

Occupational stress and coping strategies of nursing staff in times of Covid-19

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ABSTRACT

Introduction: The increase in the workload of health professionals and the degree of complexity of patients, attribute greater risk to psychosocial stress. **Objective:** To evaluate the associations between occupational stress, quality of life at work, and coping strategies by the hospital nursing team during the COVID-19 pandemic. **Methods:** Cross-sectional, quantitative study with convenience sampling, data collection from August to December 2020; in two units of the private hospital network, with sociodemographic, occupational and health questionnaires; visual analogue scale for assessing quality of life at work; Demand-Control-Support (DCS); Occupational Coping Scale. **Results:** The total sample consisted of 196 nursing professionals. There was significant certainty (negative, however, the dimension “Demand” of the DCS and QWL (<0.001 , $r=-0.367$). Control over work-related work has a significant quality (but the “Control” dimension of the DCS and QWL ($=0.025$, $r=0.160$); and significantly negative, however, between the “Social Support” dimension of DCS and “Negative Equivalence” of Coping ($p=0.003$, $r=-0.2013$). **Conclusion:** The findings of this study allowed the correlation between occupational stress, coping and quality of life at work, showing that the lower the social support, the greater the use of avoidance strategies and consequently decline in quality of life at work. They also allowed us to identify the coping strategies used by the nursing staff and quality of life at work in the face of occupational stress during the COVID-19 pandemic.

Keywords: occupational stress; adaptation, psychological; nursing; hospitals; Coronavirus.

INTRODUCTION

The first identified cases of the new Coronavirus were reported in China between November and December 2019, and the rapid global spread of this virus contributed to the World Health Organization declaring a pandemic in March 2020 because of the public health emergency¹. By 21 March 2023, the COVID-19 pandemic had reached 761,071,826 confirmed cases, including 6,879,677 deaths worldwide. In Brazil, 37,145,514 cases had been confirmed, totaling 699,634 deaths from COVID-19².

The high transmissibility of the virus and the lack of knowledge about the clinical aspects of the disease have posed a challenge to health professionals, especially nursing

How to cite this article: Schirmann et al.
Occupational stress and coping strategies
of nursing staff in times of Covid-19. ABCS
Health Sci. 2024;49:e024209
<https://doi.org/10.7322/abcshs.2022156.2364>

Received: Nov 08, 2022

Revised: Apr 03, 2023

Approved: Apr 17, 2023

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Declaration of interests: nothing to declare

Funding: CAPES – Financing code 001



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staff, who spend most of their time providing direct care in emergencies, wards, and intensive care for COVID-19 patients³.

The need to restructure the work environment due to the pandemic has made nursing activities, which were already considered stressful, painful and unhealthy, more stressful, since in addition to the various demands of the category, they still experience the lack of individual equipment, patient care equipment, the absence of hospital beds, the difficulty of establishing a specific protocol for this disease and the need to face an exponential increase in the number of deaths, increasing the physical and mental suffering of these workers, thus exposing the weaknesses existing in health services^{4,5}.

Frente a essas situações, em que o aumento da carga de trabalho, do grau de complexidade dos pacientes que procuram atendimento hospitalar são atribuídos ao maior risco para o estresse psicossocial, que ocorre de duas formas: o agudo, definido como intenso e de desaparecimento súbito e o crônico, com duração de período mais elevado⁶.

In this context, several studies have been produced on the stressors of nursing work during the COVID-19 pandemic. The fear of contracting the disease and bringing it home to their families⁷⁻¹⁰, high levels of stress¹¹; physical and emotional symptoms, including exhaustion, anxiety, insomnia, moral distress⁷, and increased use of chemical substances¹², have been associated with symptoms of anxiety, trauma and post-traumatic stress in nurses during the pandemic.

When faced with a stressful situation, different coping strategies emerge. Those who use the positive coping style see work demands as personal challenges and opportunities for growth and strive to maintain higher levels of performance, which is why positive coping is described as strategies aimed at solving problems and positive evaluation. In contrast, negative coping is characterized using emotion-focused and palliative coping strategies. Individuals exhibit distorted thinking, make negative evaluations, and have difficulty resolving problems¹³.

Coping strategies reported in studies with nurses during the pandemic involved positive and negative strategies such as planning, instrumental support, sense of humor, self-censorship¹¹, support from co-workers, knowledge of appropriate PPE, support from family and friends¹⁴, avoidance such as not working overtime, avoiding the news, social isolation¹⁵, physical activity, reading, rest, family life¹⁶; mutual support from team members, recognition, financial incentive, meaningful and valuable work for the population⁹.

In this sense, it is necessary to seek solutions and innovations to the collective challenges that emerged with the pandemic and that persist in the work environment of the nursing team, thus contributing to the construction of public policies.

Thus, this study aimed to evaluate the associations between occupational stress, quality of life at work and coping strategies by

hospital nursing staff working during the COVID-19 pandemic in two hospitals in the Centre-West region of Brazil.

METHODS

This is a quantitative descriptive study, conducted virtually. Data collection took place over five months, from August to December 2020, at two hospitals in the *Caixa de Assistência dos Servidores do Estado de Mato Grosso do Sul* - MS network, both of which are highly complex, private hospitals in the two largest cities in the state of Mato Grosso do Sul (Campo Grande and Dourados), located in the Centre-West region of Brazil.

The hospital in Campo Grande-MS had 99 beds, but as the months went by and the number of cases increased exponentially, the number of beds reached 113, with 40 intensive care beds, 28 wards and 5 adult emergency rooms, totaling 71 beds for COVID-19 care. The hospital in Dourados-MS had 73 beds, of which 10 were intensive care beds, 21 wards and 8 emergency rooms, totaling 39 beds for COVID-19 care. The number of nursing professionals on the front line of COVID-19 in the two hospitals totaled 268. 196 participants agreed to take part and met the inclusion criteria, with a response rate of 73.1%.

The nursing professionals were invited to take part in the research and informed about the research objectives; when they agreed to take part, they filled in the ICF (Informed Consent Form), which was sent via e-mail, WhatsApp application or social networks with the Google forms link. The participant's signature was validated, and duplicates were blocked.

The research project was approved by the Research Ethics Committee of the Federal University of Mato Grosso do Sul, CAAE No. 31698020.0.0000.0021 and complies with Resolution 466/2012 and the guidelines for research procedures with any stage in a virtual environment. Data collection in virtual format was chosen due to the public health emergency of international importance resulting from COVID-19.

The inclusion criteria for the subjects were: being nursing professionals (Nurses and Nursing Technicians) in sectors providing direct care to patients diagnosed with COVID-19. Participants who were part of the nursing team, but who were on leave of absence, were reassigned from the unit's professional staff or were part of the management sectors were excluded from the study.

A sociodemographic and occupational questionnaire adapted for the research was used and the variables of interest were professional category, institution, work sector, job satisfaction, support from colleagues, boss and sociodemographic characteristics¹⁷.

The second instrument used was the Swedish Demand-Control-Social Support scale (DCS), a condensed version for assessing occupational stress. It is a Likert-type scale that contains 17 items divided into demand (five items), control (six items) and social support (six items)¹⁸. To analyze the data, the following

cut-off points were used: for the demand score, the cut-off point was 14 points, classifying results <14 as low demand and above 14 as high demand. For the control score, the cut-off point was 18 points, between 6 and 18 points as low control and above 18 as high control. For social support, the cut-off point was 17 points, classifying results <17 as low social support and above 17 as high social support.

The third instrument used was the Visual Analogue Scale for Quality of Life at Work (QWL)¹⁹. From zero to ten, with a global question for QWL, it has a single dimension, which uses visual analysis in a standardized extension, where the left end describes the “worst rating” and the right end the “best possible”. The distance between the start of the line and the point marked by the participant was analyzed, so the numerical result corresponding to QWL was recorded, and this measurement was transformed into millimeters, on a scale of zero to 100, the higher the value, the greater the satisfaction with the factors assessed.

The fourth instrument used was the Occupational Coping Scale (OCS), translated, validated and in the public domain²⁰. It is a Likert-type scale with 29 items, from one (1) “I never do this” to five (5) “I always do this”, related to the way people respond to problems in the workplace, divided into three classification factors: control factor (11 items); avoidance factor (09 items) and symptom management factor (09 items). The scores for each OCS classification factor were processed using the average of the items that make them up, with the factor with the highest average being prevalent for each professional.

The comparison between nursing professionals according to gender, age group, schooling, distance from family, city of work, professional category, work sector and work regime, about the QWL score, was carried out using the non-parametric Mann-Whitney or Kruskal-Wallis tests since most of the samples did not pass the Kolmogorov-Smirnov normality test. The evaluation of the linear correlation between the scores on the DCS scale and those on the OCS or the QWL scale was conducted using Spearman's correlation test. The other results of this study were presented in the form of descriptive statistics or tables and graphs. Statistical analysis was conducted using the SPSS program, version 23.0, with a significance level of 5%.

RESULTS

This study was conducted with 196 nursing professionals, and the average age of the population studied was 36.2 years (SD=1.6). Of these professionals, 49.5% (n=97) were from the city of Campo Grande and 50.5% (n=99) from the city of Dourados, both municipalities in the state of Mato Grosso do Sul.

Table 1 shows the distribution of nursing professionals according to sociodemographic and occupational data. Most of the participants were women, nursing technicians, married, with

Table 1: Number and percentage of nursing professionals according to sociodemographic and labour data, Campo Grande/Dourados, Brazil 2020 (n=196).

Variable	N	%
Sex		
Female	155	79.1
Male	41	20.9
Age		
20 – 29	27	13.8
30 – 39	112	57.1
40 – 49	45	23.0
50 – 59	12	6.1
Marital status		
Married	128	65.3
Divorced	29	14.8
Single	35	17.9
Widowed	4	2.0 (9,7)
Education		
High School	107	54.6
Graduation	36	18.4
Postgraduate programme	53	27.0
Children		
No	53	27.0
Yes	143	73.0
Monthly Income		
1-2 Min Wages.	81	41.3
3-4 Min Wages.	80	40.8
5-6 Min Wages.	24	12.2
>6 Min Wages.	11	5.6
Work sector		
COVID-19 ICU	79	40.3
PA COVID-19	48	24.5
COVID-19 ward Outros(onco/CC)	69	35.2 (9,7)
Distancing from Family		
No	40	20.4
Yes Total	47	24.0
Yes Partial	109	55.6
More than one job enfermagem		
No	103	52.6
Yes	93	47.4
Time in nursing		
1 year	34	17.3
1 to 3 years	23	11.7
>3 years	139	70.9

children and the highest level of education was up to secondary school. As for the participants' occupational characterization, the majority worked the day shift, but there was a high proportion of night shift workers (40.3%); they were COVID-19 intensive care professionals, had to partially move away from their families, had worked in the profession for more than three years and 90.8% reported having access to personal protective equipment.

Table 2 shows the distribution of nursing professionals according to the quadrants of the DCS Scale, with a predominance of passive and highly demanding work.

The QWL scores of the 196 professionals assessed in this study ranged from 2 to 10 points, with a mean score of 7.66 ± 0.11 points (mean standard error of the mean). There was no significant association between the variables assessed in this study and the score on the Quality of Work Life Scale (QWL) (gender: $p=0.903$; age group: $p=0.122$; schooling: $p=0.298$; distance from family: $p=0.081$; city of work: $p=0.746$; professional category: $p=0.271$; sector of work: $p=0.209$; and work regime: $p=0.638$).

Regarding the results of the OCS, the most prevalent strategy among nursing professionals was the control strategy (86.7% - $n=170$), followed by the avoidance strategy (11.2% - $n=22$) and symptom management (2.5% $n=5$).

Among the control strategies, the most frequently used actions were: I make an effort to do what I think is expected of me; I try to work faster and more efficiently; I get more involved in my tasks if I think that can resolve the issue; I try to see the situation as an opportunity to learn and develop new skills and I pay extra attention to planning. The use of avoidance strategies is less common and identifies the following behaviors: I avoid the situation

if possible; I try not to worry about the situation; I concentrate on doing what I enjoy as a priority. About symptom management strategies, the following actions were used: I become dreamier; I seek out the company of other people and try to get involved in leisure activities.

Table 3 shows the results of the evaluation of the linear correlation between the scores on the DCS and those on the OCS and the QWL scale. There was a significant negative but weak correlation between the score on the "Demand" dimension of the DCS and that on the QWL scale ($p<0.001$, $r=-0.367$; Figure 1). On the other hand, there was a significant positive but weak correlation between the score on the "Control" dimension of the DCS and that on the QWL scale ($p=0.025$, $r=0.160$). There was a significant negative but weak correlation between the score on the "Social support" dimension of the DCS and that on the "Avoidance" dimension of the OCS ($p=0.003$, $r=-0.2013$). On the other hand, there was a significant positive but weak correlation between the score on the "Social support" dimension of the DCS and that on the "Symptom management" dimension of the OCS ($p=0.032$, $r=0.070$).

Finally, there was a significant positive but weak correlation between the score on the "Social support" dimension of the DCS and that on the QWL scale ($p<0.001$, $r=0.286$).

Figure 1 shows a graph demonstrating the significant negative but weak linear correlation between the score on the "Demand" dimension of the DCS and the score on the QWL scale.

DISCUSSION

The COVID-19 pandemic has altered care practices and the format of work management, which began to be developed on an emergency basis with care protocols for standardized care, such as greater rigor for protective equipment, care flows, safety for professionals and agility of care²¹.

In this scenario, this study aimed to evaluate the associations between occupational stress, quality of life at work and coping strategies by hospital nursing staff working during the COVID-19 pandemic, using the DCS Scale, the QWL Scale and the OCS. In

Table 2: Distribution of nursing professionals according to the quadrants of the Demand-Control Model, Campo Grande/Dourados, Brazil 2020 ($n=196$).

Situation	n	%
Passive Labour	86	43.9
High demand	59	30.1
Low demand	32	16.3
Active Labour	19	9.7

Table 3: Results of the evaluation of the linear correlation between scores on the Demand-Control-Social Support Scale at work (DCS), and those on the Occupational Coping Scale and the QWL scale.

DCS	Coping Scale			
	Control	Dodging	Symptom management	QWL
Demand	$p=0.591$	$p=0.339$	$p=0.937$	$p<0.001$
	$r=-0.390$	$r=0.069$	$r=0.006$	$r=-0.367$
Control	$p=0.062$	$p=0.314$	$p=0.102$	$p=0.025$
	$r=0.134$	$r=-0.072$	$r=0.117$	$r=0.160$
Social Support	$p=0.151$	$p=0.003$	$p=0.032$	$p<0.001$
	$r=0.103$	$r=-0.213$	$r=0.070$	$r=0.286$

Spearman's test p-value. r =linear correlation coefficient.

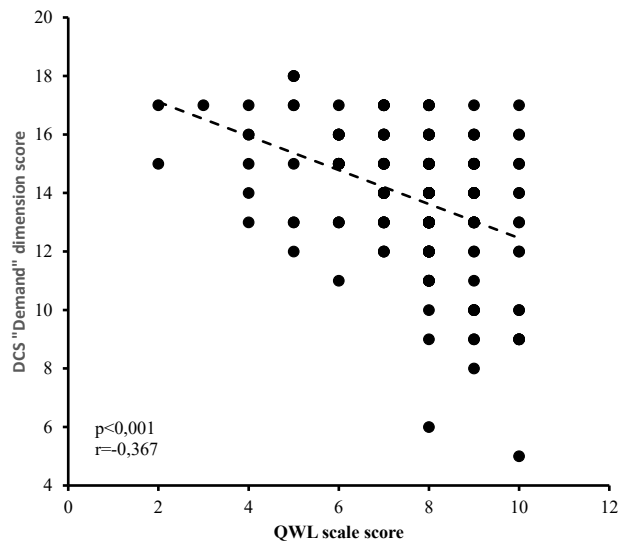


Figure 1: Scatter plot illustrating the significant negative but weak linear correlation between the score on the “Demand” dimension of the DCS and that on the QWL scale. Each dot represents the score on both scales for a single nursing professional. Spearman’s linear correlation test p-value. r =linear correlation coefficient. The dashed line represents the linear regression line.

this study’s sample, the female workforce, married and with children, predominated and corroborated the conditions described in studies on the subject^{1,22,23}.

The results of the DCS Scale showed that most nursing workers had passive and highly demanding work. When it came to the Nurses and Nursing Technicians categories, passive and highly demanding work predominated, respectively. This situation was also described in a survey of nurses²⁴.

Although the results of a study of nursing professionals in southern Brazil during a period outside the pandemic show that nurses were allocated to the less stressful and active work quadrants, while technicians and assistants were allocated to passive and highly demanding work²⁵, the difference with the findings of this study may reflect the overload of the pandemic.

In passive work, the worker is more exposed to the risks of illness, the work is considered boring, without the possibility of solving problems and learning new things²⁶. Low demand, poor control, and reduced production potential due to the lack of new challenges²⁷. And high-demand work leads to psychological exhaustion due to fatigue, stress and depression²⁸. In the control-demand model, as control over labor increases, the repercussions of high labor demand decrease²⁹.

Regarding low-demand work, in a study conducted in Germany²², it was the work with the highest proportion identified in that study population, diverging from the data found in this study. Active work was the least prevalent in this study, in contrast to data from medical and nursing staff at a hospital in southern Brazil, which found a higher concentration of active work (high

demand and high control over work), with low psychological stress and a lower risk of developing physical illnesses³⁰. Active work has a positive effect on stress by inducing new forms of problem-solving and learning, and greater motivation to adopt new behaviours.³¹.

In the context of coping with COVID-19, nurses are challenged to adapt their nursing care to respond to the different demands of care; in the face of this, it has been imperative to increase the workforce³². When subjected to high work demands, professionals are exposed to greater risks of illness³⁰.

When occupational stress and QWL were correlated, it was found that the greater the psychological demand, the worse the quality of life at work. Stress and QWL are essential components for the organizational process of the work environment, as they reaffirm the importance of the worker as a key element in achieving a better level of service quality and lower worker illness and turnover³³.

A Canadian study found that professionals with low demands associated with high social support, so low exposure to stress, were related to better quality of life at work³³ and that nursing professionals with high occupational stress were five times more likely to have low QWL³³.

Similarly, a Brazilian study found that low social support from colleagues and managers was associated with a poorer perception of QWL, identifying a higher rate of unsatisfactory QWL in direct patient care professionals, such as in units with critically ill and highly dependent patients like operating theatres, medical clinics, and intensive care units³⁴.

In the tests with an association between the dimension of control over work and QWL, control is positively related to QWL. In the results obtained from the Occupational Coping Scale, 86.7% of nursing professionals use the control strategy. Evidence shows that control-orientated strategies are positive, as they direct efforts towards reducing social dysfunction and eliminating stress resulting from the work environment^{6,23}.

The studies conducted during the pandemic indicate that the most relevant coping control measures were the search for knowledge about COVID-19, its transmission mechanisms, and the correct use of personal protective equipment such as masks and aprons^{14,15,35,36}.

A study conducted in Italy with nurses found that coping strategies focused on control were related to depression³⁷. It is worth pointing out that coping strategies are complementary, as it is a dynamic process; sometimes the responses are focused on control, at other times on symptom management.

In another study conducted in China, women adopted control-focused coping, while men adopted symptom management-focused coping. Only control-focused coping increased nurses’ anxiety. Coping focused on control and symptom management was associated with nurses being more prone to fear emotions.

Coping focused on symptom management influenced nurses' feelings of anger³⁸.

In this study there was a significant positive but weak correlation between the score on the "Social support" dimension of the DCS and that on the "Symptom management" dimension of the Coping scale. Social support is the support an individual receives in times of difficulty, which makes them believe that they are important to a certain group of people. This study shows that the greater the perceived social support, the greater the use of symptom management strategies aimed at reducing the negative effects of stress through self-care interventions.

Some Chinese studies have identified the use of strategies aimed at managing symptoms, such as finding activities to occupy their free time, like relaxing activities, listening to music, reading, and resting, as well as eating well, given the workload they face^{16,35,39}.

The less support there is from colleagues, the more coping strategies are used by nursing staff, with a negative influence on quality of life. In this study, there was a significant negative but weak correlation between the score on the "Social support" dimension of the DCS and that on the "Avoidance" dimension of the Coping scale. Avoidance strategies were observed in the studies as negative behaviours^{15,36}. Examples of these avoidance strategies are described in a study conducted in Alabama (USA) as refusing to work overtime to avoid exposure to the virus, avoiding news about the pandemic and contact with people in general¹⁵.

It was found that the greater the psychological demand, the worse the quality of life at work, and this was the strongest correlation with the self-assessment of QWL. Studies have pointed in this direction, in which nursing professionals with high occupational stress were five times more likely to have low QWL³³ or inversely because when they experience less stress, nurses have a better quality of life⁴⁰. In this study, control over work appears to be positively related to better QWL. On the other hand, professionals with greater use of avoidance strategies also had less social support and consequently a lower quality of life at work.

The use of coping strategies has a significant impact on both personal and organizational quality of life at work. It can be inferred that the perception of QWL and the adoption of coping strategies influence each other. It should also be borne in mind that stress factors at work caused by the pandemic, such as the fear of contracting COVID-19 and passing it on to loved ones, social isolation, work overload and new information, working in the COVID-ICU, the fact that the hospitals in the study were private, favored turnover and the employment of professionals with little experience, may have contributed to and aggravated the worsening in the quality of life of nursing professionals.

The limitations of this study refer to the cross-sectional design, which does not allow conclusions to be drawn about the causality of the associations and may show reverse

causality. Self-selection bias or healthy worker bias, in which individuals with greater exposure to risk factors are more likely to take part in the study, or non-respondent bias, in which the individuals most affected by working conditions and stress due to the pandemic are those who participated the least in the study. Another limitation of the study was the fact that the data was collected virtually, excluding those who for some reason did not have digital access. In addition, the study may present possible confounding factors, so the association found may not be present due to different causes that may influence the outcome, that is, the improvement or worsening of the quality of life of nursing professionals, such as low-income, having children, marital status, physical activity, among other variables, influencing the results of the study.

Conclusion

The findings of this study allowed the correlation between the three scales, occupational stress, coping and quality of life at work, showing that the lower the social support, the greater the use of avoidance strategies and consequently the decline in quality of life at work. They also allowed us to identify the coping strategies used by nursing staff and their quality of life at work in the face of occupational stress during the COVID-19 pandemic.

The results show the need for strategies on the part of health institution managers to improve the quality of life of nursing workers, as well as innovative measures to reduce stress in the workplace through strengthening and social support, especially in times of crisis, such as that experienced by the COVID-19 pandemic.

It is worth noting that the results of this study contribute to the advancement of scientific knowledge in the areas of occupational health and nursing and provide managers and workers with the opportunity to identify the stressors experienced at work, whether they are related to autonomy and/or conflicts of interest, to prevent injuries resulting from occupational stress.

More studies are needed in different regions to explain the impact caused by the COVID-19 pandemic and provide viable solutions for coping strategies for quality of life at work and occupational stress during stressful situations, not just restricted to pandemic cases, but as a guide to the difficulties experienced at the heart of the profession.

ACKNOWLEDGEMENTS

We would like to thank the nurses who anonymously contributed to this research, as well as the postgraduate program in Nursing at the Integrated Health Institute of the Federal University of Mato Grosso do Sul.

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