


Prevalence of mental and behavioral disorders among nursing workers and associated factors

Prevalência e fatores associados aos transtornos mentais e comportamentais entre trabalhadoras/es de enfermagem

Prevalencia y factores asociados a trastornos mentales y de conducta entre trabajadores de enfermería

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ABSTRACT

Objective: to identify the prevalence of mental and behavioral disorders among nursing workers in the context of COVID-19 and its associated factors.

Method: cross-sectional web survey carried out between October 2021 and January 2022, with 1.073 nursing professionals. An instrument with sociodemographic and occupational variables, and a self-assessment of mental and behavioral disorders was applied to collect data. A descriptive analysis with absolute and relative frequencies and univariate and multivariate inferential analyses using Poisson Regression were conducted.

Results: mental and behavioral disorders were reported by 50.8% of participants, showing a significant association with the female sex, more than 10 years in the profession, more than two employment contracts, and poor self-rated health.

Conclusion: There was a high prevalence of self-reported mental and behavioral disorders in the sample. The length of time working in the profession and the number of employment relationships were variables strongly associated with the outcome. Studies like these are essential to assist in the development of effective strategies for reducing risk factors to workers' health, especially those of occupational origin that can be modified.

Descriptors: Mental health. Risk factors. Surveillance of the Workers Health. Nurse practitioners. Coronavirus infections. Epidemiology.

RESUMO

Objetivo: identificar a prevalência e os fatores associados aos transtornos mentais e comportamentais entre trabalhadoras/es de enfermagem no contexto da COVID-19.

Método: estudo de corte transversal do tipo *web survey*, realizado entre outubro de 2021 e janeiro de 2022, com 1.073 profissionais de enfermagem. Aplicou-se um instrumento com variáveis sociodemográficas, ocupacionais e autoavaliação de transtornos mentais e comportamentais para a coleta de dados. A análise foi realizada de forma descritiva, com medidas de frequência absoluta e relativa, inferencial univariada e múltipla com Regressão de Poisson.

Resultados: os transtornos mentais e comportamentais, referidos por 50,8% dos participantes, apresentaram associação significativa com sexo feminino, tempo na profissão maior que 10 anos, mais que dois vínculos trabalhistas e com autoavaliação da saúde como ruim.

Conclusão: Verificou-se alta prevalência de transtornos mentais e comportamentais autorreferidos na amostra. O tempo de atuação na profissão e o número de vínculos empregatícios foram variáveis fortemente associadas ao desfecho. Estudos desta natureza são essenciais para auxiliar no desenvolvimento de estratégias eficazes para a redução dos fatores de risco à saúde do trabalhador, sobretudo aqueles de origem ocupacional passíveis de modificação.

Descritores: Saúde mental. Fatores de risco. Saúde do trabalhador. Profissionais de enfermagem. Infecções por coronavírus. Epidemiologia.

RESUMEN

Objetivo: identificar la prevalencia y los factores asociados a los trastornos mentales y el comportamiento de trabajadores de enfermería en el contexto de la COVID-19.

Método: encuesta web transversal, realizada entre octubre de 2021 y enero de 2022, con 1.073 profesionales de enfermería. Se aplicó un instrumento con variables sociodemográficas, ocupacionales y de autoevaluación de trastornos mentales y de conducta. Los datos fueron recolectados mediante una encuesta web a través de un instrumento con variables sociodemográficas, ocupacionales y variables de trastornos mentales y de comportamiento autoinformados. El análisis se realizó de manera descriptiva con medidas de frecuencia absoluta y relativa y análisis inferencial univariado y multivariado utilizando la regresión de Poisson.

Resultados: los trastornos mentales y del comportamiento, reportados por el 50,8% de los participantes, mostraron asociación significativa con el sexo femenino, tiempo de profesión mayor que 10 años, más de dos contratos laborales, y con aquellos que calificaron su salud como mala.

Conclusión: Había una alta prevalencia de trastornos mentales y del comportamiento autoinformados en la muestra. El tiempo trabajado en la profesión y el número de relaciones laborales fueron variables fuertemente asociadas con el resultado. Estudios como estos son esenciales para ayudar en el desarrollo de estrategias efectivas para reducir los factores de riesgo para la salud de los trabajadores, especialmente los factores de origen ocupacional que pueden modificarse.

Descriptores: Salud mental. Factores de riesgo. Vigilancia de la Salud del Trabajador. Enfermeras practicantes. Infecciones por Coronavirus. Epidemiología.

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■ INTRODUCTION

Nursing workers are an active part of many health care environments, working in public, private, or philanthropic institutions where they provide essential care. In this setting, workers face situations such as pain and death every day, which can develop in several directions, affecting health care issues or individual aspects of workers' lives^(1,2)

The nursing work process is considered to be critical in any health care system in the world, and illness in these professionals can impact not only individuals or their families, but the provision of health services to the population as a whole. When these workers are trained, supported, and motivated, they can provide effective⁽³⁾ holistic care, with actions that go beyond the treatment of signs and symptoms, ensuring individualized and comprehensive care, respecting the specificities of each patient and promoting health and well-being. However, when a worker has no support or adequate working conditions, their health becomes compromised⁽⁴⁾, which has a negative impact on the quality of care.

The relationship between working conditions, worker disease, and impacts on health care, can be observed in an Australian study⁽⁵⁾, which developed an integrated model between the organizational climate, psychosocial and physical safety, and work and safety conditions. The authors discussed the influence of working conditions on the lives of workers, patient safety, and institutional costs. Following 463 health workers, including nurses, physicians, and health aides from 60 health teams in four stages, with intervals of six months between each stage, the authors identified that emotional demands were related to bullying and to the exhaustion of workers, leading to work absence, and incidents that affected the team and the patients.

Similarly to this Australian study⁽⁵⁾, working conditions and their relationship with the health of nursing workers has been widely investigated in scientific discourse. However, when the (Coronavirus Disease 2019) COVID-19 pandemic started, new elements of the health of these professionals have been the subject of closer examinations. Among them, mental health stands out as part of social responsibility and its implications for the wellbeing of these professionals. Considering this large number of health workers means to recognize the value of professional category that has been facing numerous occupational consequences that emerged from such context.

In addition to a significant increase in the demand for health services, be it in preventive capacities or in health care, during the pandemic health professionals were even more

exposed than usual to vulnerable working conditions^(6,7), be it due to the lack of Personal Protective Equipment (PPE), the emotional overload from a high number of deaths, or the lack of material resources to provide adequate care for those affected by the disease.

Moreover, the little investment in Brazilian health, working conditions below professional needs, and the insufficient number of workers⁽⁸⁾, in addition to the increased demand for care due to the pandemic, highlighted this problems, damaging both the quality of care and the health of professionals who work with it⁽⁹⁾.

Faced with an emergency health situation, studies reported on the impact it had on the occupational health of professionals on the front line, who showed mental illness⁽¹⁰⁾ as one of the main consequences of being part of such a setting. Mental disease can trigger mental states such as anguish, anxiety, panic^(6,9), and others, often ignored by professionals and with the potential to become worse over time. Furthermore, when health is compromise, absenteeism can become more common, overloading other professionals and culminating in failures in health care, as a Chinese study found⁽¹¹⁾.

The relationship between work conditions and health care failure was found in a North American study⁽²⁾ that investigated associations between the perceived health and safety climates in the workplace, analyzing 959 participants from three companies. Results showed that, the higher the level of health among workers, the higher their ability to be productive at work, with a positive impact on the quality of the care they provide.

Knowledge about the prevalence of mental and behavioral disorders (MBD) in nursing workers can foster actions or interventions to improve health care and working conditions in health, in addition to mitigating harmful effects on workers' health. Thus, this study aimed to identify the prevalence of mental and behavioral disorders in nursing workers and its associated factors, in the context of COVID-19.

Identifying the factors that influence the mental health of workers in situations of great emotional intensity, such as the pandemic, is essential to develop preventive and efficient actions for future events. The same is true for the implementation of a care plan considering the effects manifested in the post-pandemic period. A Portuguese study⁽¹¹⁾ found that health workers already show psychological and mental vulnerability, showing that the monitoring of health conditions and the development of protective measures should be a continuous preoccupation in this setting. Studies such as this one can guide the implementation of strategies to promote health and prevent health issues caused by the

exposure to risk factors, considering the mental and emotional health of these workers.

■ METHOD

Design of the study

Epidemiological, cross-sectional web survey, conducted remotely during the COVID-19 pandemic. It involved nursing professionals from the State of São Paulo (SP), between October 2021 and January 2022.

Population

Nursing professionals of all categories (Nurse, Nursing Technician, Nursing Assistant, Midwife). Currently, São Paulo has 725,120 nursing workers, including 171,366 nurses, 305,190 technicians, 240,230 assistants, and 334 midwives⁽¹²⁾.

Selection criteria and sampling

This study included all nursing professionals who worked with direct assistance to the patient during the COVID-19; aged 18 or older; with an employment contract with the health institutions, regardless of type of contract, type of service, or time working in the field; and who answered the data collection instrument in full. We excluded a worker who, despite being graduated as a nurse, worked in an institution that was not related to health care ($n=1$). The final sample included 1,073. The sample power was 94.6%. This number was calculated considering estimates about the outcome of national studies^(4,13), considering the final sample and $\alpha = 5\%$.

Data collection

The dissemination of the research and the initial invite took place through posts in social media (Facebook®, WhatsApp®, Instagram®, and email) and in groups for nursing workers. Furthermore, organs that represent the professional (Federal Council, Regional Councils, the Brazilian National Association of Nursing and its regional sections, trade unions, National Federations, among others) were asked to place the invitation and the link to the form in their institutional pages.

At the end of the questionnaire, there was a request for participants to send the link to their colleagues, in an

attempt to use the snowball technique, where participants successively recommend other participants until the sample objectives of the study are reached⁽¹⁴⁾.

Data collection took place using an electronic questionnaire made available in the platform Google Forms®, with information organized in three blocks of independent variables, and another with dependent variable. They were:

1) Sociodemographic information: sex, age group (20 – 24 years, 25 – 34 years, 35 – 44 years, 45 – 54 years, and ≥ 55 years), income from the profession of nursing (≤ 2 minimum wages, 3 to 4 minimum wages, ≥ 5 minimum wages). Income was calculated considering the minimum wage at time of data collection, which was R\$1,212.00.

2) Occupational: professional category within nursing (higher education – nurse; high school – nursing technician; elementary education – nursing assistant), time working in the profession (in years), number of current employment contracts; weekly workload in the COVID-19 care sector (in hours), weekly workload in the non-COVID-19 care sector (in hours).

3) Health state: self-reported diagnoses for “mental and behavioral disorders” (ICD-10), positive test for COVID-19 during the pandemic (yes/no), self-assessment of health status: 1) impairment, without absence from work; 2) impairment with absence from work; 3) impairment, without medical care; and 4) no change. Answers were classified into: “compromised” (1 to 3) and “not compromised” (4).

4) Dependent variable: Have you ever been diagnosed with some form of mental/psychic mental issue (BMD) (stress, anxiety, depression, mood disorders, panic disorder, bipolar disorder, manic episodes, drinking/drug use, burnout, others)? (yes/no).

Data treatment and analysis

The self-reported dependent variable was “mental and behavioral disorders” (CMD) (yes/no). The independent variables were sociodemographic, economic, and occupational data, COVID-19 infection, and self-assessment of health status.

The analysis was carried out using Microsoft Excel® and the software Stata, version 12. At first, data was categorized and 5% of the instruments filled in were checked to minimize error and ensure data reliability.

The descriptive analysis took place using qualitative and continuous variables. For qualitative variables, we used absolute and relative frequencies, which was also done for continuous variables. For the latter, we also calculated central

tendency measures (mean and median) and dispersion measures, such as standard deviation (SD) and interquartile range (IQR).

In the inferential analysis stage, at first we carried out Pearson's chi-squared, and a univariate analysis calculating the prevalence ratio (PR) to find the effect measure for association with a 95% confidence interval (95% CI) between the dependent variable (CMD) and the independent variables (sex, age group, income, professional category, working time, number of employment contracts, weekly workload in the COVID-19 sector, serology for COVID-19, and health self-assessment), considering $p < 0.05$ as significant.

After the univariate analysis between the dependent and the independent ones, an adjusted analysis was conducted using Poisson's regression. The multiple model maintained independent variables with $p < 0.2$ from the univariate analysis, considering $p < 0.05$ as significant. The multiple analysis was carried out using the hierarchical epidemiological model in three blocks: 1st block (distal to the outcome/socioeconomic) – sex, age group and income; 2nd block (intermediate to the

outcome/occupational) – professional category, time working in the profession, number of employment contracts, weekly workload in the COVID-19 care sector; 3rd block (proximal to the outcome/health status) – positive test for COVID-19 during the pandemic, self-assessment of health status.

At first, the multiple analysis included the variables from the first block; then, the first and second blocks in sequence; and finally, all three blocks of variables. Among variables associated with the outcome, we considered those that had a significant association in the adjusted model. The fitness of the final model was verified using Pearson's Goodness-of-fit test, according to the hierarchical modeling process represented in Chart 1.

Ethical aspects

This study was submitted to the Research Ethics Committee and approved under No.6,783,503 in August 17, 2021, in accordance with the Resolution 466/2012 from the National Council of Health.

Chart 1 – Multiple hierarchical model regarding the outcome and the set of independent variables analyzed. São Paulo, SP, 2022.

Block	Equation (set of variables)	Interpretation
1 st	Socioeconomic	The variables in this block fit among themselves
2 nd	Socioeconomic + occupational	The first block assisted in adjusting the second block.
3 rd	Socioeconomic + occupational + health status	The first and second blocks assisted in adjusting the third block

RESULTS

This study included 1,073 workers. Most were female (87%), aged from 35 to 41 years old (28.7%), median of 41 years (SD = ± 9.52 years; IQR = 22 to 62 years), with a salary between 3 and 4 minimum wages (39.1%), time of professional practice between 20 and 30 years (35.17%). Self-reports of diagnosed MBD were more common in the F40 to F48 group (24.1%) (Table 1).

The prevalence of MBD was 50.8% (95% CI: 47.7; 53.8), affecting more females (53.6%), and those aged 42 to 48 years, with a mean age of 41.5 years and income above five minimum wages (Table 1).

Regarding sociodemographic data, a descriptive analysis showed a prevalence of nursing technicians and assistants,

who corresponded to 62.9% of the participants. For 61.6% of the sample, time working in nursing was more than 10 years, and 75.5% of them had only one employment contract in the field. Regarding their work during COVID-19, 79.7% did work in the period, and 66.6% of participants reported having worked in specific sectors for the care of patients infected with SARS-CoV-2. 81.4% of participants informed a weekly workload of up to 44 hours. For 61.9% of respondents, the workload remained the same. For 33.2%, the weekly workload increased compared to the pre-pandemic period. Among workers who were in specific sectors to assist COVID-19 victims, 40.1% reported having worked more than 44 hours per week. For those who worked during the pandemic, but in sectors other than those for infected patients, 19.2% reported having worked more than 44 hours per week.

Table 1 – Prevalence of mental and behavioral disorders MBD of workers according to sex, age group, income, COVID-19, and health self-assessment, São Paulo, SP, 2022

Variable	MBD		
	N (%)	Yes N (%)	P-value*
Sex (n = 1,073)			< 0,001
Male	139 (13)	44 (31.6)	
Female	934 (87)	501 (53.6)	
Faixa etária (n = 1.073)			= 0.126
20 – 34 years	241 (22.5)	119 (49.4)	
35 – 41 years	306 (28.7)	164 (53.6)	
42 – 48 years	252 (23.6)	138 (54.8)	
≥ 49 years	268 (25.1)	122 (45.52)	
Ignored responses	6		
Income (n = 1,073)			= 0.934
≤ 2 minimum wages	360 (33.5)	180 (50)	
3-4 minimum wages	420 (39.1)	215 (51.1)	
≥ 5 minimum wages	293 (27.3)	150 (51.2)	
Most frequent diagnoses[†] (n = 279)			
F40 – F48 [‡]	131 (24.1)	-	
F30 – F39 [§]	62 (11.4)	-	
Z73 ^{**}	37 (6.8)	-	
F30 – 39 + F40 – 48 ^{††}	25 (4.6)	-	
F50 – F59 ^{†††}	24 (4.4)	-	

N: absolute number of MBDs reported.

‰: relative prevalence of self-reported MBD

* Pearson's chi-square test.

† MBD was not measured for this variable.

‡ F40 – F48: Neurotic disorders, "stress-related" disorders, and somatic symptom disorders.

§ F30 – F39: Mood disorders

** Z73: Problems related to the organization of the way of life

†† F30 – 39 + F40 – 48: Mood disorders + neurotic disorders, "stress-related" disorders and somatic symptom disorders.

††† F50-F59 – Behavioral syndromes associated with physiological dysfunctions and physical factors

Regarding workers who self-declared some MBD (n=545), most had worked in the field for more than 10 years (n=370 – 68%), had a single employment contract (n=408 – 74.9%), tested positive for COVID-19 (n=235

– 43.1%), and considered that their health was compromised (n=471 – 86.4%).

The study found an association between MBD, COVID-19, and poor self-rated health in the chi-square test (Table 2).

Table 2 – Prevalence of mental and behavioral disorders (MBD) and distribution of workers according to nursing profession, working time, number of employment contracts, and workload in the COVID-19 care sector, São Paulo, SP, 2022

Variable	MBD		
	N (%)	Yes N (%)	P-value*
Profession† (n = 1,055)			= 0.66
Nursing Assistant/Technician	655 (62.1)	330 (50.4)	
Nurse	400 (37.9)	207 (51.7)	
Time working in years (n = 1,073)			= 0.126
<5 years	277 (21.2)	91 (40.1)	
5 – 10 years	185 (17.2)	84 (45.4)	
> 10 years	661 (61.6)	370 (56.0)	
Number of employment contracts (n= 1,073)			= 0.073
One	810 (75.5)	408 (50.4)	
Two	144 (13.4)	66 (45.8)	
More than two	119 (11.1)	71 (59.7)	
Workload in the COVID-19 sector (n = 711)			=0.944
≤ 44 hours per week	566 (79.6)	279 (49.3)	
≥ 45 hours per week	145 (20.4)	71 (48.9)	
Workload in non-COVID-19 sector ‡ (n = 355)			=0.303
≤ 44 hours per week	307 (86.5)	161 (52.4)	
≥ 45 hours per week	48 (13.5)	29 (60.4)	
Positive for COVID-19 (n = 1,073)			< 0.05
Yes	423 (39.4)	235 (55.6)	
No	650 (60.6)	310 (47.7)	

Table 2 – Cont.

Variable	MBD		
	N (%)	Yes N (%)	P-value*
Health self-assessment (n = 1,073)			< 0.001
Compromised (bad)	760 (70.8)	471 (61.9)	
Not compromised (good)	313 (29.2)	74 (23.6)	

N: absolute number of self-reported MBDs

%: relative prevalence of self-reported MBD

* Pearson's chi-square test.

† 18 participants did not respond this variable

‡ The weekly workload variable obtained n=1,066 answers, that is, 7 participants did not answer this question.

Table 3 – Crude and adjusted analysis of mental and behavioral disorders (MBD) according to sex, age group, income, COVID-19, and health self-assessment, São Paulo, SP, 2022

Variable	PR*(95% CI)†	PR†(95% CI)‡
Sex		
Male	1 reference:	1 reference:
Female	1.69 (1.24; 2.31)§	1.7 (1.25; 2.31)§
Age group		
20 – 34 years	1 reference:	1 reference:
35 – 41 years	1.08 (0.85; 1.37)	1.06 (0.84; 1.35)
42 – 48 years	1.11 (0.86; 1.41)	1.09 (0.84; 1.39)
≥ 49 years	0.92 (0.71; 1.19)	0.9 (0.69; 1.16)
Income		
≤ 2 minimum wages	1 reference:	1 reference:
3-4 minimum wages	1.02 (0.83; 1.24)	1.03 (0.85; 1.26)
≥ 5 minimum wages	1.02 (0.82; 1.27)	1.03 (0.83; 1.29)

*PR: Crude prevalence ratio

†PR: Prevalence ratio adjusted according with Poisson regression

‡ (95% CI): 95% confidence interval

§p-value < 0.005 on Wald test

There was also a strong statistical association for females, both in the univariate analysis and in the final model with a PR of 1.7 (95% CI: 1.25; 2.31) (Table 3).

In Table 4, categories associated with MBD in the final model were more than 10 years working in the field, more than 2 employment contracts, and poor health self-evaluation.

The other independent variables lost any association with the outcome after an analysis using Poisson's regression. The final model of inferential analysis was carried out using the adjusted Poisson regression, according to Pearson's Goodness-of-fit test ($p > 0.05$).

Table 4 – Crude and adjusted analysis of the mental and behavioral disorders (MBD) considering the profession in nursing, working time, number of employment contracts, and workload in the COVID-19 sector, São Paulo, SP, 2022

Variable	PR*(95% CI)‡	PR†(95% CI)*
Profession		
Nursing, elementary/high school level	1 reference:	1 reference:
Nursing, higher education	1.03 (0.86; 1.11)	0.96 (0.86; 1.08)
Working time		
<5 years	1 reference:	1 reference:
5 – 10 years	1.13 (0.84; 1.52)	1.17 (0.86; 1.59)
> 10 years	1.39 (1.11; 1.76)[§]	1.62 (1.22; 2.15)[§]
Number of employment contracts		
One	1 reference:	1 reference:
Two	0.91 (0.7; 1.18)	0.93 (0.71; 1.21)
More than two	1.18 (0.92; 1.52)	1.62 (1.21; 2.15)[§]
COVID-19 Positive		
No	1 reference:	1 reference:
Yes	1.16 (0.98; 1.38)	1.06 (0.89; 1.27)
Health self-evaluation		
Not compromised (good)	1 reference:	1 reference:
Compromised (bad)	2.62 (2.05; 3.34)**	2.36 (1.83; 3.05)[§]

*PR: Crude prevalence ratio

†PR: Prevalence ratio adjusted according with Poisson regression

‡ (95% CI): 95% confidence interval

[§]p-value < 0.005 on Wald test

** P-value < 0.0005 in the Wald test

■ DISCUSSION

This study found a general MBD prevalence of 50.8% (95% CI: 47.7; 53.8) in a sample of nursing workers from São Paulo. The associated categories were being female, working in the field for 10 years or longer, having more than two employment contracts, and a poor self-evaluation of health.

Females were strongly associated with MBD, corroborating national and international research carried out with nursing and health professionals^(6,13). Historically, women have been visibly more exposed to poor working conditions, low salaries and earnings, in addition to a lower chance of ascending in the hierarchy of their work⁽¹⁵⁾. Additionally, in countries such as Brazil, women often have a a double or

triple work journey, when we consider both their employment and home chores. This can lead to more tension and increase MBD when compared to men, due to less time for self-care and leisure⁽¹⁶⁾.

These findings reiterate their need for care and interventions from administration. The findings that women are more exposed to psychic disease risk factors^(6,7,17), precarious working conditions, low pay⁽¹⁷⁾, and to an excessive load of domestic activities⁽¹⁸⁾, highlight the complexity of the obstacles they face in the professional environment. When feeling health, this professional can take on several simultaneous activities⁽¹⁹⁾. That, as the time passes, can contribute to their physical and mental health.

The variable age, in general, can be a determining factor in several aspects of health and disease. One of the main reasons for that is the effect of degenerative processes with advancing age. A research from Rio Grande do Sul found an association between MBD outcomes and nursing workers above 40 years old⁽⁴⁾. A national systematic review with health workers from many fields, developed by Spanish researches/professors, associated MBD with younger workers, under 40 years of age^(6,15). This study found no association between MBD and age, showing that this variable needs to be studied further, considering physiological aspects, adaptability, work context, and other factors.

Having worked in the field for longer was also associated with the outcome of this study, as opposed to the findings of researchers from Rio Grande do Sul⁽⁴⁾. However, studies developed in Ireland, Czech Republic, and Slovakia^(20,21) show evidence of a positive correlation between emotional exhaustion and the time health professionals have worked in the field.

There are several dimensions that involve professional nursing activities (physical, emotional, and social) and continuous expose individuals to stressful and exhausting situations in their clinical practice. These factors can increase exhaustion and suffering, increasing the likelihood of psychic and/or organic diseases⁽²²⁾, both in the short and long term. A Spanish study⁽²³⁾ carried out with 1,521 nurses supports these findings, as it evaluated employment variables as associated with quality of life in regard to health, showing the prevalence of stress associated with work and its negative impact on workers' health.

A systematic review carried out in Spain to analyze the impact of health worker mental health during or after health emergencies caused by viral epidemic outbreaks⁽⁶⁾ found that most reported clinically significant mental health symptoms, especially post-traumatic stress disorder, anxiety, depression, acute stress, and burnout. MBD were more common in nursing workers from high-risk sectors, that is, those in direct

contact with infected patients, less professional experience, or little training.

Still in the context of health, a research from Iran, aiming to investigate the exhaustion and mental health of workers on the front lines of patient care during the COVID-19 showed that prolonged exposure to stressors and the reduction in professional self-confidence in the face of morbidity and mortality are risk factors for the disease⁽²⁴⁾, a situation similar to that experienced by nursing workers in the pandemic context. These data require special attention from occupational health services and health managers, since this relationship can impact on the resilience and the ability of the worker to deal with work demands.

Another variable which is strongly associated to the MBD in this study was the existence of more than two employment contracts. A revision study⁽¹⁷⁾ has shown that a double working journey (two employment contracts) has been related to anxiety and depression disorders in 70% of publications analyzed, with the overload of tasks being one of the main factors that contributes for the physical and mental exhaustion of participants.

Nursing work is often carried out in unhealthy and stressful environments, and professionals are subjected to work overload and have to perform excessive tasks. That, added to personal needs, leads to negligence in self-care, impacts the adherence of preventive and health-promoting behaviors, and increases the vulnerability to physical and psychological health problems⁽¹³⁾.

Moreover, another variable that has a negative influence on health self-care is the fact that working in nursing is carried out in shifts. This form of organization can lead to damage to the health and quality of life of the workers, since it interferes with their biological rhythm, changes their schedules and habits, and affects their possibility of socializing with friends and family⁽²⁵⁾, which is essential for body homeostasis. These conditions are especially worrisome, as they can interfere with health conditions, as evidenced by the association between self-reported MBD and poor self-rated health.

A bad self-evaluation of health was significant in this study, being reported by more than 70% of participants. This confirms the results of a research with health workers in Minas Gerais, which showed the prevalence of negative self-evaluations of health, in addition to the association of this variable with age, family income, two employment contracts, morbidity diagnoses, and more⁽¹⁹⁾.

Furthermore, a research involving Brazilian health workers showed that poor health self-evaluation was common among these workers, showing that they are associated to other important elements, such as quality of life dissatisfaction, common mental disorders, and general overload, including

those caused by work⁽¹⁸⁾ According with a study carried out by health workers from Minas Gerais⁽¹⁹⁾, negative health self-evaluations are also associated with family incomes above three minimum wages, diagnoses of morbidity, aggression at work, and participation in domestic activities. This reiterates the relationship between work and life conditions and the health-disease process, showing how necessary it is to implement public policies to prevent diseases and promote the health of nursing professionals⁽¹⁸⁾.

The most common disorders self-reported in this study were anxiety disorders, obsessive-compulsive disorder, severe stress-related disorders, and somatic symptom disorders (ICD F40 – F48), followed by manic episodes, bipolar affective disorder, depressive disorders, and mood disorders (ICD F30 – F39)⁽²⁶⁾.

This result ratifies a study⁽¹⁶⁾ that evaluated the causes of nurses who resorted to social security, finding that leaves from work due to burnout syndrome, anxiety, depression, and stress were the most common. According to the authors, the illnesses were associated to the work environment (physical, emotional, and professional overload, two employment contracts, and lack of recognition and professional training), in addition to factors inherent to workers themselves (not caring or oneself and lack of time for personal life and leisure). This data corroborates the current study, showing how the lack of recognition and opportunities to grow in one's profession can be harmful to one's mental health.

Still in accordance with a systematic review⁽⁶⁾, professionals who work providing direct care to patients during viral pandemics have their mental health compromised by high levels of anxiety, post-traumatic stress disorder, and depression, during and after outbreaks. The risk of acquiring the disease has already shown itself to be a harmful factor for the mental health of nursing workers, reducing their productivity and changing their behavior⁽⁴⁾. Nevertheless, the fear of infecting relatives and, perhaps, causing their death, was the most significant for these workers⁽²⁷⁾.

The context of Brazilian nursing work is harmful to the mental health of workers, in addition to conflicts in workplaces, lack of autonomy, excessive workload, and unsatisfactory earnings⁽¹⁷⁾, inconsistent with the responsibilities assumed by these professionals. For years, these professionals have had precarious work conditions, with no adequate place to rest, for example; lack of human and material resources; and lack of recognition of these professionals on the part of society. During the COVID-19 pandemic, this situation was exacerbated. Feelings of rejection, social isolation, stigmatization, and low social support⁽⁶⁾ had a high potential for provoking mental illness and psychological suffering in nursing workers⁽²⁸⁾.

Furthermore, workers with long work journeys (above 45 hours a week), more than two employment contracts, and monthly income above 5 minimum wages, presented more MBD. However, in the present study, only the number of employment contracts showed an association with the outcome in this study. According with an integrative review⁽¹³⁾, double work journeys implies in negligence regarding one's own health. It interferes in the adoption of preventive behaviors and in the promotion of health, increasing vulnerability to factors that can decrease one's health.

Our results showed the importance of promoting a healthy workplace, where demands and situations, as delicate and psychologically exhausting as they may be, can be mitigated in order to protect professionals' health. As shown by Portuguese researchers⁽¹¹⁾, reducing the psychological and mental tension of workers can improve the quality of the care provided to the patients.

That said, occupational health programs must be implemented to evaluate and monitor the mental health conditions of workers, proposing interventions concerning psychosocial risk factors, eliminating or reducing the occupation exposure to environmental stressors, and developing workers' health care programs that involve psychotherapy and psycho-education activities, including mind-body interventions such as yoga, tai chi, pilates, and others that are effective in reducing symptoms of anxiety, exhaustion and depression. This was evidenced by a Canadian study that aimed to identify effective interventions to support the mental health and well-being of health professionals during and after a public health emergency⁽²⁹⁾.

Furthermore, public policies must ensure decent work conditions, which ensure good personnel sizing, breaks during the workday, and provide adequate places for rest and to store one's belongings, while providing workers with decent starting salaries, in addition to other rights which have been requested for decades, and could reduce their exposure to risk factors without decreasing their quality of life.

When there are investments to promote a positive environment, autonomy, and the personal and professional development of workers, they stay in their work for longer, as a study from the North or Norway showed⁽³⁰⁾. This, in turn, leads to less interference in work process, as there is less worker turnover.

It must be noted that some biases may have influenced the results of this study. Studies such as this one, based on evidence self-reported by participants, can under- or over-estimate MBD diagnoses, since the recognition of signs and symptoms, as well as their association with mental health, are based on the subjective view of the worker. Additionally, recall bias may have influenced the intensity and remembrance of

the symptoms reported. Moreover, cross-sectional studies do not allow establishing cause-and-effect relationships, and a convenience sample of approximately 0.001% of nursing workers in the state may not be representative of the category as a whole.

On the other hand, the sample size increased the power/robustness of the statistical analysis. The alternated, multidimensional effect topics, aided by adding a “blinding” effect at the time of interviews, which is another advantage of this study.

■ CONCLUSION

This study showed a high prevalence of self-reported MBDs, especially as associated with females — as consistently reported in literature —, time working in the field, number of employment contracts, and a poor self-evaluation of health.

Epidemiological studies to evaluate MBD in nursing workers during emergency health situations is extremely important, and the COVID-19 pandemic is no exception. This is necessary to support actions to reduce impact, prevent health issues, promote health, and improve the quality of life of workers.

Our results show that several strategies and actions must be carried out to improve the wellbeing and mental health of nursing workers. This may include investments in continued education and specialized training, psychological support and support groups, mind-body activities such as yoga and tai chi, reasonable work shifts, and adequate rest periods. Furthermore, regular evaluations of the mental health of workers, adequate medical and psychological counseling, and the implementation of information systems that allow avoiding unnecessary contact with infected people during the pandemic are strategies that should be considered. Adopting clear protocols for assistance during health emergencies, creating healthy work environments that encourage respect, communication, and self care, offering training that can help managing challenging situations at work, and encouraging self care through financial management courses and benefit programs can also benefit the life and health of these workers.

■ REFERENCES

1. Kang L, Ma S, Chen M, Yang J, Wang Y, Li R, et al. Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: a cross-sectional study. *Brain Behav Immun*. 2020;1-7. <https://doi.org/10.1016/j.bbi.2020.03.028>.
2. Katz AS, Pronk NP, McLellan D, Dennerlein J, Katz JN. Perceived workplace health and safety climates: associations with worker outcomes and productivity. *Am J Prev Med*. 2019;57(4):487-94. <https://doi.org/10.1016/j.amepre.2019.05.013>
3. World Health Organization (WHO). Global strategy on human resources for health: workforce 2030 [Internet]. Geneva, (CH): WHO; 2016[cited 2023 Jun 15]. 64 p. Available from: https://www.who.int/hrh/resources/global_strategy_workforce2030_14_print.pdf
4. Centenaro APFC, Andrade A, Franco GP, Cardoso LS, Spagnolo LML, Silva RM. Common mental disorders and associated factors in nursing workers in COVID-19 units. *Rev Esc Enferm USP*. 2022;56:e20220059. <https://doi.org/10.1590/1980-220X-REEUSP-2022-0059en>
5. McLinton SS, Afsharian A, Dollard M, Tuckey MR. The dynamic interplay of physical and psychosocial safety climates in frontline healthcare. *Stress Health*. 2019;35(5):650-64. <https://doi.org/10.1002/smi.2898>
6. Serrano-Ripoll MJ, Meneses-Echavez JF, Ricci-Cabello I, Fraile-Navarro D, Fiol-de Roque MA, Pastor-Moreno G, et al. Impact of viral epidemic outbreaks on mental health of healthcare workers: a rapid systematic review and meta-analysis. *J Affect Disord*. 2020;277:347-57. <https://doi.org/10.1016/j.jad.2020.08.034>
7. Cavalcante FLNF, Negreiros BTC, Maia RS, Maia EMC. Depressão, ansiedade e estresse em profissionais da linha de frente da COVID-19. *Rev Port Enferm Saúde Mental*. 2022;(27):6-20. <https://doi.org/10.19131/rpesm.321>
8. Lopes FG, Palotti PLM, Barbosa SCT, Massaco KN. Nota Técnica n.30 (Diest), mapeamento dos profissionais de saúde no Brasil: alguns apontamentos em vista da crise sanitária da COVID-19[Internet]. 2020[cited 22 May 2023]. Available from: <http://repositorio.ipea.gov.br/handle/11058/9837>
9. Tavares CQ. Dimensões do cuidado na perspectiva da espiritualidade durante a pandemia pelo novo coronavírus (COVID-19). *J Health NPEPS*. 2020;5(1):1-4. <https://doi.org/10.30681/252610104517>
10. Oliveira FES, Costa ST, Dias VO, Martelli Júnior H, Martelli DRB. Prevalência de transtornos mentais em profissionais de saúde durante a pandemia da COVID-19: revisão sistemática. *J Bras Psiquiatr*. 2022;71:311-20. <https://doi.org/10.1590/0047-2085000000391>
11. Sampaio F, Coelho J, Gonçalves P, Sequeira C. Protective and vulnerability factors of municipal workers' mental health: a cross-sectional study. *Int J Environ Res Public Health*. 2022;19(21):14256. <https://doi.org/10.3390/ijerph192114256>
12. Conselho Federal de Enfermagem (COFEN). Enfermagem em números[Internet]. Brasília; 2021[cited 2021 Aug 03]. Available from: <http://www.cofen.gov.br/enfermagem-em-numeros>
13. Santos DRA, Pinto MS, Martins W, Carvalho FF. O comprometimento da saúde mental dos profissionais de enfermagem diante da jornada diária. *BOCA*. 2021;8(23):124-35. <https://doi.org/10.5281/zenodo.5640176>
14. Baldin N, Munhoz EMB. Snowball (Bola de neve): uma técnica metodológica para pesquisa em educação ambiental e comunitária[Internet]. In: X Congresso Nacional de Educação (EDUCERE). I Seminário Internacional de Representações Sociais, Subjetividade e Educação — SIRSSE. Pontifícia Universidade Católica do Paraná. Curitiba; 2011[cited 2021 Jul 27]. Available from: <https://educere.bruc.com.br>
15. Silva-Junior JS, Cunha AA, Lourenção DC, Silva SM, Silva RF, Faria MG, et al. Estressores psicossociais ocupacionais e sofrimento mental em trabalhadores de saúde na pandemia de COVID-19. *Einstein (São Paulo)*. 2021;19:eA06281. https://doi.org/10.31744/einstein_journal/2021A06281
16. Polonio M, Padula MPC. Causas de afastamento previdenciário por transtornos mentais nos trabalhadores de Enfermagem: pesquisa bibliográfica. *Braz J Health Rev*. 2020;3(5):11938-57. <https://doi.org/10.34119/bjhrv3n5-048>

17. Rocha ME, Freire KP, Reis WPDD, Vieira LTQ, Sousa LMD. Fatores que ocasionam o índice de transtornos depressivos e de ansiedade em profissionais de enfermagem: uma revisão bibliográfica. *Braz J Develop*. 2020;6(2):9288-305. <https://doi.org/10.34117/bjdv6n2-296>
18. Lua I, Almeida MMG, Araújo TM, Soares JF, Santos KOB. Autoavaliação negativa da saúde em trabalhadoras de enfermagem da atenção básica. *Trab Educ Saude*. 2018;16(3):1301-19. <https://doi.org/10.1590/1981-7746-sol00160>
19. Barbosa RE, Fonseca GC, Azevedo DSS, Simões MRL, Duarte ACM, Alcântara MA. Prevalência e fatores associados à autoavaliação negativa de saúde entre trabalhadores da rede municipal de saúde de Diamantina, Minas Gerais. *Epidemiol Serv Saude*. 2020;29(2):e2019358. <https://doi.org/10.5123/s1679-49742020000200013>
20. Fulham-McQuillan H, O'Donovan R, Buckley CM, Crowley P, Gilmore B, Martin J, McAuliffe E. Exploring the psychological impact of contact tracing work on staff during the COVID-19 pandemic. *BMC Health Serv Res*. 2023;23(1):602. <https://doi.org/10.1186/s12913-023-09566-6>
21. Štěpánek L, Nakládalová M, Janošiková M, Ulbrichtová R, Švihrová V, Hudečková H, et al. Prevalência de Burnout em Profissionais de Saúde de Hospitais Terciários durante a Pandemia de COVID-19: uma pesquisa transversal de dois países da Europa Central. *J Int Pesqui Amb Saúde Pública* 2023;20:3720. <https://doi.org/10.3390/ijerph20043720>
22. Santos KMR, Galvão MHR, Gomes SM, Souza TA, Medeiros AA, Barbosa IR. Depressão e ansiedade em profissionais de enfermagem durante a pandemia da COVID-19. *Esc Anna Nery*. 2021;25(spe):e20200370. <https://doi.org/10.1590/2177-9465-EAN-2020-0370>
23. Ruiz-Fernández MD, Ortega-Galán ÁM, Fernández-Sola C, Hernández-Padilla JM, Granero-Molina J, Ramos-Pichardo JD. Occupational factors associated with health-related quality of life in nursing professionals: a multi-centre study. *Int J Environ Res Public Health*. 2020;17(3):982. <https://doi.org/10.3390/ijerph17030982>
24. Babamiri M, Bashirian S, Khazaei S, Sohrabi MS, Heidarmoghdam R, Mortezaipoor A, et al. Burnout and Mental Health of COVID-19 Frontline Healthcare Workers: results from an online survey. *Iran J Psychiatr*. 2022;17:136-43. <https://doi.org/10.18502/ijps.v17i2.8903>
25. Santos AF, Martins W. Saúde Mental dos profissionais de enfermagem diante da sobrecarga de trabalho: uma revisão integrativa de literatura. *E-Acadêm*. 2022;3(2):e5132188. <https://doi.org/10.52076/eacad-v3i2.188>
26. Ministério da Saúde (BR), DataSUS. CID-10: Classificação Estatística Internacional de Doenças e Problemas Relacionados à Saúde. Décima Revisão. Capítulo V. Transtornos Mentais e Comportamentais [Internet]. 2023 [cited 2023 May 14]. Available from: http://www2.datasus.gov.br/cid10/V2008/WebHelp/f00_f99.htm
27. Nogueira CGT, Rosa SVA, Dzivielewski AMO, Fonseca JPS, Silva RS, Souza TD. COVID-19: impacto na saúde mental da equipe de enfermagem frente à pandemia. *Saúde Coletiva (Barueri)*. 2021;11(69):8336-46. <https://doi.org/10.36489/saudecoletiva.2021v11i69p8336-8346>
28. Souza NVDO, Carvalho EC, Soares SSS, Varella TCMYML, Pereira SRM, Andrade KBS. Nursing work in the COVID-19 pandemic and repercussions for workers' mental health. *Rev Gaúcha Enferm*. 2021;42(spe):e20200225. <https://doi.org/10.1590/1983-1447.2021.20200225>
29. Neil-Sztramko SE, Belita E, Hopkins S, Sherifali D, Anderson L, Apatu E, et al. What are effective strategies to respond to the psychological impacts of working on the frontlines of a public health emergency? *Front Public Health*. 2023;11:1282296. <https://doi.org/10.3389/fpubh.2023.1282296>
30. Potrebny T, Igland J, Espehaug B, Ciliska D, Graverholt B. Individual and organizational features of a favorable work environment in nursing homes: a cross-sectional study. *BMC Health Serv Res*. 2022;22(1):1244. <https://doi.org/10.1186/s12913-022-08608-9>

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