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COVID-19: Impact on Mental Health of Nursing Workers

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Abstract

The prolonged pandemic context by the new Coronavirus aggravated the physical and emotional strain of healthcare workers, negatively impacting mental health. The objectives of this study were to verify the prevalence of Mild Depression Disorder (MDD) and Mild Anxiety Disorder (MAD) and their associated factors. A cross-sectional study was conducted with nurses and nursing assistants from a private hospital in the city of Sao Paulo, Brazil. The sample consisted of 184 nursing workers, who answered a form using Google Forms®, released by the social media group (WhatsApp®), restricted to employees and managers of the sectors. Demographic, occupational, clinical data, and indicators of MDD and MAD were obtained through the Hospital Anxiety and Depression Scale. Descriptive statistics and association tests between independent and dependent variables were used. There was a predominance of women (88%), in the role of nurse technicians and/or assistants (63.6%), and those who worked in specific units of patients with COVID-19 (58.7%). The prevalence of MDD was 43.5% (95% CI: 36.4% - 50.7%) and MAD was 46.2% (95% CI: 39.1% – 53.4%). There was a statistically significant association between MAD, age between 25 and 35 years (p=0.01) and hospital unit not specific for COVID-19 (p=0.04). The prevalence of mild depression and anxiety disorders was considered high. Mild anxiety disorder had a higher prevalence among younger workers and those working in units not specific to COVID-19.

Keywords: COVID-19 Pandemic. Health surveillance of workers. Anxiety disorders. Depressive disorder. Healthcare personnel. Nursing.

INTRODUCTION

The pandemic caused by the new coronavirus (SARS-CoV-2) has brought new challenges to occupational health. According to the World Health Organization (WHO), the occupational risks associated with COVID-19 included, in addition to the possibility of infection, skin problems and thermal stress caused by prolonged use of personal protective equipment, psychological distress, and chronic fatigue[1].

In this scenario, a significant increase in depression, anxiety, stress, and insomnia among workers working on the front line of COVID-19 was evidenced in scientific studies. A recent systematic review with meta-analysis revealed that health professionals,

REVISTA O MUNDO DA SAÚDE

DOI: 10.15343/0104-7809.202347e13182022I

regardless of age, presented higher levels of anxiety and depression, with somatic symptoms and insomnia, than professionals from other areas, particularly those who worked closer to infected patients[2].

Another systematic review conducted with publications of the most critical period of the pandemic (2019 to 2020) drew attention to the phenomenon of indirect trauma, developed by nurses working in direct care[3]. This phenomenon appears as a physiological and psychological response to major disasters and was related to symptoms of fatigue, loss of appetite, irritability, inattention, dizziness, and sleeping disorders[4].

In Brazil, the absence of conduct coordinated by the federal government to cope with the pandemic led the country to reach the second position in the number of deaths from the disease[5]. The real impact of these adverse conditions on workers' mental health is still little known. A study conducted with almost 1,000 health workers from various regions of Brazil showed that more than 36% had indicators of psychological alterations (depression, anxiety, insomnia), especially among nursing workers[6]. Another study comparing indicators of mental health disorders among health workers between Brazil, Canada, the United States, and Italy revealed that the severity of the problems was higher in Brazil[7].

It is noteworthy that the health workers participating in the mentioned studies worked in public health institutions. Studies on the impact of the COVID-19 pandemic on workers enrolled in supplementary healthcare network services were not found in scientific literature databases. Knowing the effects on workers' health in this context may be timely due to the expected differences in relation to access to resources and supplies, that is, greater availability of personal protective equipment and the ability to quickly reorganize care required by the pandemic, as in the case of immediate structuring of protocols to determine the flow of safer care.

Considering the above, the question presented is: what is the psychological impact of coping with the COVID-19 pandemic on nursing workers in a private healthcare center? The objectives of the study were: (a) to identify the prevalence of Mild Depression Disorder (MDD) and Mild Anxiety Disorder (MAD) among nursing workers in a private hospital and (b) to verify an association between these psychological disorders and demographic, clinical, and occupational data.

MATERIALS AND METHODS

A cross-sectional study was conducted in the inpatient units of a private hospital, between February and August 2021. It is a large general private hospital, which is a reference in high complexity care in the State of Sao Paulo. The study complied with the principles and guidelines of CNS Resolution 466/12 and was approved by the Research Ethics Committee of the institution itself on December 21, 2020, under report number CAEE 39166520.9.0000.5455 and opinion number 4.480.015.

In the home institution, the hospital's care configuration is separated into Critical Ward (CW), which includes intensive care units; Emergency Ward (EW), which includes Emergency Room and Emergency Care; Operating Room (OR), which includes Surgical Center, Anesthetic Recovery, Material Center; and Non-Critical Ward (NCW), formed by the Inpatient Units (IU).

Since the beginning of the pandemic of the new Coronavirus in the country, the hospital has established clinical and managerial protocols to adequately address this problem, to ensure the safety of patients and

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healthcare workers. Thus, it was determined that patients with suspected or confirmed diagnosis of COVID-19 should be hospitalized in a ward separate from the others and have a fixed multidisciplinary team for care. In addition, individual and differentiated circulation flows were created between wards with patients with COVID-19 and wards without this patient profile.

The study sample was composed based upon convenience of the involvement of 184 (44.4%) nurses and technicians working in the NCW, from among 414 nursing employees. This sample included two distinct groups of workers, those who worked in a specific unit of COVID and those who did not. The eligibility criteria were those functioning as a nursing professional in NCW hospitalization units for a period of 6 months or more. Those who were on vacation or on sick leave were excluded from the study.

Workers received an invitation per social media group (WhatsApp®), restricted to employees and managers of the sectors, along with an access link to the Informed Consent Form that, at the end of the text, contained an icon to accept participation or not. By accepting the participation, access to a Google Forms® form was opened. This form was properly structured to guide participation in the research, starting with clarification text and then the questions to be answered in a multiple-choice format.

Data were collected between March and June 2021. Anonymity and confidentiality of the answers were guaranteed, even considering the use of a digital platform for data collection, as these were analyzed by an independent researcher, without knowledge and access to identification of the participants' e-mail.

The form consisted of: (a) demographic, occupational and clinical data; (b) Hospital Anxiety and Depression Scale. The first included: sex; age; marital status; professional category (nursing assistant, nursing technician, nurse; reference nurse); working time in the hospital; work day (36h, 40h, or more than 40hs); work unit (specific care or not for COVID-19); chronic disease (diabetes, hypertension, cancer, respiratory problems, another); confirmed diagnosis of COVID-19; COVID-19 diagnosis time; other sources of contact with the disease (contact with a patient/family member with suspicion or with a confirmed diagnosis of COVID-19); and clinical manifestations associated with COVID-19 (fever, general malaise, muscle pain, extreme tiredness, shortness of breath, cough, sore throat; nausea, diarrhea; headache, loss of smell and taste, dizziness or vertigo, tingling, sleep disorder).

The Hospital Anxiety and Depression Scale (HADS), which has been translated and validated for the Portuguese since 2015, is composed of 14 items, with two subscales: HADS-A for anxiety and HADS-D for depression. HADS-A contemplates characteristic items of anxiety, such as “I feel tense and contracted”, “I'm full of worries”; while HADS-D contains items about depression, such as, “I'm slow to think and do things”, “I've lost interest in taking care of my appearance.” In both, response options vary between absent (0) and very frequent (3). The overall score on each subscale ranges from 0 to 21. To characterize mild anxiety (MAD) and mild depression (MDD) disorders, the criterion for obtaining ≥7 points was adopted in each of the subscales[8].

The data were statistically analyzed using the Social Package for Social Science (SPSS, version 22.0) software. The significance level of the tests was 5%. Descriptive statistics were used to characterize the personal, clinical, and professional profiles, as well as the prevalence of MAD and MDD, with the respective confidence intervals (95% CI). To verify the association between the dependent (MAD and MDD) and independent variables (demographic, occupational, and clinical data), Pearson's Chi-square test was used,

REVISTA O MUNDO DA SAÚDE

DOI: 10.15343/0104-7809.202347e13182022I

observing the values of Cramer's V and Phi to identify the magnitude of the association.

For the purpose of comparing the frequency of MAD and MDD between the groups of workers of the different units (COVID specific and not COVID specific) the estimated power of the sample considered was 61.2%. In a comparative study, the power of the sample refers to the number of cases surveyed necessary to avoid the occurrence of a type II 38,8%[9]. To achieve a power of 80%, which is recommended for generalization the results for the population of workers as a whole it would take about 190 workers in each group, a number higher than that obtained in the sample by support.

RESULTS

Table 1 presents the demographic and occupational data of the participants. Of the total sample, 108 (58.7%) workers were working in specific wards for COVID-19 and 76 (41.3%) in non-COVID-19 wards. The sample consisted predominantly of women (n=162.88%), aged between 36 and 50 years (n=111; 60.3%), legally married or in a stable union (n= 111, 63.6%). Most participants performed the function of nurse technicians and/or assistants (n=117, 63.6%), with more than 10 years of professional experience (n=124, 67.4%), with more than 5 years of experience in the hospital (n=102, 55.4%), with ≥ 40h-work week (n=112; 60.9%), and who worked COVID-19 patients (n=108; 58.7%).

Table 2 presents the participants' clinical data. It was identified that 138 (75%) reported not having chronic diseases and 91 (50%) had a positive diagnosis of COVID-19, the majority between March and July 2020 (n=56, 61.6%). The most reported symptoms were headache (n=74, 40.2%), malaise (n=66, 35.9%), loss of taste (n=66, 35.9%), and muscle pain (n=65, 35.3%). Previous contacts with infected family and friends were frequent for 113 (61.4%) of the participants and 182 (98.2%) also reported contact with patients.

The prevalence of mild anxiety disorder (MAD) was 46.2% (95% CI: 39.1% - 53.4%) and depression disorder was 43.5% (95% CI: 36.4% - 50.7%) (Table 2).

There was a statistically significant association between MAD, age between 25 and 35 years (p=0.01) and work unit, specifically among those who worked in care units not specific for COVID-19 (p=0.04) (Table 3). However, the magnitude of this association was weak (Cramer V =23.5% and Phi= -15.3%, respectively)

Table 4 shows that there was no statistically significant association between MDD and the other study variables, including whether or not they were working in exclusive units for COVID-19.

REVISTA O MUNDO DA SAÚDE

DOI: 10.15343/0104-7809.202347e13182022I

Table 1 - Demographic and occupational data of nursing workers, private hospital, Sao Paulo (SP), 2021.

Demographic and occupational data	N= 184
Ward - n (%)	
Specific for COVID-19	108 (58.7)
Not for COVID-19	76 (41.3)
Sex - n (%)	
Male	22 (12.0)
Female	162 (88.0)
Age - n (%)	
25 to 35 years	59 (32.1)
36 to 50 years	111 (60.3)
51 years or older	14 (7.6)
Marital status - n (%)	
Single	46 (25.0)
Legally married/stable marriage	117 (63.6)
Divorced/Separated/Widowed	21 (11.4)
Professional category - n (%)	
Nurse/Nurse Reference	67 (36.4)
Nursing Technician/Assistant	117 (63.6)
Professional experience- n (%)	
≤ 5 years	13 (7.1)
> 5 years and ≤ 10 years	47 (25.5)
> 10 years and ≤ 15 years	58 (31.5)
> 15 years old	66 (35.9)
Experience in the hospital- n (%)	
≤ 2 years	29 (15.8)
> 2 years and ≤ 5 years	53 (28.8)
> 5 years and ≤ 10 years	60 (32.6)
> 10 years old	42 (22.8)
Weekly working hours - n (%)	
36h	72 (39.1)
40h	62 (33.7)
> 40h	50 (27.2)

REVISTA O MUNDO DA SAÚDE

DOI: 10.15343/0104-7809.202347e13182022I

Table 2 - Clinical data and prevalence of MAD and MDD among nursing professionals, private hospital, Sao Paulo (SP), 2021.

Clinical data		n (%)
Chronic Noncommunicable Disease (CNCD)		
No CNCD		138 (75.0)
Hypertension / Diabetes Mellitus/ Respiratory Diseases		18 (9.8)
Other		28 (15.2)
COVID-19 Diagnosis		
Positive		91 (49.5)
Diagnostic Time COVID-19		
March - July 2020		56 (61.6)
August - Dec 2020		19 (20.9)
January - March 2021		16 (17.5)
Sources of contact with COVID-19		
Patients		182 (98.2)
Family		113 (61.4)
Friends		113 (61.4)
Clinical manifestations associated with COVID-19		
Headache		74 (40.2)
Malaise		66 (35.9)
Loss of taste		66 (35.9)
Muscle pain		65 (35.3)
Loss of smell		64 (34.8)
Tiredness		57 (31.0)
Cough		44 (23.9)
Sore throat		38 (20.7)
Fever		34 (18.5)
Shortness of breath		32 (17.4)
Diarrhea		32 (17.4)
Dizziness		25 (14.1)
Sleep disorders		21 (11.4)
Nausea		19 (10.3)
Tingling		12 (6.5)
Psychological disorders	**Prevalence**	**95% CI**
MAD Presence	46.2%	39.1% – 53.4%
MDD Presence	43.5%	36.4% - 50.7%

REVISTA O MUNDO DA SAÚDE

DOI: 10.15343/0104-7809.202347e13182022I

Table 3 - Association between demographics, occupation, clinical data, and presence of MAD, private hospital, Sao Paulo (SP), 2021.

Variables	Yes n (%)	No n (%)	P-value
MAD Presence	85 (46.2)	99 (53.8)	0.30
Sex			
Male	10 (45.5)	12 (54.5)	0.94
Female	75 (46.3)	87 (53.7)	
Age			
25 to 35 years	37 (62.7)	22 (37.3)	0.01
36 to 50 years	44 (39.6)	67 (60.4)	
51 years or older	4 (28.6)	10 (71.4)	
Marital status			
Single	23 (50.0)	23 (50.0)	0.39
Legally married/stable marriage	54 (46.2)	63 (53.8)	
Divorced/Separated/Widowed	8 (38.1)	13 (61.9)	
Professional Category			
Nurse/Nurse Reference	37 (55.2)	30 (44.8)	0.06
Nursing Technician/Assistant	48 (41.0)	69 (59.0)	
Professional experience			
≤ 5 years	6 (46.2)	7 (53.8)	0.66
> 5 years and ≤ 10 years	22 (46.8)	25 (53.2)	
> 10 years and ≤ 15 years	29 (50.0)	29 (50.0)	
> 15 years old	28 (42.4)	38 (57.6)	
Experience at this hospital			
≤ 2 years	16 (55.2)	13 (44.8)	0.30
> 2 years and ≤ 5 years	25 (47.2)	28 (52.8)	
> 5 years and ≤ 10 years	26 (43.3)	34 (56.7)	
> 10 years old	18 (42.9)	24 (57.1)	
Work Week			
36h	35 (48.6)	37 (51.4)	0.48
40h	29 (46.8)	33 (53.2)	
> 40h	21 (42.0)	29 (58.0)	
Work Ward			
Specific for COVID-19	43 (39.8)	65 (60.2)	0.30
Not specific for COVID-19	42 (55.3)	34 (44.7)	
Chronic Noncommunicable Disease (CNCD)			
No CNCD	60 (43.5)	78 (56.5)	0.17
Hypertension/ Diabetes Mellitus/ Respiratory Diseases	9 (50.0)	9 (50.0)	
Other	16 (57.1)	12 (42.9)	
Diagnosis of COVID-19			
Yes	44 (49.4)	45 (50.6)	0.39
No	41 (43.2)	54 (56.8)	

REVISTA O MUNDO DA SAÚDE

DOI: 10.15343/0104-7809.202347e13182022I

Table 4 - Association between demographic, occupational, clinical data, and presence of MDD, private hospital, Sao Paulo (SP), 2021.

Variables	Yes n (%)	No n (%)	P-value
MDD Presence	80 (43.5)	104 (56.5)	0.08
Sex			
Male	8 (36.4)	14 (63.6)	0.47
Female	72 (44.4)	90 (55.6)	
Age			
25 to 35 years	25 (42.4)	34 (57.5)	
36 to 50 years	50 (45.0)	61 (55.0)	0.91
51 years or older	5 (35.7)	9 (64.3)	
Marital status			
Single	19 (41.3)	27 (58.7)	
Legally married/ stable marriage	52 (44.4)	65 (55.6)	0.83
Divorced/Separated/Widowed	9 (42.9)	12 (57.1)	
Professional Category			
Nurse/Nurse Reference	32 (47.8)	35 (52.2)	0.38
Nursing Technician/Assistant	48 (41.0)	69 (59.0)	
Professional experience			
≤ 5 years	4 (30.8)	9 (69.2)	
> 5 years and ≤ 10 years	20 (42.6)	27 (57.4)	0.53
> 10 years and ≤ 15 years	27 (46.6)	31 (53.4)	
> 15 years old	29 (43.9)	37 (53.1)	
Experience at this hospital			
≤ 2 years	11 (37.9)	18 (62.1)	
> 2 years and ≤ 5 years	22 (41.5)	31 (58.5)	0.66
> 5 years and ≤ 10 years	30 (50.0)	30 (50.0)	
> 10 years old	17 (40.5)	25 (59.5)	
Work Week			
36h	34 (47.2)	38 (52.8)	
40h	25 (40.3)	37 (59.7)	0.53
> 40h	21 (42.0)	29 (58.0)	
Work Ward			
Specific for COVID-19	43 (39.8)	65 (60.2)	0.23
Not specific for COVID-19	37 (48.7)	39 (51.3)	
Chronic Noncommunicable Disease (CNCD)			
No CNCD	56 (40.6)	82 (59.4)	
Hypertension/ Diabetes Mellitus/ Respiratory Diseases	10 (55.6)	8 (44.4)	0.24
Other	14 (50.0)	14 (50.0)	
Diagnosis COVID-19			
Yes	42 (47.2)	47 (52.8)	0.33
No	38 (40.0)	57 (0.60)	

Revista O Mundo da Saúde

DOI: 10.15343/0104-7809.202347e13182022I

DISCUSSION

The sample obtained has sociodemographic characteristics similar to the profile of Brazilian healthcare workers. According to the report Photography of Nursing in Brazil, a partnership of the Brazilian Nursing Association, Federal Nursing Council, Ministry of Health, among other institutions, pointed out that, in 2018, nursing workers totaled more than two million people (70% of healthcare workers); predominantly female, mid-level (nurse technicians and assistants), and aged between 35 and 54 years[10]. The predominance of women among nursing workers can be historically explained and extends to several countries in the Region of the Americas[11].

It is also worth mentioning that the participants were predominantly workers with extensive professional experience (10 years), well acquainted with the organizational context (5 years at the institution), and who worked up to 40 hours per week, distributed almost equivalently among specific units for the care of COVID-19 patients and non-COVID-19 units.

As for the clinical data, the majority revealed no CNCDs, but almost half had contracted COVID-19, predominantly in 2020, whose most frequent symptoms were headache, malaise, loss of taste, loss of smell, and muscle pain. Studies that sought to identify the clinical and epidemiological profile of healthcare professionals who acquired COVID-19 highlighted that medical and nursing teams as most affected, mainly contaminated in the hospital environment, presenting fever, cough, fatigue, myalgia, and migraine as their main symptoms[12-13].

The study also revealed that about 4 out of 10 nursing workers had MAD and/or MDD, which characterizes a high prevalence of these disorders, especially when compared to the recent systematic review with meta-analysis. Conducted with 12 studies involving more than 33,000 participants, this review identified the aggregate prevalence of 23.2% with anxiety and 22.8% with depression[14].

Some considerations can be made to explain these indicators of anxiety and depression. The first is that it is not possible to exclude the possibility that aspects related to the organizational context itself, such as work overload or dissatisfaction with existing work, have contributed to the high perception of anxiety and depression. These aspects represent characteristics of nursing work in Brazil[15-16]. Even in private institutions, workers have a weekly workload equal to or greater than 40 hours, often maintaining two jobs, a variable not explored in the present investigation. Long working hours and high demands for care, consequent to pandemic care, aggravated by organizational instability for the clear and optimized conduct of measures and resources, and the role of nurses in decision-making for institutional restructuring, have already been associated with symptoms of stress, anxiety, and depression[16-17].

Another aspect to be considered is the troubled condition of political and governmental strategy of the pandemic within the national territory that, in a way, created an unstable social climate, permeated by Fake News and contradictory orientations between the state and federal bodies. This context generated, within the institutions providing healthcare services, the need for adopting measures without clear regimental standards, in addition to an exhaustive work with their users, with constant need to educate others to adopt protective behaviors[18-20].

The presence of mental disorders among frontline healthcare workers has been identified by several studies throughout the COVID-19 pandemic, especially among nursing professionsals[14]. In Brazil, a large study conducted with 916 diverse health workers

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(physicians, nurses, physiotherapists, among others) identified the presence of indicators of mental health problems in more than 36%. These rates were higher in the specific group of nursing professionals (more than 50% for anxiety and more than 45% for depression)[21]. The authors suggest that gender differences in the perception of their own emotions, especially women who are more sensitive and attentive, may explain the higher rates among nursing workers.

Evidence indicates that the pandemic imposed greater demands on the female worker, since women had to reconcile the care of children and/or older people with paid work in their own residence[14,17,22]. Greater vulnerability of women to psychological disorders has been pointed out in some studies[23-24]. However, in the present investigation, although women are predominant in the sample, no higher prevalence of disorders was observed in this group when compared to that of men, since there was no association between these variables.

The association of MAD with younger age suggests that older and consequently more experienced individuals, develop psychological strategies to deal with adversities at work, making age a protective factor of occupational stressors. Being older and having greater professional experience was associated as a protective factor against psychological disorders resulting from the pandemic in another study[21].

Surprisingly, MAD was also associated with the fact that the professional did not work in specific COVID-19 wards. Given the high transmissibility capacity of the new Coronavirus, healthcare services had to restructure the dynamics of care. Thus, individuals with suspected or diagnosed symptoms of COVID-19 were allocated to exclusive environments, provided with supplies and material resources in order to ensure the safety of patients and healthcare workers. Therefore, the unexpected association may indicate that nursing professionals working in the COVID-19 wards felt safer than the other.

This perception may have been reinforced by the fact that almost half of the workers had already become infected and, in the perspective of having survived the infection, were more confident, both because of the possibility of acquired and/or enhanced immunity with vaccination, as well as for their ability to have survived[25-26].

The precariousness of the healthcare sector within the public sector, aggravated by the pandemic, is pointed out as a factor that generates psychophysical suffering of workers, resulting in absences and illnesses[27]. Lack of access to personal protective equipment (PPE), up-to-date and consistent information about the disease, and control of patient flow are pointed out as stressing factors of frontline work[25].

However, these adverse working conditions were not present in the study hospital, which prioritized the implementation of new care protocols and the availability of PPEs to ensure the safety of health workers. For this reason, it is believed that such measures favored the perception of a safe environment. The preparation of healthcare professionals for action and safety in the institutional protocol together with trust in official protocols were identified as factors that influence self-confidence to cope with the pandemic among healthcare professionals[28].

As outlined globally, the challenges for the COVID-19 pandemic problem have been enormous, particularly for healthcare workers working in direct care. In Brazil, the significant number of contaminations and deaths has resulted in severe and prolonged healthcare crisis, imposing increasing demands on the physical and mental health of these workers, especially with the advent of variants with greater contamination capacity, such as the Omicron variant. Despite the decrease in severe cases, the Federal Nursing Council of Brazil warned of the risk of absences due to

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COVID-19 in up to 20% of nursing professionals, by constant contact with a large number of contaminated people[29].

Thus, a condition of intense lability in the effective control of new cases and scientific investigations are necessary to prove the impact of the pandemic on the mental health of nursing workers in the public or supplementary healthcare system. In Brazil to date, there is no other investigation that has evidenced the vulnerability of nursing workers to mild anxiety and depression disorders, despite the adequate infrastructure conditions and well-designed policies.

Despite the findings consistent with other studies, there are several limitations in the present study that should be considered. The first is related to the cross-sectional drawing that expresses a point-in-time portrait of reality and depends on the retrospective memory of information. This limitation may have been further affected by the low participation of workers for the study, which does not allow the results to be generalized.

The absence of association between MDD and wards may be a consequence of small sample size. As evidenced by the calculation of the sampling power, the probability of the null hypothesis associated with type II error, that is, of non-association between these variables, having been accepted incorrectly is 40%.

Selection bias may have been generated by the dissemination of the research only in an internal social network and by digital data collection, hindering the participation of healthcare workers unfamiliar with these resources. Finally, the absence of statistical analysis weighted by gender and workload, possible confounding variables, does not make clear the role of these variables in the prevalence of the disorders analyzed.

CONCLUSION

The prevalence of MDD and MAD were considered high when compared to other studies. Anxiety disorder was more prevalent among younger workers and those working in hospitalization units not specific for COVID-19 care.

Among the implications for practice, it is emphasized that despite the favorable working conditions for the control of the pandemic in the hospital studied, which contrast with those of public health institutions in Brazil, the high results of MAD and/or MDD in nursing professionals deserve a more comprehensive investigation of multidimensional intervening factors, as well as indicate the risks that any future pandemics may cause, contributing to appropriate management. As an immediate impact, it is important to consider young adult workers as deserving of institutional policies to track mental health, adopting programs that protect this population of nursing workers.

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Revista O Mundo da Saúde

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