests for the disease, and performed an internship in internal medicine. **Conclusion:** significant percentages of anxiety levels were identified among undergraduate Nursing students in mandatory internship during the COVID-19 pandemic, thus revealing the need for preventive actions for this public. **Contributions to practice:** based on these findings, proposals to prevent mental health problems in this public can be developed seeking to change the current mental health scenario.

Descriptors: Anxiety; Students; Nursing; Pandemics; COVID-19.

RESUMO

Objetivo: comparar a média de ansiedade em estudantes de graduação em Enfermagem na pandemia da COVID-19. **Métodos:** estudo transversal coletado com 101 acadêmicos de Enfermagem. A coleta ocorreu por meio do WhatsApp®, sendo enviado um *link* contendo termo de consentimento, instrumento do Google Forms® e Inventário de Ansiedade Traço-Estado. A análise deu-se por meio da tendência central, frequências absolutas e percentuais e testes analíticos. **Resultados:** o nível de ansiedade-traço e ansiedade-estado, respectivamente, apresentaram níveis médio (52,5%) e alto (67,3%) com média de ansiedade-estado (48,1) maior que a média de ansiedade-traço (42,3) e correlação positiva ($r = 0,479$) entre as duas escalas ($p<0,000$). Mostraram-se elevados nos discentes que conviviam com familiares com condições de risco para agravamento da COVID-19, mantiveram isolamento social, não realizaram teste confirmatório da doença e realizaram estágio na clínica médica. **Conclusão:** identificaram-se percentuais significantes de níveis de ansiedade entre os acadêmicos de Enfermagem em estágio obrigatório durante a pandemia de COVID-19, elucidando a necessidade de ações de prevenção para esse público. **Contribuições para a prática:** ressalta-se que, com base nesses achados, propostas de prevenção aos agravos à saúde mental desse público poderão ser elaboradas visando à mudança do cenário atual da saúde mental.

Descritores: Ansiedade; Estudantes de Enfermagem; Pandemias; COVID-19.

Introduction

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) was discovered in late 2019 in the city of Wuhan, China. In Brazil, data from the Ministry of Health confirmed more than 30 million cases and more than 683 thousand deaths across the country, of which more than 1.3 million cases and 27,561 deaths were certified by August 2022 by the state of Ceará government⁽¹⁾.

Coronavirus pandemic has crossed physical borders, causing not only economic and social impacts, but also psychological ones, with drastic repercussions on mental health, both individual and collective – it is estimated that the number of people psychologically affected is higher than the number infected individuals⁽²⁻³⁾.

It is noteworthy that the stress related to the effects of quarantine has been a factor of psychological illness on a larger scale for health professionals⁽⁴⁻⁵⁾, who experience important emotional changes in their daily lives usually associated with the exacerbated work environment in times of epidemics and pandemics⁽⁶⁾.

Psychic illness of health professionals during the COVID-19 pandemic was presented in an integrative review that identified the presence of moderate to severe stress in 59% of professionals, depression in 12.7% to 50.4%, and anxiety in 20.1% to 44.6%; in which anguish, fear and impaired sleep were “common” in the population studied⁽⁷⁾.

Considering the extent of this problem in trained professionals, we should think of those who are still in the training process, concluding their final practical activities as a mandatory requirement for graduation, and have already experienced with professionals, in the internship scenarios, the difficulties imposed by the COVID-19 pandemic.

Some students suffered the adversities imposed by the pandemic resulting from the lack of or precarious condition of the infrastructure required for online classes such as: adaptation to activities,

internet connection issues, family members needing attention, and cognitive singularities of each student, in addition to absence/insufficiency of personal protective equipment in the fields of practice⁽⁸⁻⁹⁾.

Mandatory internship is an important milestone in the training of these future professionals. Research carried out during the pandemic to verify the effects on their mental health detected the presence mostly of symptoms such as impotence, anguish, fear of losing family members, friends or acquaintances, as well as irritability and sadness (89.9%). Symptoms of stress and anxiety related to social changes experienced during the pandemic were also identified⁽¹⁰⁻¹¹⁾.

Emphasizing the context of frontline nursing care, this category became vulnerable to changes in psychological functioning, a fact that was extended to students in the area. An integrative review carried out in 2020 analyzed how undergraduate Nursing students were impacted on their mental health in the pandemic context: 12 international studies indicated the emergence or worsening of mental disorders in Nursing students, with prevalence of symptoms such as stress, anxiety, fear, and depression⁽¹²⁾.

In this context, given the need for studies with Brazilian academics and considering the prominent role of nursing at this moment, the present study aimed to compare the average anxiety among undergraduate Nursing students during the COVID-19 pandemic.

Methods

This is a cross-sectional study conducted with students from public and private universities located in Fortaleza, state of Ceará, Brazil, between August and December 2020.

The study consisted of a convenience sample of 101 undergraduate Nursing students from the state of Ceará, over 18 years old and who were in a mandatory curricular internship (attending the discipline of Internship or Supervised Internship). This amount referred to the number of survey respondents between

August and December 2020, after wide dissemination on social networks and sending e-mails to undergraduate Nursing courses. The sample size calculation was not statistically estimated as it was not possible to obtain the number of students enrolled in the Supervised Internship or Internship in Ceará; and given that the collection was carried out through social networks it would be impossible for all students to participate in the study.

Initially, students from the last semesters of the university where the researchers work as professors were invited; then, the snowball strategy was used, asking the participants to indicate others. Students who had access to a smartphone and/or a computer with internet connection were included, while students who were repeating the Internship/Supervised Internship discipline and those who did not fulfill the final mandatory stages for graduation were excluded.

The form was distributed to students from public or private universities who were attending the mandatory internship (Internship or Supervised). They were contacted through individual and private messages on WhatsApp® and Instagram®. Furthermore, these respondents were asked to forward the form to other students who met the inclusion criteria.

An online questionnaire was designed in Google Forms®, grouped into four stages with closed-ended questions: Stage 1 – Socioeconomic, demographic, and university profile of undergraduate Nursing students in Supervised Curricular Internship or Internship; Stage 2 – Knowledge and prevalence of COVID-19 in undergraduates and their family members and/or acquaintances; Stage 3 – How the undergraduates feel in their lives; and Stage 4 – Acting as an academic in the face of the COVID-19 pandemic. It is worth highlighting that, to measure anxiety levels, the State-Trait Anxiety Inventory (STAI) was applied, inserted in Stage 3. The instrument was tested with five students, and since it did not demonstrate the need for adjustment, their results were included in the final sample.

STAI was developed⁽¹³⁾, translated and adapted for Brazil⁽¹⁴⁾, with questions that demand answers ac-

ording to the individual's self-perception regarding anxiety as a state (STAI-S) and another that deals with anxiety as a trait (STAI-T). State anxiety is related to the provisional reaction directly linked to a situation at a certain point in life (in this study, anxiety during the pandemic period); whereas trait anxiety is linked to a stable aspect associated with the individuals' self-perception of their anxiety throughout life⁽¹⁵⁾.

It is a Likert-type self-report instrument composed of two scales: one assessing state anxiety, and the other assessing trait anxiety, both with 20 items. Each scale has a score ranging from 20 to 80, with the following cut-off points: 20-40, low level of anxiety; 40-60, medium level of anxiety; above 61, high level of anxiety. Several countries used the scale and demonstrated satisfactory validity and reliability in psychiatric and non-psychiatric populations: Greece, France, Malaysia, United States, Portugal, Lebanon, Caribbean, among others⁽¹⁶⁾.

Levels of trait anxiety and state anxiety constituted the dependent variables. The triggering guidelines were: "For questions related to trait anxiety, mark the answers that best represent your anxiety condition throughout your life"; "Indicate the answers that most represent your reality regarding the last four weeks during the COVID-19 pandemic." These answers would enable the comparison between the average anxiety levels that students self-reported during their lifetime and the average during the pandemic. Results of medium and high levels of anxiety were aggregated in order to assess whether there was an increase in the most severe stages of state anxiety (pandemic period) relative to trait anxiety (prior anxiety profile).

The independent variables were: gender, age, race, marital status, family income, city where they live, who they live with, number of people they live with, study institution, if they live with relatives from a risk group, if they underwent social isolation, if they were tested for COVID-19, what was the test result, where they did their internship, and if they had contact with COVID-19 patients during the internship.

Data were tabulated in a Microsoft Excel® spreadsheet. Qualitative variables were described by absolute and relative frequencies; and quantitative variables, by means and standard-deviation according to the verification of adherence to the Kolmogorov-Smirnov distribution, nevertheless, the Central Limit Theorem was considered. Means were compared using Student's t-tests, considering a 5% significance level.

The project was submitted to the Research Ethics Committee and approved under the Certificate of Ethical Appreciation Presentation No. 35898920.8.0000.5054, opinion No. 4,277,440/2020, and it was conducted in accordance with the required ethical standards.

Results

Of the 101 students who participated in the study, 88 (87.1%) were female, 49 (48.5%) declared themselves as brown, and 33 (32.7%) as white. They had a mean age of 25 ± 5 years, 76 (75.2%) lived in the capital city, 76 (75.2%) had no partner, 55 (54.5%) lived with parents and siblings, 67 (66.3%) lived with someone in the risk group for COVID-19, with an average coexistence of 3.5 ± 1.4 person. Among the respondents, 63 (62.4%) were not working at that time, and 55 (54.5%) had a family income of two to three minimum wages.

Among the participants, 89 (88.1%) studied in the city of Fortaleza, and 51 (50.5%) studied at a public university. Regarding the internship/supervised internship during the pandemic, 97 (96%) reported that it affected their academic life in some way, 75 (74.3%) did not feel like resuming academic activities, 95 (94.1%) were in social isolation before returning to practice fields, and 77 (76.2%) reported having performed care practices for the infected.

As for the clinical status, 41 (40.6%) had some testing for COVID-19, while 20 (19.8%) were not tested but presented some clinical symptoms. The tests performed on 41 participants were: serology (Eli-sa, immunofluorescence and chemiluminescence),

3 (7.75%); swabs, 11 (27.5%); and rapid tests, 27 (67.5%).

Of the 61 (60.4%) participants who had some symptom, there was a prevalence of headache in 45 (73.7%), fatigue in 42 (68.9%), fever in 34 (59%), runny nose in 35 (57.4%), cough in 34 (55.7%), loss of smell in 32 (52.4%), diarrhea in 28 (45.9%), loss of taste in 28 (45.9%), dyspnea in 25 (41.0%), and nausea in 19 (31.1%).

Regarding the level of trait anxiety and state anxiety, 53 (52.5%) and 69 (67.3%) students presented medium and high levels, respectively. The mean state anxiety (48.1 ± 11.9) was higher than the mean trait anxiety (42.3 ± 9.5) ($p < 0.000$).

Table 1 presents the comparison between the means obtained in the two scales according to the sociodemographic variables. Only the students living with one or two people did not show differences between the means of trait anxiety and state anxiety.

Table 1 – Comparison of means of trait anxiety and state anxiety according to sociodemographic variables (n=101). Fortaleza, CE, Brazil, 2020

Variables	Trait anxiety		State anxiety		p [†]
	Mean	SD*	Mean	SD	
Gender					
Female	42.30	10.0	48.14	12.21	<0.000
Male	41.76	5.1	48.23	10.52	0.028
Age (years)					
21-22	48.51	8.7	53.31	11.73	0.009
23-24	40.13	8.2	48.25	12.04	0.001
25-49	39.27	9.1	43.89	10.59	0.015
Race					
Brown	41.43	8.2	47.41	9.60	<0.000
White	42.24	10.0	47.41	9.60	0.024
Black	41.20	7.0	49.93	15.45	0.018
Family income (minimum wage)					
Up to 1	44.05	6.00	48.65	10.12	0.041
2-3	41.16	9.37	46.62	11.68	0.002
>4	43.11	11.85	51.00	13.63	0.000
Who they live with					
Parents/siblings	41.56	8.98	49.40	11.61	0.000
Companion	43.15	11.96	46.19	13.46	0.128
Other	42.90	7.60	47.25	10.96	0.021

*SD: Standard deviation; [†]Paired Student's t-test

Table 2 shows the comparison of the means between the two anxiety scores regarding behavioral and academic variables in the face of the disease. There are significant differences in anxiety levels in people who live or not with relatives with risk factors for COVID-19 aggravation, among those in isolation, among others, revealing statistical significance in all the variables studied.

Table 2 – Comparison of means of trait anxiety and state anxiety according to behavioral and academic variables in the face of COVID-19. Fortaleza, CE, Brazil, 2020

Variables	Trait anxiety		State anxiety		p [†]
	Mean	SD*	Mean	SD	
Living with relatives in risk groups					
Yes	40.98	8.4	47.70	11.16	0.000
No	44.07	10.8	48.80	13.15	0.006
Underwent social isolation					
Yes	42.36	9.6	48.81	11.9	0.000
No	40.16	8.2	37.67	4.0	0.415
Was tested for COVID-19					
No. I manifested classic symptoms but was not tested	42.45	8.7	42.85	10.5	0.892
No. I did not manifest classic symptoms	40.40	9.2	47.23	10.3	0.000
Yes	43.92	10.0	51.63	13.1	0.000
Test result					
Positive	45.00	11.7	50.00	13.6	0.021
Negative	42.68	7.8	53.53	12.6	0.000
Place of internship					
Primary Care	41.03	7.8	45.96	12.14	0.005
Emergency Care Unit	43.30	9.1	46.00	10.68	0.590
Delivery/postpartum room	42.93	9.9	50.13	11.8	0.048
Intensive Care Unit	39.62	7.2	45.38	10.3	0.041
Internal medicine	41.96	12.6	50.26	13.3	0.000
Surgical clinic	46.00	14.0	50.35	13.0	0.119
Mental health hospital	43.87	8.0	45.00	11.6	0.844
Resuscitation room	44.13	10.4	50.53	10.6	0.110

*SD: Standard deviation; [†]Paired Student's t-test

Discussion

The predominance of females in nursing courses is a historical and common fact⁽¹⁷⁻²⁰⁾. Some authors emphasize that the female prevalence may be due to culture factors, in which women are responsible for

care in various civilizations, a fact that has been perpetuated over the years⁽²⁰⁾. The average age for courses in the health area is 22.3 (± 4.6) years, being higher for the Nursing course, 21-30 (62%), thus corroborating the average of 25 years found in the literature⁽²¹⁻²²⁾.

It is noteworthy that the impact of this study was to detect that, in almost all variables evaluated, there was statistical significance when cross-referencing the data comparing trait anxiety and state anxiety, indicating that the anxiety level of the evaluated Nursing students may have increased during the pandemic period.

International researches also presented results confirming that anxiety, depression and stress were more frequent among college students in the pandemic period compared to normal periods⁽²³⁻²⁵⁾.

Females presented high levels of anxiety, indicating that women may show greater emotional changes, which is consistent with research on the same issue that identified a prevalence of women with anxiety, depression and stress⁽²³⁾. Although studies indicate this prevalence, they do not explain why it occurs among women, which can raise several reflections on the possible role of females in society, their multiple functions and the impacts suffered by them during the context of isolation and illness caused by the pandemic, in addition to the biological constituents such as hormonal load.

As for age, it is known that younger students are more resilient and have greater adaptive capacity, nonetheless students over 22 years old show lower levels of anxiety and no differences in relation to race, as shown in the studied sample⁽²⁶⁾. The heterogeneity of Brazil in terms of race must be considered, especially in the North and Northeast regions, which raises a reflection on different results of anxiety levels between races, regardless of the location of the study.

Students' concern with the health of relatives is a factor related to the anxiety levels of college students, in line with the statistically significant difference between trait anxiety and state anxiety of students who live with their parents⁽²⁷⁾. Income between two

and three minimum wages and the largest number of people living in the same house were also significant data, which does not corroborate other findings that do not identify that the economic condition directly reflects on the anxiety of health workers⁽²⁸⁾.

In the behavioral context, it can be verified that anxiety was at medium/high levels in students who lived with relatives with risk factors for COVID-19 aggravation, who underwent social isolation, and who were or not tested for COVID-19. It is valid to emphasize the existence of impacts on mental health as a result of this pandemic in the routines of undergraduates and nursing professionals. They are at the mercy of exhausting physical and mental situations, due to fear of contamination, fear of at-risk family members getting sick; they are afraid of not having enough information to educate the population; suffer from loneliness caused by social isolation; they present depressed mood and anxiety symptoms, as well as neurovegetative symptoms such as tachycardia, insomnia, racing thoughts, panic attacks, and irregular breathing⁽²⁹⁾.

A large part of the population, 75.2% of respondents, reported fear of transmitting the disease to their families; this fear generates anxiety, identified in the present study and enhanced by the fact that many of these family members are from risk groups⁽³⁰⁾.

Additionally, there is also the media influence on anxious behavior, especially in those who have been in social isolation. The excess of information on confinement measures, monitoring of the situation at a global level and the increase in positive cases of COVID-19 possibly influenced the levels of anxiety, depression and stress among college students, even with the information that this would not be a higher risk group in terms of lethality⁽²⁵⁾.

Failure to perform the test was a key intervening factor identified for the increased level of anxiety, which validates the hypothesis that testing for COVID-19 in symptomatic patients reduces the prevalence of signs and symptoms of stress, anxiety and

depression, thus being a protective factor⁽³⁰⁾. The lack of knowledge about the serological status of these students, as well as the general population, was due to the large-scale unavailability of supplies to perform the test. This indicated to the public sector that investments in diagnostic supplies provide indirect protection against other illnesses (in this case, a psychological disorder), thus causing positive impacts on the population that go beyond the illness caused by the virus.

The academic context was also evaluated in relation to the place of the internship, focusing on the performance in the internal medicine service. The teaching-learning process with the suspension of internships in internal medicine, pediatrics, and public health was affected, generating insecurity, concern and stress in students.

Considering internal medicine as an important space for academic experience, even though, the suspension of internships in these sectors may have been a protective action for students, it may have awakened the feeling of commitment in their professional career.

Therefore, given the importance of undergraduate Nursing students as professionals in training process, it is urgent to recognize that the implications of the pandemic in their lives can produce anxiogenic behaviors in the long term, revealing the need for quick responses from the academy to reduce levels of anxiety. In this context, it is essential that all academics and professionals who make up the hospital universe can develop strategies to intervene and transform the triggering factors of anxiety, aiming at resilience.

Study limitations

The study design constituted a limitation, which only demonstrates the impacts on this population in a given period, not being able to present causal relationships; thus, such impacts must be monitored in the long term. Moreover, there is the convenience sampling and the impossibility of sample calculation.

Contributions to practice

It is noteworthy that, based on these findings, better proposals for preventing mental health problems in this public can be developed, contributing to the formation of healthy habits seeking to change the current scenario of mental health.

Conclusion

This study was able to contribute to identify significant percentages of trait anxiety and state anxiety levels among nursing students in mandatory internship during the COVID-19 pandemic. It was evident that the means of these outcomes were different in almost all sociodemographic, behavioral, and academic variables. Furthermore, it is suggested that similar research be carried out evaluating the new levels of trait anxiety and state anxiety during the non-pandemic period to compare the findings.

Authors' contribution

Conception and design, writing of the article and relevant critical review of the intellectual content: Coelho MMF.

Data analysis and interpretation: Almeida PC.

Writing of the article and relevant critical review of the intellectual content: Martins MC, Oliveira DT, Cavalcante VMV, Lima LRF.

Final approval of the version to be published: Martins MC, Coelho MMF, Gubert FA.

Agreement to be responsible for all aspects of the manuscript related to the accuracy or completeness of any part of the work to be investigated and resolved properly: Martins MC.

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