ORIGINAL ARTICLE

Nurses' and nursing technicians' occupational stress and coping strategies during the COVID-19 pandemic

Estresse ocupacional e estratégias de coping de enfermeiros e técnicos de enfermagem durante a pandemia de COVID-19

Estrés ocupacional y estrategias de afrontamiento de enfermeros y técnicos de enfermería durante la pandemia de COVID-19

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ABSTRACT

Objectives: to assess the factors that generate occupational stress among nurses and nursing technicians working in direct care for patients affected by COVID-19 during the pandemic and verify their relationship with coping strategies adopted by the nursing staff. **Methods:** an analytical cross-sectional study, carried out at a hospital in the countryside of the state of São Paulo. The convenience sample (n = 112) consisted of nursing professionals who answered the Nurses' Stress Inventory and the Coping Responses Inventory for Working Settings. For inferential analyses, chi-square test or Fisher's exact test, Mann-Whitney test and Spearman test were used ($p < 0.05$). **Results:** there was a high level of occupational stress in nurses (M = 106.0; SD ± 23.1) and nursing technicians (M = 98.5; SD ± 25.1), with higher scores among nurses for factors intrinsic to work compared to nursing technicians. Interpersonal relationships were the main source of stress. The coping strategies with the highest means were coping responses for both nurses (M = 43.2; SD ± 8.5) and nursing technicians (M = 41.4; SD ± 9.1). **Conclusions:** the identification of occupational stress factors and coping strategies and their repercussions at work brought important contributions to understanding the contextual reality.

Descriptors: Adaptation, Psychological; Burnout, Professional; Stress, Psychological; Nurse Practitioners; Coronavirus Infections.

RESUMO

Objetivos: *avaliar os fatores geradores do estresse ocupacional dos enfermeiros e técnicos de enfermagem atuantes no cuidado direto aos pacientes acometidos pela COVID-19, durante a pandemia, e verificar sua relação com estratégias de coping adotadas pela equipe de enfermagem.* ***Métodos:*** *estudo transversal analítico, realizado em um hospital no interior do estado de São Paulo. A amostra de conveniência (n = 112) foi constituída por profissionais de enfermagem que responderam ao Inventário de Estresse de Enfermeiros e Inventário de Respostas de Coping no Trabalho. Para as análises inferenciais foram utilizados os testes Qui-quadrado ou Exato de Fisher, o teste de Mann-Whitney e o teste de Spearman (p < 0,05).* ***Resultados:*** *verificou-se elevado nível de estresse ocupacional em enfermeiros (M = 106,0; DP ± 23,1) e técnicos de enfermagem (M = 98,5; DP ± 25,1), com maior pontuação de enfermeiros para fatores intrínsecos ao trabalho, em comparação com técnicos de enfermagem. As relações interpessoais foram a principal fonte de estresse. As estratégias de coping com maiores médias foram as respostas de enfrentamento tanto para enfermeiros (M = 43,2; DP ± 8,5) quanto para os técnicos de enfermagem (M = 41,4; DP ± 9,1).* ***Conclusões:*** *a identificação dos fatores de estresse ocupacional e das estratégias de coping, bem*

como, suas repercussões no contexto laboral trouxeram contribuições importantes para entender a realidade contextual.

Descritores: *Adaptação Psicológica; Esgotamento Profissional; Estresse Psicológico; Profissionais de Enfermagem; Infecções por Coronavírus.*

RESUMEN

Objetivos: *evaluar los factores que generan estrés ocupacional entre enfermeros y técnicos de enfermería que actúan en el cuidado directo de pacientes afectados por COVID-19, durante la pandemia, y verificar su relación con las estrategias de afrontamiento adoptadas por el equipo de enfermería.* ***Métodos:*** *estudio analítico transversal, realizado en un hospital del interior del estado de São Paulo. La muestra por conveniencia (n = 112) estuvo compuesta por profesionales de enfermería que respondieron el Nurses' Stress Inventory y el Coping at Work Response Inventory. Para los análisis inferenciales, se utilizaron las pruebas de chi-cuadrado o exacta de Fisher, Mann-Whitney y Spearman (p < 0,05).* ***Resultados:*** *hubo un alto nivel de estrés ocupacional en enfermeros (M = 106,0; DE ± 23,1) y técnicos de enfermería (M = 98,5; DE ± 25,1), con puntuaciones más altas entre los enfermeros para factores intrínsecos al trabajo, en comparación con los técnicos de enfermería. Las relaciones interpersonales fueron la principal fuente de estrés. Las estrategias de afrontamiento con mayores promedios fueron las respuestas de afrontamiento tanto de enfermeros (M = 43,2; DE ± 8,5) como de técnicos de enfermería (M = 41,4; DE ± 9,1).* ***Conclusiones:*** *la identificación de factores de estrés ocupacional y estrategias de afrontamiento, así como sus repercusiones en el contexto laboral, trajeron importantes aportes para la comprensión de la realidad contextual.*

Descriptores: *Adaptación Psicológica; Agotamiento Profesional; Estrés Psicológico; Enfermeras Practicantes; Infecciones por Coronavirus.*

INTRODUCTION

The Coronavirus Disease-19 (COVID-19) pandemic scenario, caused by the SARS-CoV-2 virus, interfered with the way health professionals work, especially the nursing staff, responsible for continuous care and assistance to patients. Excessive nursing workload resulted in reports of physical exhaustion, emotional fragility and feelings of frustration and impotence in the face of patient death[1]. Among the psycho-emotional symptoms presented by nursing professionals who worked to combat the pandemic, anxiety and depression stood out[2]. Furthermore, burnout, described as a prolonged response to chronic exposure to emotional and interpersonal stress in the workplace, was identified in 12.0% of the nursing staff caring for patients with COVID-19[3].

Professionals' mental distress is related, in many cases, to work structure, unhealthy environments, precarious conditions, internal conflicts, scarcity of material resources, overload of roles, extensive working hours and lack of professional training to work in specific contexts[3]. Concomitant to this, during the pandemic, there was an increase in fear of contagion and exposure of family members, leading to the frequency of negative feelings, such as despair, guilt and lack of motivation to work[4], in addition to facing ethical dilemmas[5].

In the literature, the term "occupational stress" is not new, however it gained greater visibility in the health area and, especially in nursing, during the COVID-19 pandemic. It is defined as a decrease in work capacity due to individuals' inability to adapt to the psychological demands of their work environment, which can trigger issues of insecurity, dissatisfaction, lack of interest and irritation[6].

Known stress factors are reduced number of employees, lack of institutional and professional support, work overload, lack of communication and understanding by service supervision and assistance to patients in serious condition[7].

Stressful situations associated with work contribute to triggering physical and psychological damage, leading individuals to develop "coping strategies" to control this problematic relationship between themselves and their environment[8].

Coping strategies are considered individual characteristics of a person's reaction to stress, which are determined by personal factors, situational demands and available resources[8]. In recent years, this topic has also gained greater attention, especially due to changes in the daily work of professionals involved in assistance during the COVID-19 pandemic. Availability of personal protective equipment, strict infection control protocols, professional recognition, in addition to reduced new reported cases, provided health professionals with psychological benefits, reducing the demands for coping strategies[9].

Coping strategies may vary among different individuals in the presence of the same stressor. People who make a positive cognitive assessment may perceive stress as a health problem to be resolved, and, on the contrary, those who make a negative assessment may see the same problem as a threat to their health and believe that solving the problem is beyond their abilities.

In Brazil, there is a lack of studies that portray the reality in this field. A study carried out by Fiocruz throughout the country portrays the reality of health professionals who worked on the front line, and were marked by pain, suffering and sadness, with strong signs

of physical and mental exhaustion, in addition to fear of contamination and death[10], indicating a highly stressful scenario, but no investment was made in the analysis of possible coping strategies by the nursing staff. Furthermore, integrative review studies on stress and nursing staff's coping during the COVID-19 pandemic[11-13] favored large cities and capitals, highlighting a gap in this reality in countryside cities, which have a peculiar economic, political, cultural and labor ecosystem.

Thus, this study aimed to assess the factors that generate occupational stress among nurses and nursing technicians working in direct care for patients affected by COVID-19 during the pandemic and verify their relationship with coping strategies adopted by the nursing staff.

METHODS

Study design

This is a cross-sectional study with a quantitative approach, whose report was guided by Strengthening the Reporting of Observational studies in Epidemiology (STROBE)[14].

Study site

The study was carried out at a large public hospital, with 260 beds, 144 of which were destined for inpatient units, 96 for Intensive Care Units (ICU) and 20 for outpatient surgery, located in a city in the countryside of the state of São Paulo, which has a population of approximately 700,000 inhabitants according to the 2022 Census carried out by the Brazilian Institute of Geography and Statistics (Portuguese acronym: IBGE - *Instituto Brasileiro de Geografia e Estatística*), and has approximately 20 health institutions that offer hospital admission services.

Study participants

The nursing professionals involved in the care for patients with COVID-19 totaled 124 workers, 32 nurses and 92 nursing technicians.

Participants were all nurses and nursing technicians who provided direct care to patients with COVID-19, available to fill out the questionnaires during their work shift and who agreed to voluntarily participate in the study by signing the Informed Consent, after being informed of the study objectives. Professionals who were on vacation or medical leave during the data collection period or those who did not agree to participate in the research were excluded.

Data collection

Data collection was carried out in person between October and December 2021 in the three work shifts and during the hours agreed with the health institution. The research protocol consisted of a questionnaire with items for nursing professional sociodemographic characterization: Nurses Stress Inventory (NSI) and Coping Responses Inventory for Working Settings (CRI-W).

Data collection instruments

Sociodemographic characterization questionnaire: it was prepared by the researchers, containing questions about age, sex, marital status, religion, level of training, length of professional experience, job tenure, employment in another institution

Nurses' Stress Inventory (NSI): adapted to Portuguese and validated in Brazil[15]. This is a questionnaire that allows identifying stressors as well as their intensity and frequency in the profession. It is made up of three factors: a) *Interpersonal relationships* (17 items), which deals with interpersonal relationships with other professionals, with patients and their families, with students, with work group, with people in general and also with one's own family; b) *Stressful career roles* (11 items), which addresses uncertainty, lack of professional recognition and autonomy, impotence due to the impossibility of performing some tasks and aspects of the institutional organization and the physical environment; c) *Factors intrinsic to work* (10 items), which deals with roles performed during the working day and with inadequate resources.

Each item is classified on a Likert-type response scale (1-5) that ranges from 38 to 190 points. A score less than or equal to 95 indicates a low level of stress and a score greater than 95 indicates a high level of occupational stress[15].

Coping Responses Inventory for Working Settings (CRI-W): adapted to Portuguese and to the Coping Responses Inventory's work context[16]. It consists of 48 items that address coping strategies for professionals in the workplace. The responses are grouped into two categories: coping responses and avoidance responses, with 24 items each. The score is assessed using a Likert scale (0-3) and ranges from 0 to 144 points. The higher the score, the greater the use of coping in the workplace.

Data analysis procedure

The collected data were transported to an Excel for Windows spreadsheet (version 2010, Microsoft, United States of America) and entered into the Statistical Analysis System for Windows (version 9.2. SAS Institute Inc, 2002-2008, United States of America). A descriptive

data analysis was carried out using frequency in absolute values (n) and percentages (%) for categorical variables, and position and dispersion measurements (mean, standard deviation) for continuous variables. For inferential analyzes, chi-square test or Fisher's exact test were used. To compare stress means between professional categories, the Mann-Whitney test was used. To analyze the correlation between NSI and CRI-W, the Spearman test was used, due to the lack of normal distribution of variables. A p-value < 0.05 was considered a level of statistical significance. For correlation coefficient analysis, values < 0.30 were considered weak correlations, between 0.30 and 0.50, moderate correlations, and > 0.50, strong correlations[17]. To assess instrument reliability, Cronbach's alpha was used[18].

Ethical aspects

The study was approved by the Research Ethics Committee of *the Pontifícia Universidade Católica* Faculty of Medical and Health Sciences (Portuguese acronym: FCMS-PUC/SP), Opinion 4,763,683, in accordance with Resolution 466/2012 of the Brazilian National Health Council and followed the guidelines and regulatory standards for research involving human beings.

RESULTS

The sample consisted of 112 nursing professionals, 30 nurses and 82 nursing technicians who worked to care for patients with COVID-19. These professional categories had a similar sociodemographic profile in all variables, except for the age group, in which there was a majority of 30-39 years of age among nurses and a more diverse distribution among technicians, with a predominance of ages between 20-29 years for this category and an important portion between 40-49 years (Table 1).

It was identified that nurses and nursing technicians presented a high level of occupational stress (Table 2), with significant differences only for nurses regarding factors intrinsic to work. Regarding the use of coping strategies, no differences were found for both total scores and types of responses (coping or escaping) when comparing professional categories.

The total score for using coping strategies by nurses and nursing technicians showed no difference in relation to the number of jobs. However, when studying the type of coping strategies, it was observed that, for nurses with a second employment relationship, avoidance response mean was higher compared to those with just one employment relationship (Table 3). The same did not occur among nursing technicians.

Table 1 - Sociodemographic profile of nurses and nursing technicians at a public hospital in the countryside of the state of São Paulo, Brazil, 2021

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Variables	Nurses (n = 30)		Nursing technicians (n = 82)	
	n*	%†	n	%
Age				
20-29	07	23.4	31	37.8
30-39	21	70.0	25	30.5
40-49	01	3.3	22	26.8
> 50	01	3.3	04	4.9
Sex				
Female	24	80.0	63	76.8
Male	06	20.0	19	23.2
Marital status				
Single	08	26.7	29	35.3
Married	15	50.0	40	48.8
Separated/divorced	07	23.3	13	15.9
Religion				
Catholic	16	53.4	36	43.9
Evangelical	10	33.3	29	35.4
Spiritism	01	3.3	06	7.3
Do not have	02	6.7	06	7.3
Did not answer	01	3.3	05	6.1

Table 1 - Sociodemographic profile of nurses and nursing technicians at a public hospital in the countryside of the state of São Paulo, Brazil, 2021

Conclusion.

Variables	Nurses (n = 30)		Nursing technicians (n = 82)	
	n*	%†	n	%
Sector of activity				
ICU	20	66.6	60	75.0
Medical clinic	03	10.0	07	6.2
Emergency	03	10.0	03	3.8
Emergency service	02	6.7	01	1.2
Surgical center	02	6.7	11	13.8
Work shift				
Day	20	66.7	50	61.0
Night	10	33.3	32	39.0
More than an employment relationship				
Yes	13	43.3	25	30.5
No	17	53,7	57	69,5
Length of professional experience (years)	**Mean**	**SD ‡**	**Mean**	**SD**
In the profession	12.8	6.6	10.4	6.4
At the institution	2.3	1.0	2.4	1.0
In the work sector	1.5	0.8	1.7	0.9

Note: * n: absolute number; † %: percentage; ‡ SD: standard deviation.

Table 2 - Comparison between the level of occupational stress and coping strategy scores presented by nurses and nursing technicians at a public hospital in the countryside of São Paulo, Brazil, 2021

Variables and respective instruments/factors or domains	Nurse (n = 30) Mean (SD)†	Nursing technician (n = 82) Mean (SD)	p-value‡
Occupational stress			
NSI** total score (38-190)	106.0 (23.1)	98.5 (25.1)	0.109
Interpersonal relations (17-85)	50.6 (14.2)	47.0 (16.4)	0.253
Stressful career roles (11-55)	28.5 (8.1)	27.7 (8.3)	0.638
Factors intrinsic to work (10-50)	26.9 (6.5)	23.8 (6.0)	0.012
Coping strategies			
CRI-W** total score (0-144)	70.5 (13.6)	69.1 (16.2)	0.326
Coping responses (0-72)	43.2 (8.5)	41.4 (9.1)	0.400
Avoidance responses (0-72)	27.2 (7.6)	27.7 (8.7)	0.901

Note: * NSI: Nurses' Stress Inventory; ** CRI-W: Coping Responses Inventory for Working Settings; † SD: standard deviation; ‡ p-value: Mann-Whitney test

Table 3 - Score on the use of coping strategies by nurses and nursing technicians according to the number of employment relationships at a hospital in the countryside of the state of São Paulo, Brazil, 2021

Professional category and total score and in the domains for use of coping strategies	One employment relationship		Two employment relationships		p-value‡
	Mean (SD)	Min-max	Mean (SD)*	Min-max†	
Nurses					
CRI-W** score for coping responses	43.5 (8.5)	29-55	42.8 (8.9)	35-68	0.542
CRI-W** score for avoidance responses	24.3(6.1)	14-34	31.1 (7.9)	14-41	0.014
CRI-W* total score	67.8 (13.0)	45-88	73.9 (14.1)	53-109	0.305
Nursing technicians					
CRI-W** score for coping responses	41.4 (9.2)	23-61	41.3 (9.2)	26-60	0.940
CRI-W** score for avoidance responses	27.5 (8.8)	14-47	28.3 (8.8)	18-50	0.992
CRI-W* total score	68.9 (16.1)	26-106	69.7 (16.6)	46-103	0.980

Note: * SD: standard deviation; ** CRI-W: Coping Responses Inventory for Working Settings; † Min-Max: minimum and maximum values; ‡ p-value: Mann-Whitney test

When testing the relationship between the occupational stress level score and the use of coping strategies by nursing professionals according to the sector of activity, such as ICU (COVID ICU) or other sectors (medical clinic, surgical center, emergency service and hemodynamics), no significant difference was found between the sector of activity for any of the inventory variables (non-tabular data).

A moderate and positive correlation (Table 4) was observed between nurses' total occupational stress score and total score of coping strategies (r = 0.4052; $p < 0.05$) and coping responses (r = 0.3667; $p < 0.05$), with emphasis on stressors in the interpersonal relationships domain, which showed a moderate and positive correlation with the total score of coping strategies (0.3637; $p < 0.05$) and coping responses (r = 0.3667; $p < 0.05$). Regarding nursing technicians, there was no correlation between the level of stress and coping strategies.

Cronbach's alpha values of NSI and CRI-W, referring to their application in this study, were, respectively, $\alpha = 0.917$ and 0.846 for nurses and $\alpha = 0.912$ and 0.888 for nursing technicians.

Table 4 - Correlation between the scores obtained by nurses and nursing technicians on the Nurses' Stress Inventory (NSI) and the Coping Responses Inventory for Working Settings (CRI-W) at a hospital in the countryside of the state of São Paulo, Brazil, 2021

Total score and NSI domains*	Score on coping responses	Scoring on avoidance responses	CRI-W total score**
Nurses		**Spearman's correlation coefficient**	
Score in the interpersonal relationships domain	0.3667†	0.2486	0.3637†
Score in the stressful career roles domain	0.1399	0.1091	0.1935
Score in the factors intrinsic to work domain	0.1351	0.0537	0.1250
NSI-total score*	0.3807†	0.2886	0.4052†
Nursing technicians		**Spearman's correlation coefficient**	
Score in the interpersonal relationships domain	0.17476	0.26439	0.23767
Score in the stressful career roles domain	0.05609	0.32666	0.21348
Score in the factors intrinsic to work domain	0.10776	0.20341	0.16125
NSI-total score*	0.17481	0.33202	0.27644

Note: * NSI: Nurses' Stress Inventory; ** CRI-W: Coping Responses Inventory for Working Settings; † r = moderate Spearman's correlation coefficient; p-value < 0.05

DISCUSSION

It was observed that the professionals who make up the nursing staff were predominantly female, young adults, married, had some religion and worked in the profession for more than 10 years for both categories. This demographic profile is similar to Brazilian studies[2,3] as well as studies from abroad[7,9,19-21], in which there is a prevalence of women, aged under 40 years and married.

Both categories presented a high level of occupational stress, corroborating an Iranian study that identified a higher level of work stress in nurses who cared for patients with COVID-19 than in those who worked in other services[19]. Professionals who care for patients with COVID-19 are more exposed to stressors, such as risk of infection, physical and mental fatigue, in addition to being away from family[22].

In the three factors that make up the NSI, the highest score was for the interpersonal relationships factor. This result is similar to studies that highlighted this factor in professionals who provide care to critically ill patients, highlighting as the main source of stress the interaction between professionals from different shifts, nurses with their bosses or professors in internship field[23] and the relationship with staff members in the work environment[24]. In this context, interpersonal coexistence is seen as exhausting for the nursing staff, and the items that represented the greatest stress factor were care for patients' families, relationship with medical staff, responsibility for the quality of the service provided by the institution and exclusive dedication to the profession. During the pandemic, the complexity of attire for care, the high degree of uncertainty in provision of care and family members' anguish brought greater emotional burden to interpersonal relationships, which may have contributed to the imbalance of these relationships.

The positive and moderate correlation between total stress, interpersonal relationships and nurses' coping responses suggests that these professionals make conscious use of coping strategies to better adapt to stressful situations. Nurses experience stressful situations on a daily basis and are therefore expected to have developed a strategy for emotional adaptation in order to withstand all difficult moments[7]. The main strategies adopted to face this were thinking about different ways out of the problem, talking to co-workers about the problem, knowing what should be done and trying to make things work, in addition to reflecting on what they could say or do. On the other hand, the lack of correlation of these variables, for nursing technicians, allows us to infer that nursing technicians were less resilient to stressors. Coping strategies, when used effectively, tend to reduce or solve the problems caused by stressors[24].

Stress, as a consequence of divergent attitudes and opinions, can result in conflicts, which, in turn, tend to promote reflection on reality and modification of actions towards the staff. In this regard, actions to strengthen teamwork, promote communication in different instances, spaces for collective discussion as well as share experiences and feelings are strategies that could help alleviate the effects caused by the pandemic[25] and can direct actions of this nature in similar situations.

Stressful roles in the career represented the second item with the highest score, for both professional categories, with emphasis on items working with unprepared people and in an unhealthy environment, feeling of impotence in the face of tasks performed and restriction of professional autonomy. Nursing staff's daily work is marked by experiences of pain, suffering and death associated with intensive work rates, long working hours and complex human relationships that can result in occupational illnesses[26]. Furthermore, fear of infection due to patient handling, lack of treatment and available vaccines for the coronavirus were cited as sources of stress, in addition to little institutional recognition and low remuneration for work[20]. In fact, professionals who were on the front line would need recognition and support from managers and the institution itself to guarantee benefits such as career promotion and subsidies.

The nursing work process is often characterized by an increase in workload and stress levels during shifts, in addition to fear of contamination, lack of information flow and human and material shortages, thus exposing professionals of nursing to vulnerable situations that can lead to illnesses[26]. This context was worsened by the COVID-19 pandemic. Increased workload to comply with lockdown measures and meet training requirements was the most important source of workplace stress[27]. A study revealed that 43.2% of health professionals did not feel protected to face COVID-19, with the main reasons being the lack, scarcity or inadequacy of use of personal protective equipment[28], fear of contagion and strenuous work[20]. Fear of contracting the disease was a worrying factor, as it had a considerable impact on people's mental health[29]. Furthermore, television media and social networks, which broadcast daily reports, denounced staff's working conditions.

The enormous workload in nursing is historic, and increased sharply during the pandemic. Thus, inadequate working conditions associated with lack of nursing staff qualification and training to face the pandemic, in addition to the weakness in the description of protocols and flows for effective infection control, generated phy-

sical and mental fatigue in nursing workers[30]. Despite this, in this study, factors intrinsic to work were the item with the lowest score as a source of stress.

Comparing the two groups of professionals, the domain related to factors intrinsic to work was the only one that showed a significant difference between them, with higher values for nurses, corroborating the results of another study, in which this domain contributed to increasing the level of stress in nurses in relation to nursing technicians and assistants ($p = 0.019$)[24]. This result is justified by the characterization of the daily duties of each professional category. Nurses take on demands that go beyond providing direct care to patients. They are involved with managerial issues, human resources and conflict management, in addition to administrative roles. Nursing technicians do not engage in these issues, and end up focusing on direct patient care. Nurses with leadership positions attribute stress to situations experienced in the exercise of leadership and level of accountability[31], in addition to the high degree of control characteristic of the position and demands from managers for maintaining quality of care, when compared to nursing assistants/technicians[24]. With these results, it can be inferred that factors intrinsic to work are related to the roles performed, which are sometimes challenging, in addition to working hours and inadequate resources[15].

In the Coping Inventory assessment, nurses scored higher than nursing technicians, with the highest scores being for coping responses, with emphasis on problem-solving and work reflection items. Coping strategies focused on solving problems in the workplace are positive responses to staff's growth as a professional and personal level. They demonstrate that these resolution strategies allow mobilizing efforts towards a better ability to adapt to stressful situations, thus reducing the occurrence of occupational stress in the work environment[24]. However, when comparing the two groups, the results did not show significant differences. This result differs from the study in which the nursing assistant/technician category used avoidance responses with higher values than nurses ($p = 0.027$)[24]. The coping strategies used in the work environment have the meaning of social support within the nursing staff itself, and were the means that professionals used to help themselves during the health crisis. Therefore, it is possible that social support within the staff itself helped to ensure that there was no statistical difference in the results of this study.

This scenario was observed in two studies carried out during the COVID-19 pandemic. One of them revealed that nursing staff working in nursing homes received social support as a mediator between care and psychological well-being[28]. In the other case, support from the management group was important to increase the ability to deal with challenges and peer support as a coping strategy for increased workload[27].

Using coping responses demonstrates that a person is capable of facing stressful situations at work directly, in other words, approaching problems in tune with reality. The opposite, avoidance responses, reflect that a person aims to postpone the act of dealing with the difficult issue or situation[16]. Thus, co-workers' positive attitude and teamwork as well as support from family members favorably influenced professionals' coping responses during the pandemic[7]. The reduction in nurses' stress during the pandemic was due to co-workers' positive attitudes in the unit[20].

This study showed a significant difference in avoidance responses, with the highest values for nurses who had more than one employment relationship. If, on the one hand, avoidance or denial reduces stress symptoms, on the other, it does not change their cause. These are short-term responses, allowing better psychological functioning. However, denial can generate more stress because problems are not solved[8]. Nurses with double employment relationships can adopt this alternative as a way to preserve energy, due to the fatigue caused by double shifts. Double working day is marked by negativity, restrictions and suffering, putting professionals' health at risk as well as their social relationships and quality of care[30]. Consequently, this can negatively impact patient care quality and safety.

The absence of a significant difference between the NSI and CRI-W scores in relation to the sector of activity suggests that, in the case of the COVID-19 pandemic, the complexity of care may have been neutralized or compensated by another condition, which resulted in no difference in the level of stress and coping strategies used. This hypothesis is supported, since studies indicate a higher degree of anxiety in professionals who work in closed sectors and with highly complex procedures[32] and an increase in burnout in professionals who worked in ICUs during the pandemic period, with higher rates in nurses[33].

Finally, it is worth highlighting that the emergency measures adopted during the pandemic led to new problems arising from lack of knowledge of institutional standards and inexperience of professionals recruited in procedures to combat the pandemic, which required greater efforts in the ongoing training of these professionals. While the majority of the population maintained social distancing, health workers, especially the nursing staff, were unable to retreat. Thus, the identification of occupational stress factors and coping strategies and

their repercussions in the work context bring important contributions to understanding the contextual reality.

The NSI and CRI-W presented a high level of reliability when applied in this study, demonstrating that these instruments have good internal consistency for assessing the construct for which they were proposed[17], both among nurses and nursing technicians.

Considering that the research was carried out at a single hospital, the research has as a limitation the impossibility of generalizing the findings. However, this study points out psychological impacts and coping strategies, which can generate support for processes of psycho-emotional support and personal development that can be planned and implemented in the medium and long term so that workers recover and future generations can be better prepared to face situations of this nature in the future.

CONCLUSIONS

Nurses and nursing technicians working in the care of patients admitted to hospital due to COVID-19 in a city in the countryside of Brazil presented a high level of occupational stress, with a higher level for nurses in the intrinsic work conditions factor in relation to nursing technicians, which can be justified by the responsibility of the former in managing the sector of activity and the work staff.

Among the three stress factors, interpersonal relationships represent the highest score, followed by stressful career roles and factors intrinsic to work.

These professionals predominantly use coping strategies, with no differences in relation to professional categories or place of work (ICU or other sectors involved in caring for patients admitted to hospital). However, nurses with double employment had a higher frequency of avoidance responses compared to those with only one employment.

The relationship between total stress, stress related to interpersonal relationships and nurses' coping strategies suggests that using problem-solving strategies allows for a better ability to adapt to stressful situations, thus maintaining physical and mental health. On the other hand, the lack of correlation of these variables, for nursing technicians, allows us to infer that nursing technicians were less resilient to stressors.

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Conflict of Interest

None.

Authors' contributions - CRediT

ICRSS: conceptualization; data curation; formal analysis; funding acquisition; methodology; project administration; supervision and writing - review & editing.
ASO: conceptualization; data curation; investigation and writing – original draft.
MPCB: conceptualization; data curation; investigation and writing – original draft.

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