

Mental health of nursing professors and graduate students in the context of the coronavirus disease pandemic

Saúde mental de docentes e pós-graduandos em enfermagem no contexto da pandemia do coronavirus disease

Salud mental de docentes y estudiantes de posgrado en enfermería en el contexto de la pandemia de la enfermedad del coronavirus

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ABSTRACT

Objective: to analyze the mental health condition of nursing professors and graduate students in the context of the Coronavirus Disease pandemic. **Method:** the study was conducted with 32 Nursing professors and 52 graduate students from UFPE, Recife campus, through four questionnaires (sociodemographic, DASS-21, EMC-19, and an instrument on academic life in graduate studies), remotely administered via Google Forms®. **Results:** among the professors, 81.3% were female, 96.9% had internet access at home, with 75% having good quality access, and 87.1% adapted well to the remote format. About 34% of professors experienced stress, 18.7% anxiety, and 9.4% depression, ranging from mild to extremely severe. Most graduate students were women, married, or living with a partner. A high percentage of stress (48.1%), anxiety (42.3%), and depression (48.1%) was observed, with degrees ranging from mild to extremely severe. **Conclusion:** the context of the COVID-19 pandemic and the changes in the teaching-learning format had varied impacts on the mental health of the study population, leading to depressive, anxious, and predominantly stressful symptoms.

Descriptors: Mental Health; Nursing Faculty; Graduate Nursing Education; COVID-19; Nurses.

RESUMO

Objetivo: analisar a condição de saúde mental de docentes e pós-graduandos em enfermagem no contexto da pandemia do *Coronavirus Disease*. **Método:** a pesquisa foi conduzida com 32 docentes e 52 pós-graduandos em Enfermagem da UFPE, campus Recife, através de quatro questionários (sociodemográfico, DASS-21, EMC-19 e instrumento sobre a vida acadêmica na pós-graduação), aplicados remotamente pelo Google Forms®. **Resultados:** entre os docentes, 81,3% eram do sexo feminino, 96,9% tinham acesso à internet em casa, sendo que 75% tinham acesso de boa qualidade, e 87,1% se adaptaram bem ao formato remoto. Cerca de 34% dos docentes apresentaram algum grau de estresse, 18,7% apresentaram algum grau de ansiedade e 9,4% apresentaram algum grau de depressão, variando de leve a extremamente severo. A maioria dos pós-graduandos eram mulheres, casadas ou vivendo com um companheiro. Foi observado um alto percentual de estresse (48,1%), ansiedade (42,3%) e depressão (48,1%), com grau variando de leve a extremamente severo. **Conclusão:** o contexto da pandemia da COVID-19 e as mudanças na forma de ensino-aprendizagem tiveram impactos variados na saúde mental do público estudado, resultando em sintomas depressivos, ansiosos e, principalmente, estressores.

Descritores: Saúde mental; Docentes de Enfermagem; Educação de Pós-Graduação em Enfermagem; COVID-19; Enfermeiros.

RESUMEN

Objetivo: analizar la condición de salud mental de docentes de enfermería y estudiantes de posgrado en el contexto de la pandemia de la enfermedad del coronavirus. **Método:** el estudio se llevó a cabo con 32 docentes de enfermería y 52 estudiantes de posgrado de la UFPE, campus de Recife, a través de cuatro cuestionarios (sociodemográfico, DASS-21, EMC-19 y un instrumento sobre la vida académica en posgrado), administrados de forma remota mediante Google Forms®. **Resultados:** entre los docentes, el 81.3% eran mujeres, el 96.9% tenía acceso a Internet en casa, siendo que el 75% tenía acceso de buena calidad, y el 87.1% se adaptó bien al formato remoto. Alrededor del 34% de los docentes experimentó estrés, el 18.7% ansiedad y el 9.4% depresión de leve a extremadamente grave. La mayoría de los estudiantes de posgrado eran mujeres, casadas o convivientes. Se observó un alto porcentaje de estrés (48.1%), ansiedad (42.3%) y depresión (48.1%), con grados variando entre leve y extremadamente grave. **Conclusión:** el contexto de la pandemia de COVID-19 y los cambios en el formato de enseñanza-aprendizaje tuvieron impactos variados en la salud mental de la población estudiada, resultando en síntomas depresivos, ansiosos y predominantemente estresantes.

Descriptor: Salud Mental; Docentes de Enfermería; Educación de Postgrado en Enfermería; Enfermeros.

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INTRODUCTION

In recent years, the entire world has faced a pandemic characterized by a highly transmissible and morbid disease: Coronavirus Disease, also known as COVID-19.¹ Infection control measures were therefore implemented in this scenario, among which social isolation deserves attention. Due to the rapid spread of the virus, the closure of educational institutions was one of the most widely used measures globally to encourage and comply with this norm, consequently reducing the number of cases. As a result, all educational activities from early childhood to university level could not be offered in-person. This fact required a rapid adaptation to remote teaching methodologies, which may have caused emotional and physical disorders within the academic community,^{2,3} such as stress, fear, and anxious and depressive symptoms, which can lead to absenteeism and decreased productivity.⁴

Fear is an adaptive response of the body to a life-threatening situation and is triggered when the individual perceives a risk, such as contracting COVID-19. This feeling can be healthy when it leads to caution, and in a time as sensitive as the current pandemic, it can encourage

personal and collective responsibility to comply with restrictive measures to control the transmission of the virus. This attitude would not be so evident if fear were insufficient or absent.^{5,6} On the other hand, if fear becomes unbridled, it can provoke or exacerbate anxiety, which in turn can become pathological.⁶

Anxiety, which has the highest percentage of cases in Brazil compared to other countries,⁷ is also an adaptive system in the face of danger and is triggered to ensure the individual's survival. In this sense, the body manifests itself through different emotional, physiological, cognitive, and neurological sensations.⁸ However, when these manifestations negatively affect the individual's daily activities, anxiety can become pathological.⁹

Another emotional disorder that affects the population is depression, which is one of the causes of greater social disability in the world, impairing a person's performance and increasing the risk of suicide.¹⁰ According to the World Health Organization,⁷ depression has been increasing in the world population since 2005, and the trend is that its percentage will continue to increase. In Brazil, this reality is even more worrying, as it is the third country with the highest percentage of people affected by the disease (5.8%), after Estonia, the United States and Australia, which all have the same percentage (5.9%), and Ukraine (6.3%), which is considered the most depressed country in the world. Depression has high rates of recurrence and chronicity, manifesting itself in prolonged depressive episodes and causing psychological, social, and occupational harm.¹¹

Similar to depression, stress is a physiological response that occurs when the body is faced with a situation that carries a significant emotional burden, whether it stems from the workplace or personal life. As a result of this reaction, individuals may experience fatigue, both physically and mentally, fluctuations in body weight, feelings of discouragement and apathy, heightened anxiety, sleep disturbances, and a decline in overall quality of life, ultimately interfering with their daily functioning.¹² Among various social groups, professors and graduate students are particularly susceptible to high levels of stress due to the demanding nature of their work,¹³ which can adversely affect their performance and quality of life.¹⁰

During the COVID-19 pandemic, professors and graduate students faced an extremely demanding burden, both emotionally and professionally.⁴ This is attributed to the fact that, in addition to dealing with the negative emotional impacts caused by the pandemic, they had to transition from in-person teaching to remote teaching, working from their own homes. This sudden and unforeseen change resulted in the academic community having to cope with a lack

of adequate technological equipment and insufficient technological skills, while balancing teaching responsibilities with household tasks, facing distractions at home, and even having to invest in higher-quality internet plans.¹⁴

Furthermore, a portion of professors and graduate students also work as healthcare professionals. During the pandemic, this had significant impacts on their mental health, particularly for nurses. They had to contend with the anguish of potentially infecting their own families, face overwhelming workloads in overcrowded hospitals, and cope with increased study and work demands, leading to psychological distress, demotivation, and a negative impact on the balance between personal and professional/academic life.¹⁵

Moreover, the accumulation of roles and the pressure for high performance often result in physical and emotional overload. The inability to cope with the high demand of responsibilities can contribute to the emergence of stress factors.¹⁶ The challenges in adapting to academic, personal, relational, and institutional demands have led to the deterioration of the health of professors and graduate students, creating an environment conducive to the development of stress, fear, and symptoms of anxiety and depression.⁴

Despite the stressful events caused by COVID-19 among nurses, there is a paucity of studies in the literature addressing the mental health of professors and graduate students in nursing during the pandemic. Furthermore, up to the present moment, no study has been conducted utilizing the questionnaires employed in this research. Therefore, this study holds great significance for the academic community.

OBJECTIVE

To analyze the mental health condition of nursing professors and graduate students in the context of the Coronavirus Disease pandemic.

METHOD

Research design

A descriptive study of exploratory nature was conducted, employing a quantitative approach and utilizing a census methodology. The goal is to collect sample data and translate it into numbers so that, through statistical analysis, these data can be generalized to the target population.¹⁷

Study location

Data were collected remotely using Google Forms® from February to July 2022, with the Nursing Department of the Federal University of Pernambuco (UFPE) as the academic location of reference.

Population and sample of participants

The study population consisted of professors (temporary and tenured) and graduate students (master's and doctoral) in nursing at UFPE. At the time of data collection, the department had a total of 58 professors, 13 substitutes, and 45 tenured. The Nursing Graduate Program at UFPE (PPGENF - UFPE) had 106 nursing students regularly enrolled. Since this was a census study, it was not necessary to calculate a sample, considering the total number of professors and graduate students who agreed to participate in the study. A total of 26 professors and 54 graduate students did not agree to participate in the study. Therefore, the sample consisted of 32 nursing professors and 52 nursing graduate students at UFPE, located on the Recife campus.

Inclusion and exclusion criteria

Professors of the Nursing Program at the UFPE - Recife campus, who did not have any type of relationship with the research students during the active period of data collection, were considered eligible to avoid any conflict of interest. Likewise, graduate students regularly enrolled in the Nursing Graduate Program at UFPE - Recife campus, who also had no relationship with the research students during the active period of data collection, were contacted. Individuals who filled out the forms incorrectly or answered more than once were excluded from the data analysis.

Recruitment of participants

The recruitment of professors was done through an active search, with remote contact via email, as some disciplines are still offered online due to the ongoing COVID-19 pandemic. Recruitment of graduate students was done through an active search, through remote contact via WhatsApp®, with the authorization of the program coordination and all volunteer students. To obtain this permission, graduate students were informed about the research through a WhatsApp® group that included all students in the program.

Participants, both professors and graduate students, received prior guidance about the study through social networks (email and WhatsApp®, respectively). These guidelines were sent individually to each teacher or student, emphasizing the anonymity of their identity and the confidentiality of the information collected. If they agreed to participate, they received a link to access the forms, and the researchers made themselves available to clarify any doubts that might arise during the completion of the questionnaires. If there was no response, the researchers sent the invitation again.

Data collection instruments

The data was collected through questionnaires containing closed-ended questions. The first questionnaire was a sociodemographic questionnaire aimed at identifying the participants' profile. This questionnaire included personal information such as age, gender, marital status, income, number of children, educational/work situation of the children, type of internet access, and internet quality. Additionally, it gathered academic/professional characteristics of the student/teacher, such as academic degree, paid employment, working hours, work arrangement (only for professors), conditions of using Information and Communication Technologies (ICTs) in the remote and home environment, whether the student is a scholarship recipient (only for graduate students), and preferred mode of teaching/learning. The following instruments were also administered: Fear of COVID-19 Scale (EMC-19 in Portuguese), Depression, Anxiety, and Stress Scale (DASS-21), and an instrument regarding academic life in graduate studies (only for students).

The Fear of COVID-19 Scale (FCV-19S or EMC-19 in Portuguese), adapted for the Brazilian context by Faro et al. (2022),¹⁸ is used to assess levels of fear related to COVID-19. The scale consists of seven questions that are answered using a Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The sum of the scores determines the total score, which ranges from 7 to 35. The interpretation of the results considers that higher scores indicate a greater presence of fear symptoms related to COVID-19. A score range of 7 to 19 indicates low fear, a range of 20 to 26 indicates moderate fear, and scores starting from 27 indicate high levels of fear.

The DASS-21 is a scale adapted to Portuguese¹⁹ that aims to assess levels of depression, anxiety and stress. The scale consists of 21 questions, where the answers are scored on a Likert scale ranging from 0 (not at all true) to 3 (very true or true most of the time).

To calculate the total score, each subscale (depression, anxiety, and stress) is multiplied by two.

The questionnaire on academic life, adapted from Costa and Nebel (2018),²⁰ aims to assess the student's relationship with the advisor and concerns about maintaining the academic scholarship (in the case of scholarship holders), producing articles, attending events, and meeting academic deadlines. The 10 questions addressed in this item were answered using a Likert-type scale with four options, ranging from "a lot of concern" to "no concern."

To the best of our knowledge, this study seems to be the first to be conducted with nursing professors and graduate students during the pandemic, using the DASS-21, EMC-19 and academic life questionnaires. Therefore, this study represents an important contribution to the academic community.

Procedures for data collection

Data were collected remotely through the free and digital use of Google Forms®. This approach was chosen to avoid direct contact with participants in order to minimize the risk of potential transmission of COVID-19.

After the invitation and instructions on how to correctly complete the instruments, individuals who did not return or expressed a desire not to participate were excluded from the sample. The first page of the form, created using Google Forms®, presented the informed consent form (ICF). Proceeding to the next step was only allowed if the participant checked the box indicating agreement with the terms of the ICF.

To prevent volunteers from answering the same questionnaire more than once, we asked for the last four phone numbers and the participant's year of birth and made the purpose of this information clear. Participants answered only those questions they felt were relevant. For required questions, we included a "prefer not to answer" option among the response choices. Volunteers were able to exit the survey at any time, and a link was provided on all pages of the form that allowed them to opt out of the survey and withdraw their consent. Requests to exit the survey or withdraw data from volunteers were received through the Google Forms® platform. The estimated time for data collection, including reading the consent form, was approximately 12 minutes.

Data collection period

The collection period was from February 17 to July 30, 2022.

Data analysis process

The collected data were automatically converted into an electronic spreadsheet using Microsoft Office Excel software via Google Forms®. Data analysis was performed using the Statistical Package for the Social Sciences version 21 (SPSS 21). Statistical analysis was performed using descriptive statistics with simple and absolute frequency distributions. The Chi-square test was used to analyze the association between qualitative categorical variables. In case of violation of the assumptions of the chi-square test, Fisher's exact test was used. All conclusions were considered at a 5% significance level ($p < 0.05$).

Ethical aspects

The research followed the guidelines of Resolution 466/12²¹ and was approved by the Research Ethics Committee of UFPE, with the ethical appraisal presentation certificates (CAAE) bearing numbers 54121821.2.0000.5208 and 54122021.9.0000.5208. Additionally, the research adhered to the guidelines outlined in Circular Letter No. 2/2021/CONEP/SECNS/MS²² and the Guidelines for Conducting Research and Activities of Research Ethics Committees (CEP) during the SARS-CoV-2 (COVID-19) pandemic, dated May 9, 2020.²³

RESULTS

Descriptive analysis

Table 1 shows the distribution of socio-demographic data and the professional/academic profile of the 32 professors and 52 graduate students who participated in the study. Most were female (81.3% and 88.5%, respectively) and married or living with a partner (64.5% and 67.3%, respectively). Age ranged from 27 to 70 years for professors and from 24 to 49 years for graduate students. Among professors with children (37.5%), most were in high school and/or elementary school (42.1% each). Among graduate students with children (32.7%), most were in kindergarten (daycare/preschool) and elementary school I and II (56.3% each). Most professors and graduate students had access to the Internet at home (96.9% and 98.1%, respectively) and with good quality (75.0% and 80.8%, respectively).

In terms of work characteristics, 56.3% of professors taught exclusively, and 43.7% had some type of paid activity in addition to teaching, with assistance being the most common

(57.1%). Most of the professors worked 40 hours per week with exclusive dedication (65.6%) under the legal regime (80.6%). Among graduate students, only 26.9% received an academic scholarship and 67.3% had some type of remunerated activity in addition to their graduate studies. Among working students, the majority worked in the care sector (48.1%) with a weekly workload of 40 to 45 hours (28.8%) and more than 45 hours (26.9%).

Most professors and graduate students reported that they knew how to use ICT (78.1% and 76.9%, respectively), did not share the electronic teaching tool with other people (81.3% and 73.1%, respectively), were able to balance home activities with work (71.9% and 59.6%, respectively), and were well adapted to the distance learning format (87.1% and 96.2%, respectively). Most professors (50.0%) preferred to teach in the face-to-face format, while graduate students preferred the hybrid format (50.0%). Active teaching methods were used most often by professors and students (65.6% and 90.4%, respectively).

Regarding the variables of the group of professors, such as "Elementary and higher education" (both with 42.1%), "Internet access" at the university (56.3%), "Higher academic degree" and "Paid activity performed", no significant differences were found in the response options ($p>0.05$). In the group of graduate students, no significant differences were observed for the variables "child and elementary education" (both with 56.3%) and "management" (25.0%). The other variables studied showed statistically significant differences, indicating a common profile for most of the professors and students participating in the study.

Table 1. Distribution of personal and occupational profile of nursing professors and graduate students at UFPE, Recife campus, 2022.

Evaluated factor	Professors			Graduate students		
	n	%	p-value ¹	n	%	p-value ¹
Sex						
Male	6	18.8	<0.001	6	11.5	<0.001
Female	26	81.3		46	88.5	
Marital status (n=31)						
Single	9	29.0	<0.001	23	44.2	0.001
Married	20	64.5		24	46.2	
Divorced	2	6.5		5	9.6	
Number of children						
None	12	37.5	0.041	35	67.3	<0.001
1 child	12	37.5		9	17.3	
2 children	5	15.6		7	13.5	
>or= 3 children	3	9.4		1	1.9	

Children's occupation*				(n=17)			
Preschool education	3	15.8	0.003	9	56.3	0.617	
Primary education	8	42.1	0.491	9	56.3	0.617	
Secondary education	1	5.3	<0.001	3	18.8	0.012	
Higher education	8	42.1	0.491	1	6.3	<0.001	
Engaged in work activities	4	21.1	0.012	0	0.0	-	
Internet access*							
Residence	31	96.9	<0.001	51	98.1	<0.001	
University	18	56.3	0.480	9	17.3	<0.001	
LAN house	2	6.3	<0.001	0	0.0	-	
Cell phone	25	78.1	<0.001	35	67.3	0.013	
Internet quality							
Bad	1	3.1		4	7.7		
Good	24	75.0	<0.001	42	80.8	<0.001	
Excellent	6	18.8		6	11.5		
Academic scholarship		NOT APPLICABLE					
Not awarded	38			73.1	0.001		
Granted	14			26.9			
Type of paid activity performed*							
Nursing assistance	8	57.1	0.593	25	48.1	0.039	
Research	6	42.9	0.593	4	7.7	<0.001	
Audit	0	0.0	-	1	1.9	<0.001	
Management	3	21.4	0.033	13	25.0	0.309	
Total workload				n % p-value			
20h/week	2	6.3	<0.001	=or<20h/week	4	7.7	0.013
40h/week	5	15.6		21-39h/week	7	13.5	
40h/week with ED	21	65.6		40-45h/week	15	28.8	
Other	4	12.5		> 45h/week	14	26.9	
Working regime (n=31)							
CLT employee	6	19.4	<0.001	NOT APPLICABLE			
Statutory	25	80.6					
Can use ICTs							
Yes	25	78.1	<0.001	40	76.9	<0.001	
Somewhat	7	21.9		12	23.1		
No	0	0.0		0	0.0		
Adaptation to the remote teaching format (n=31)							
Good	27	87.1	<0.001	50	96.2	<0.001	
Bad	4	12.9		2	3.8		
Electronic work device sharing							
Yes	6	18.8	<0.001	14	26.9	<0.001	

No	26	81.3		38	73.1	
Reconciliation between work and domestic activities				(n=51)		
Yes	23	71.9	<0.013	31	59.6	<0.001
No	9	28.1		20	38.5	
Preferred teaching methodology						
Traditional methodology	10	31.3	0.048	5	9.6	<0.001
Active methodologies	21	65.6		47	90.4	
Preferred teaching format/best way to learn						
Online	2	6.3	0.005	5	9.6	<0.001
In person	16	50.0		21	40.4	
Hybrid	14	43.8		26	50.0	

¹p-value of the chi-square test.

*Multiple choice questions.

Source: Research data, 2022.

Table 2 presents the responses of the students regarding the academic life in graduate studies in relation to the level of demand from the program or advisor. A reasonable level of expectation was observed, particularly regarding participation in program-related tasks/events, participation or presentation of work in events, and publication of articles in journals. The percentages described represent significant differences between the variables studied (p-value < 0.05).

Table 2. Description of the questionnaire on academic life in graduate studies according to the responses to the question "What is the level of demand from your advisor and/or the graduate program?" Recife, 2022.

Level of demand									
Aspect	High demand		Reasonable demand		Low demand		No demand		p-value ¹
	n	%	n	%	n	%	n	%	
Publishing articles in journals	8	15.4	31	59.6	11	21.2	2	3.8	<0.001
Participating in program-related tasks/events	6	11.5	39	75.0	6	11.5	1	1.9	
Participating or presenting papers at conferences/events	3	5.8	37	71.2	11	21.2	1	1.9	
Achieving high grades in courses	4	7.7	21	40.4	22	42.3	5	9.6	

¹p-value of the chi-square test for proportion comparison.

Source: Research data, 2022.

Table 3 presents the description of the questionnaire on academic life in graduate studies regarding the level of concern. It was observed that a significant portion of the students expressed high levels of apprehension, particularly concerning not being able to finish their thesis/dissertation, not being able to qualify/defend within the deadline, and not being approved in the qualification/defense. All evaluated factors were statistically significant, except for the fear of having to change the advisor, indicating that the described percentages truly correspond to the studied group. This highlights that the demands of graduate studies and the expected responsibilities and competencies generate distress and significant concern.

Table 3. Description of the questionnaire on graduate students' academic life according to the responses to the question "Currently, what is your level of concern regarding the following issues?" Recife, 2022.

Question	Level of concern										p-value ¹
	High		Reasonable		Low		No		Not applicable		
	n	%	n	%	n	%	n	%	n	%	
Fear of losing a job or scholarship	18	34.6	14	26.9	4	7.7	6	11.5	10	19.2	0.013
Fear of not being able to finish the thesis/dissertation	27	51.9	9	17.3	14	26.9	2	3.8	-	-	<0.001
Fear of not being able to qualify/defend within the deadline	26	50.0	15	28.8	7	13.5	3	5.8	1	1.9	<0.001
Fear of not being approved in the qualification/defense	22	42.3	18	34.6	8	15.4	4	7.7	-	-	0.001
Fear of failing in any course	20	38.5	10	19.2	11	21.2	6	11.5	5	9.6	0.009
Fear of advisor change	11	21.2	11	21.2	11	21.2	15	28.8	4	7.7	0.193

¹p-value of the chi-square test for proportion comparison
Source: Research data, 2022.

Table 4 shows the level of fear of COVID-19 in the group of professors and graduate students using the EMC-19. It was observed that most professors and students had low levels of fear of COVID-19 (75% and 59.6%, respectively). In addition, 25% of the professors and

40.4% of the students displayed an elevated level of this feeling, ranging from moderate fear to great fear.

Table 4. Levels of fear of COVID-19 among nursing professors and graduate students at UFPE Campus Recife, analyzed using EMC-19.

Level of fear of COVID-19	Professors			Graduate students		
	n	%	p-value ¹	n	%	p-value ¹
Low	24	75.0	<0.001	31	59.6	<0.001
Moderate	5	15.6		17	32.7	
High	3	9.4		4	7.7	

¹p-value of chi-square test for proportion comparison.
Source: Research data, 2022.

According to the data obtained from the DASS-21 (Tables 5 and 6), most professors and students did not exhibit depressive symptoms (90.6% and 51.9%, respectively), anxiety (81.3% and 57.7%), or stress (65.7% and 51.9%). However, it was observed that 34.3% of professors and 48.1% of graduate students experienced some degree of stress, ranging from mild to extremely severe. Among professors, moderate levels of stress were more prominent (15.6%), while severe and extremely severe levels were more prevalent among students (15.4% each). Regarding anxiety, 18.7% of professors and 42.3% of students exhibited higher levels, ranging from moderate to extremely severe in the former group and from mild to extremely severe in the latter group. As for depressive symptoms, 9.4% of professors and 48.1% of graduate students experienced degrees of depression, ranging from mild to moderate among professors and from mild to extremely severe among students.

Table 5. Levels of depression, anxiety, and stress among nursing professors at UFPE, Recife campus, analyzed through the DASS-21. Recife, 2022.

	Depression			Anxiety			Stress		
	n	%	p-value ¹	n	%	p-value ¹	n	%	p-value ¹
Normal	29	90.6	<0.001	26	81.3	<0.001	21	65.7	<0.001
Mild	1	3.1		-	-		4	12.5	
Moderate	2	6.3		5	15.6		5	15.6	
Severe	-	-		-	-		1	3.1	

Extremely severe	-	-	1	3.1	1	3.1
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¹p-value of the chi-square test for proportion comparison.
Source: Research data, 2022.

Table 6. Levels of depression, anxiety, and stress among graduate students at UFPE, Recife campus, analyzed through the DASS-21. Recife, 2022.

	Depression			Anxiety			Stress		
	n	%	p-value ¹	n	%	p-value ¹	n	%	p-value ¹
Normal	27	51.9	<0.001	30	57.7	<0.001	27	51.9	<0.001
Mild	7	13.5		6	11.5		6	11.5	
Moderate	4	7.7		3	5.8		3	5.8	
Severe	7	13.5		4	7.7		8	5.4	
Extremely severe	7	13.5		9	17.3		8	15.4	

¹p-value of the chi-square test for proportion comparison.
Source: Research data, 2022.

Data crossing analysis

Regarding the association between sociodemographic, work-related, and academic characteristics with DASS-21 variables among graduate students, a significant association was observed between female gender and depression (p=0.038). Regarding the sociodemographic, work-related, and academic profile in relation to EMC-19 variables among graduate students, significant associations were found only between attendance and fear of COVID-19 (p=0.022), as well as between internet quality and fear of COVID-19 (p=0.040).

When associating EMC-19 with DASS-21 in students, a significant association was identified between fear of COVID-19 and anxiety (p=0.008). No other associations were found between EMC-19 and DASS-21. An association was also observed between internet quality and the "anxiety" (p=0.005) domain of DASS-21, as well as between internet quality and the "stress" (p=0.023) domain. Regarding paid activities in addition to graduate studies, a significant association was found between attendance and depression (p=0.002), as well as between management and depression (p=0.032).

Significant associations were found between the variable "best learning method" and "depression" (p=0.046), as well as between the "best learning method" and "anxiety" (p=0.009). Regarding academic life questions and DASS-21 among graduate students, significant

associations were identified between participating or presenting papers at events and depression ($p=0.030$), as well as between the fear of not being able to complete the thesis/dissertation and anxiety ($p=0.044$). While professors stated a preference for teaching in a face-to-face format, students reported more effective learning through hybrid teaching methods. Both groups prefer active teaching-learning methodologies.

Regarding professors, no significant associations were found between the "stress" levels of DASS-21 and the sociodemographic and work-related profile. However, a significant association ($p<0.05$) was observed between the professors' workload and the "anxiety" domain. All individuals who taught 20 hours per week had moderate or extremely severe levels of anxiety, while 14.3% of those who worked 40 hours per week in an exclusive dedication (ED) regime had moderate levels of anxiety. Those who taught 20 hours per week have approximately 3.5 times more chances of developing a moderate level of anxiety compared to those who taught 40 hours per week in ED, in the context of the COVID-19 pandemic.

Regarding nursing professors, significant associations ($p<0.05$) were also found between the "depression" domain of DASS-21 and the variables "children's occupation", "highest academic degree", "workload", "work regime", "sharing of electronic work devices", and "balance of work and domestic activities". Approximately 67% ($p=0.018$) of professors who had children in early school age presented moderate depression during the pandemic. About 29% ($p=0.045$) of professors with ongoing or completed master's degrees exhibited mild or moderate levels of depression. Half of the sample ($p=0.025$) teaching 20 hours per week had moderate depression.

Professors working under the CLT regime showed significant levels ($p=0.004$) of mild (16.7%) and moderate (33.3%) depression. This can be attributed to the fact that professors under this regime do not have job stability, which generates uncertainties and concerns and can contribute to the development of mild and moderate depression. Those who shared work electronic devices with other household members also exhibited significant levels ($p=0.030$) of moderate depression (33.3%). Additionally, educators who were unable to balance work and domestic responsibilities showed significant levels ($p=0.017$) of mild (11.1%) and moderate (22.2%) depression.

Regarding professors and EMC-19, a significant association was observed between fear of COVID-19 and the variables "work hours" ($p=0.012$) and "balancing work and domestic activities" ($p=0.043$). The moderate degree of fear of the disease was present in 100% of

professors who taught 20 hours per week, 20% of those who worked 40 hours per week, and 4.8% of those who worked 40 hours per week with exclusive dedication. Furthermore, 33.3% of professors who were unable to balance work and domestic activities during the pandemic exhibited moderate fear of the disease, and 22.2% expressed high levels of fear.

Similar results were found in the group of educators: fear of COVID-19 was significantly associated ($p=0.025$) only with the "anxiety" variable of the DASS-21. All professors who experienced extremely severe anxiety fell within the moderate fear category of COVID-19. Additionally, 40% of those with moderate anxiety fell into the moderate fear category of COVID-19, and 20% had high levels of fear of the disease. Those who experienced moderate fear of COVID-19 were 2.5 times more likely to develop extremely severe anxiety in the context of the COVID-19 pandemic.

DISCUSSION

The female gender predominates among nursing professionals, which confirms the profile of nursing in Brazil, outlined by the Federal Council of Nursing (COFEN) in 2015. The COFEN study found that the nursing team is made up of 84.6% women and only 15% male workers. In addition, most of these professionals are married or living with a partner and do not have children, which is in line with the results of the study conducted by Conceição (2021), which analyzed the impact of the COVID-19 pandemic on university professors.²⁴

When analyzing the socio-demographic, work and academic profile of the graduate students in relation to the DASS-21 variables, a significant association was found between "female gender" and "depression" ($p = 0.038$). This association can be attributed to the fact that nurses tend to neglect their own self-care. In addition to a heavy workload, they end up spending more time caring for others and doing household chores than taking care of themselves. In addition, the unequal distribution of these responsibilities with men causes women to become tired and overwhelmed, resulting in higher levels of distress and affecting their emotional health.²⁵

Among the professors, most of them had children in primary and secondary education, while most of the children of the graduate students were in kindergarten and primary education. This distribution is consistent with the findings of the study by Alves, Guirardello, and Kurashima (2013), which showed that the younger the age of the children, the more the parents perceived symptoms of anxiety and stress in the face of worrisome situations.²⁶

The present study found that most respondents had Internet access at home, with good browsing quality. In addition, the participants demonstrated the ability to use ICT and adapted satisfactorily to distance learning. It was also observed that the volunteers did not share electronic devices for study/work with other people and were able to adequately balance their work activities with those at home. However, it is important to emphasize that the lack of good Internet access, the sharing of electronic teaching devices, the difficulties in using digital platforms, and the difficulties in reconciling various extra-work activities can affect the transmission of online classes and compromise the quality of teaching. These challenges are barriers to the full benefits of distance learning and highlight the need for appropriate solutions and support to ensure quality education.²⁴

Those who were unable to adequately reconcile their work and home activities during the pandemic were 3.83 times more likely to have a moderate fear of COVID-19 and 5.16 times more likely to have a very intense fear of the disease than those who were able to satisfactorily reconcile these activities. It is important to emphasize that fear can trigger or aggravate anxiety, which in turn can become a pathological state and interfere with the daily activities of the individual.⁶

In this study, most of the participants were employed in nursing in addition to their teaching or graduate studies. Previous field research has shown that caregivers who work in more than one setting face an excessive workload, with long shifts in two or three settings at the same time. In addition, these professionals have difficulty getting adequate and restorative sleep due to shift work, which can lead to health problems. A good quality of sleep is essential for satisfactory rest and the restoration of physical and mental well-being.²⁷

Regarding the EMC-19, no significant associations were found among students. However, among professors, those who taught 20 hours per week during the pandemic were approximately 5 times more likely to report moderate fear of COVID-19 than those who taught 40 hours per week. In addition, professors who taught 20 hours per week were approximately 20 times more likely to exhibit moderate fear of COVID-19 than those who taught 40 hours per week with exclusive dedication.

In addition, 20% of the professors who taught 40 hours per week had a very high level of fear related to COVID-19, which is approximately 4.1 times more likely than those who worked 40 hours per week with exclusive dedication. These results suggest that in the context of the COVID-19 pandemic, professors who worked for a shorter period were more likely to

have some level of fear of the disease. This may be because these professors were likely to have worked in multiple locations, resulting in greater exposure to people and, consequently, an increased risk of viral infection.

Sousa et al. (2020)²⁸ found an association between working hours and the risk of working conditions and illness. Employees who worked more than 30 hours per week were more likely to be ill.

Those who had additional employment and worked more hours per week were at higher risk of being exposed to COVID-19 and stressors compared to those who worked under an exclusive dedication regime, thus leading to increased psychological distress in the context of the COVID-19 pandemic. The study by Luz, Campos, Bezerra, Campos, Nascimento (2021) highlighted the extent to which the COVID-19 pandemic has heightened the workload burden on nurses due to increased care demands, hospital overcrowding, and a significant number of professionals contracting the disease and being absent from work. Additionally, nurses isolated themselves to prevent transmission of the virus to their families, which further exacerbated the mental health challenges faced by these professionals.²⁹

Another study also affirmed that the most critical period of the COVID-19 pandemic has had a significant impact on the mental well-being of frontline professionals, including nurses (professors and graduate students), who experience high levels of stress, fatigue, and difficulty in coping with all the changes demanded by the pandemic. The work process and isolation have resulted in increased pressure and fatigue beyond the usual, stemming from the lack of time for rest and the need for constant donning and doffing of personal protective equipment, placing a heavy burden on them.³⁰

In the case of graduate students, the high level of pressure from institutions and supervisors leads to an accumulation of responsibilities and physical and psychological overload, which negatively affects mental health and quality of life and increases the risk of developing emotional disorders such as anxiety and depression. In addition, another study found that students who rely on scholarships face other issues that must also be considered. In addition to the devaluation of the value of scholarships, scholarship recipients do not have the same rights as employees, such as vacation time, 13th paycheck, sick pay, and scholarship time does not count toward retirement. On the other hand, major development agencies prohibit fellows from engaging in paid employment, which means that fellowship values are often used

to cover personal household expenses, neglecting their primary purpose of covering research costs.²⁰

Even though most of the groups surveyed reported minimal fear of COVID-19, this disease still causes intense distress and anxiety in individuals. This is due to the sense of uncertainty created by the pandemic and the sudden changes in lifestyle. The ease of transmission, the indefinite duration of the pandemic, the high mortality rate, and the concern for the health of family and friends also contribute to the fear that many people have of the disease.³¹

CONCLUSION

The high prevalence of stress, anxiety, and depression among nursing professors and graduate students underscores the need for educational institutions to organize themselves to provide conducive teaching/learning conditions, especially in the distance format. This includes ensuring high quality and free Internet access for professors and students for both synchronous and asynchronous activities. These measures are particularly important during health crises such as the COVID-19 pandemic.

Manifestations suggesting mental suffering were observed in a large proportion of the nurses studied. All factors evaluated in both groups were considered significant. Although most of the participants did not experience intense psychogenic effects, the analyzed data indicate that the current context of the COVID-19 pandemic and the changes in the way of teaching (online/hybrid) had different effects on the mental health of many of the individuals studied. This resulted in depressive, anxious, and especially stressful symptoms.

The need to reorganize the work of nursing professors and graduate students becomes apparent, including the definition of a workload that allows sufficient time for self-care and participation in activities that promote the physical and mental well-being of individuals. In addition, it is important to emphasize the importance of a pleasant work/academic environment and the implementation of strategies to prevent stress, anxiety, and depression and to promote the improvement of existing symptoms.

Although stress was the most frequently reported feeling by both professors and students, no association was found between this feeling and the socio-demographic profile or the fear of COVID-19, except in the case of the variable "Internet quality" in the student sample.

This suggests that the stress experienced by the groups studied goes beyond the barriers of the personal/work profile and the pandemic. To the best of our knowledge, this is the first study conducted with nursing professors and graduate students during the pandemic using the DASS-21, EMC-19, and Academic Life questionnaires. Therefore, it is necessary to conduct further research with this target population, using variables different from those tested in this study, to identify the true causes of stressors and to intervene effectively.

This study has some limitations, including a small sample size and data collection in a single institution, which makes it difficult to generalize the results. However, the data obtained provide a basis for reflection on the working and academic conditions of nursing students and professors, the impact of COVID-19 on the mental health of these professionals, as well as stimulating additional studies on issues of mental illness in this population.

CONTRIBUTIONS

The authors contributed equally to the design of the research project, data collection, analysis and discussion, as well as to the writing and critical review of the content with intellectual contribution and approval of the final version of the study.

CONFLICTS OF INTERESTS

Nothing to declare.

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