

# Minor psychiatric disorders among nursing workers during the pandemic: a multicenter study

Distúrbios psíquicos menores entre trabalhadores de enfermagem durante a pandemia: estudo multicêntrico  
Disturbios psíquicos menores en trabajadores de enfermería durante la pandemia: estudio multicéntrico

Luciana Olino<sup>1</sup>  <https://orcid.org/0000-0001-7902-3915>

Juliana Petri Tavares<sup>1</sup>  <https://orcid.org/0000-0003-4121-645X>

Tânia Solange Bosi de Souza Magnago<sup>2</sup>  <https://orcid.org/0000-0002-5308-1604>

Larissa Fonseca Ampos<sup>1</sup>  <https://orcid.org/0000-0001-8775-9515>

Lizandra Santos Vieira<sup>1</sup>  <https://orcid.org/0000-0002-4303-7079>

Juliana Dal Ongaro<sup>2</sup>  <https://orcid.org/0000-0003-0058-0132>

Daiane Dal Pai<sup>1</sup>  <https://orcid.org/0000-0002-6761-0415>

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## Corresponding author

Luciana Olino  
E-mail: [lucianaolino@gmail.com](mailto:lucianaolino@gmail.com)

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Thiago da Silva Domingos  
(<https://orcid.org/0000-0002-1421-7468>)  
Escola Paulista de Enfermagem, Universidade Federal de São Paulo, São Paulo, SP, Brazil

## Abstract

**Objective:** To analyze the factors associated with the presence of minor psychiatric disorders among nursing workers working in the COVID-19 pandemic.

**Methods:** A multicenter cross-sectional study was conducted in four hospitals in the state of Rio Grande do Sul, Brazil, with 845 nursing workers. An electronic form composed of sociodemographic, labor, health conditions and Self-Reporting Questionnaire-20 was used. Mann-Whitney, chi-square and Poisson Regression tests, expressed in Prevalence Ratio (95% CI), were applied.

**Results:** The prevalence of minor psychiatric disorders (49.3%) was associated with increased alcohol consumption (PR = 1.2; 95% CI = 1.1-1.4), not practicing physical activity (PR = 1.5; 95% CI = 1.3-1.8), starting the use of medication in the pandemic (PR = 1.5; 95% CI = 1.3-1.7), not having a fixed work shift (PR = 1.4; 95% CI = 1.1-1.9) and feeling afraid of exposure to the risk of contamination (PR = 1.2; 95% CI = 1.1-1.3)

**Conclusion:** In the current pandemic, minor psychiatric disorders are associated with alcohol consumption, lack of physical activity, use of medication, work shift and fear of contamination.

## Resumo

**Objetivo:** Analisar os fatores associados à presença de Distúrbios Psíquicos Menores entre trabalhadores de enfermagem que atuam na pandemia da COVID-19.

**Métodos:** Estudo transversal multicêntrico, realizado em quatro instituições hospitalares, no Estado do Rio Grande do Sul, com 845 trabalhadores de enfermagem. Utilizou-se um formulário eletrônico composto por questões sociodemográficas, laborais, de condições de saúde e pelo *Self-Reporting Questionnaire-20*. Aplicaram-se testes de Mann-Whitney, Qui-Quadrado e Regressão de Poisson expressa na Razão de Prevalência (IC 95%).

**Resultados:** A prevalência de Distúrbios Psíquicos Menores (49,3%) foi associada ao aumento do consumo de álcool (RP = 1,2; IC95% = 1,1-1,4), não praticar atividade física (RP = 1,5; IC95% = 1,3-1,8), iniciar o uso de medicação na pandemia (RP = 1,5; IC95% = 1,3-1,7), não possuir um turno de trabalho fixo (RP = 1,4; IC95% = 1,1-1,9) e sentir medo frente à exposição ao risco de contaminação (RP = 1,2; IC95% = 1,1-1,3)

**Conclusão:** Na atual pandemia, os Distúrbios Psíquicos Menores mostram-se associados ao consumo de bebida alcoólica, falta de atividade física, uso de medicamento, turno de trabalho e medo de contaminar-se.

## Resumen

**Objetivo:** Analizar los factores asociados con la presencia de disturbios psíquicos menores en trabajadores de enfermería que trabajan en la pandemia de COVID-19.

<sup>1</sup>Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil.

<sup>2</sup>Department of Nursing, Universidade Federal de Santa Maria, Santa Maria, RS, Brazil.

Conflicts of interest: nothing to declare.

**Métodos:** Estudio transversal multicéntrico, realizado en cuatro instituciones hospitalarias, en el estado de Rio Grande do Sul, con 845 trabajadores del área de enfermería. Se utilizó un formulario electrónico compuesto por cuestiones sociodemográficas, laborales, de condiciones de salud y por el *Self-Reporting Questionnaire-20*. Se aplicaron las pruebas de Mann-Whitney, Ji Cuadrado y de Regresión de Poisson expresada en la Razón de Prevalencia (IC 95 %).

**Resultados:** La prevalencia de trastornos psíquicos menores (49,3 %) estuvo asociada al aumento del consumo de alcohol (RP = 1,2; IC95 % = 1,1-1,4), a no practicar actividades físicas (RP = 1,5; IC95 % = 1,3-1,8), al comiendo del uso de medicación durante la pandemia (RP = 1,5; IC95 % = 1,3-1,7), a no tener un turno de trabajo fijo (RP = 1,4; IC95 % = 1,1-1,9) y a sentir miedo frente a la exposición al riesgo de contaminación (RP = 1,2; IC95 % = 1,1-1,3)

**Conclusión:** En la actual pandemia, los trastornos psíquicos menores demostraron estar asociados al consumo de bebida alcohólica, falta de actividad física, uso de medicamentos, turnos de trabajo y miedo a contaminarse.

## Introduction

Abrupt changes in life due to the Coronavirus Disease-19 (COVID-19), caused by SARS-CoV-2,<sup>(1)</sup> has intensified mental frailties in the population, mainly due to isolation measures, grief and feelings of fear in the face of the consequences of contamination. In this context, health professionals are the main risk group for COVID-19 because they work on the front lines, living directly with infected people and deaths from the disease.<sup>(2)</sup>

In Brazil, until November 2021, 59,257 professionals (nurses, technicians and assistants) were infected and 869 lost their lives by COVID-19.<sup>(3)</sup> This scenario reveals the physical and mental vulnerability of nursing professionals who, in the face of inadequate working conditions, become even more exposed to mental illness.<sup>(2)</sup> The literature shows that the insufficient amount of tests and personal protective equipment, the stigmatization of professionals, the lack of training, the frustration in not being resolute in the face of health system problems and new demands, the process of grieving for the loss of patients, colleagues and family members, the change in the rest period due to the long workload, the increase in the criticality of work, in addition to the insecurity regarding the scarcity of medical resources to care for the need for hospitalization<sup>(2,4)</sup> are aspects that can contribute to the psychic illness of health workers in the pandemic.

A meta-analysis, which included a combined total of 33,062 participants from 13 studies, identified prevalence of 23.2% for anxiety, 22.8% for depression, and 38.9% for insomnia in health workers during the COVID-19 pandemic.<sup>(5)</sup> An Italian study also assessed the psychological impact of the pandemic on the health team and found that

50.1% of professionals had symptoms of anxiety and 26.6%, symptoms of moderate depression.<sup>(6)</sup>

In Brazil, given the addition of the COVID-19 pandemic to the labor and social demands already experienced by the nursing team, the need for studies that glimpse the psychic health of these workers emerges. Prior to the pandemic, the literature already highlighted a scenario unfavorable to nursing professionals' health with reflexes for the suspicion of minor psychiatric disorders (MPD), in which prevalence of 32.6%<sup>(7)</sup> and 32.2%<sup>(8)</sup> are evidenced. It is likely that the pandemic context contributes to the worsening of this scenario of illness, which justifies the concern about these disorders. Such disorders are characterized by depressive symptoms, anxiety, fatigue, sadness, irritability, insomnia, memory and concentration deficit.<sup>(9)</sup>

Considering the above, the study aimed to analyze the factors associated with the presence of MPD among nursing workers working in the COVID-19 pandemic.

## Methods

This is a cross-sectional study, carried out at four hospital institutions in the state of Rio Grande do Sul, reference in care by the Unified Health System (SUS - *Sistema Único de Saúde*), and which had their flows adapted to care for patients affected by COVID-19. In this study, they will be called HA, HB, HC and HD, in order to ensure the anonymity of the institutions. HA hospital is a public, general and teaching hospital, with 784 beds; HB hospital is public, with 237 beds; HC hospital is public, general and university, with 850 beds; HD is a general and university public hospital, with 403 beds.

The study population consisted of 2,962 nursing professionals from hospital HA, 707 from HB, 2,278 from HC and 952 from HD, totaling 6,899 nursing workers. The study included nursing workers (nurses, technicians and nursing assistants) working in hospital care during the COVID-19 pandemic.

All professionals linked to the four institutions were invited to participate in the study, and the sample consisted of 845 nursing workers who answered an electronic form. Considering the representativeness of this number of responses in relation to the population, the power of the sample was calculated by Power and Sample Size for Health Researchers, version 0.1.5, resulting in a minimum of 534 subjects, with a confidence level of 96%, an estimate of error of 4% and assuming a prevalence of 33.7% for MPD (outcome).<sup>(10)</sup>

The possible participants consisted of 6,899 nursing workers and after attempts to contact them, 6,054 did not respond to the form, and it was not possible to estimate how many of them referred to the refusal to participate or to absences, since workers were instructed in the invitation email not to fill it out if they were away from work or did not want to participate in the research. The final sample of respondents was 845 professionals.

Data collection took place between August and October 2020 through an electronic form, via Google Forms, sent through a professional email, after availability and institutional authorization. Two e-mails were sent for dissemination and invitations to study participants. To fill out the research form, an average time of 15 to 20 minutes was foreseen. In addition to this, there was internal disclosure in the sectors of the participating hospitals. Independent variables (exposure) were: sociodemographic - sex (female or male), age (continuous in years - median and interquartile ranges), race/color (white or black, mixed race and others), marital status (single or married), greater level of education (professional or nursing technician, graduation, specialization and/or residency, master's and/or PhD degree), professional category (nurse or nursing technician), life and health habits - increased alcohol consumption, tobacco use, initiation of medication use in the pan-

dem, physical activity (dichotomous in yes or no), work issues - institution where they work (HA, HB, HC and HD), experience time in the profession and working time at the institution (continuous in years), occupation (nurse, technician/nursing assistant), type of employment relationship (Consolidation of Labor Laws, temporary and statutory), work shift (day, night and no fixed shift), how much fear they felt in face of exposure to the risk of contamination (categorized from 1 to 5, where 1 means no fear and 5 very scared). Dichotomous variables (yes or no) were: if they work in another institution, if they have a leadership position, if they were relocated to another sector during the pandemic, if they assisted patients with COVID-19. The Self-Reporting Questionnaire – SRQ-20 was used to track MPD (dependent variable – outcome), developed by the World Health Organization in the 1970s and validated in Brazil with 80% specificity and 83% sensitivity.<sup>(9)</sup> It is self-applicable, with dichotomous scale (yes/no) and score from zero to 1, with cut-off values equal to or greater than seven positive responses.<sup>(7)</sup>

The data collected were extracted from Google Forms to an Excel spreadsheet, analyzed by PASW Statistics® (Predictive Analytics Software, from SPSS Inc., Chicago, USA), version 18.0. Due to the issues of Google Forms requiring mandatory answer, there was no missing data. The Shapiro-Wilk test was applied to verify the arrangement of variables, asymmetry and kurtosis values. Categorical variables were presented in absolute and relative frequency and continuous variables in central tendency and dispersion.

Mann-Whitney and chi-square tests were used, according to the type of variable. In the multiple analysis, Poisson Regression was used, with robust variance and expressed in the Prevalence Ratio, and their respective confidence intervals (95% CI). The insertion criterion of the variables in the final multiple regression model was having p-value < 0.20 for both exposure (associated factors) and outcome (MPD). The significance level adopted was for two-tailed p-value < 0.05.

This research was approved by the Research Ethics Committee, under Opinion 4,152,027,

and is in accordance with Resolution 466/12 of the Brazilian National Health Council (*Conselho Nacional de Saúde*) and Resolution 510/16 on the use of data obtained directly from participants. The Informed Consent Form was made available to participants via e-mail before filling out the form, under CAAE (*Certificado de Apresentação para Apreciação Ética - Certificate of Presentation for Ethical Consideration*) 33105820.2.0000.0008.

## Results

MPD were present in 417 (49.3%) nursing professionals. In Table 1, the arrangement of workers in relation to MPD and their associated factors is presented.

**Table 1.** Arrangement of workers exposed and not exposed to minor psychiatric disorders during the COVID-19 pandemic, according to sociodemographic, work and life and health habits

Sociodemographic, work and health habits	Frequency	MPD		p-value
	n(%) 845	Yes 417(49.3) N(%)	No 428(50.7) N(%)	
Sex				0.007*
Female	717(84.9)	368(51.3)	349(48.7)	
Male	128(15.1)	49(38.3)	79(61.7)	
Age (years)	41(36-48)	41(36-48)	42(37-50)	0.083†
Color or race				0.253*
White	702(83.1)	353(50.3)	349(49.7)	
Brown, black and others	143(16.9)	64(44.8)	79(55.2)	
Marital status				0.754*
Single	220(26)	111(50.5)	109(49.5)	
Married	625(74)	306(49)	319(51)	
Higher level of training				0.456*
Professionalizing or NT	340(40.2)	161(47.4)	179(52.6)	
Undergraduate education	121(14.3)	66(54.5)	55(45.5)	
Specialization and/or residency	232(27.5)	119(51.3)	113(48.7)	
Master's and/or PhD degree	152(18)	71(46.7)	81(53.3)	
Occupation				0.401*
Nurse	375(44.4)	179(47.7)	196(52.3)	
NT/nursing assistant	470(55.6)	238(50.6)	232(49.4)	
Institution where they work				0.001*
HA	155(18.3)	94(60.6)	61(39.4)	
HB	90(10.7)	50(55.6)	40(44.4)	
HC	367(43.4)	179(48.8)	188(51.2)	
HD	233(27.6)	94(40.3)	139(59.7)	
Time working at the institution (years)	8(3.2-15.2)	8(2.5-15.2)	8(4-15.2)	0.565†
Time working in the profession (years)	15(10-21)	15(10-20.9)	15.6(9.7-21)	0.961†

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Continuation.

Sociodemographic, work and health habits	Frequency n(%) 845	MPD		p-value
		Yes 417(49.3) N(%)	No 428(50.7) N(%)	
Type of working relationship				0.667*
Consolidation of Labor Laws	660(78.1)	329(49.8)	331(50.2)	
Temporary	83(9.8)	42(50.6)	41(49.4)	
Statutory	102(12.1)	46(45.1)	56(54.9)	
Works at another institution				0.543*
Yes	112(13.3)	52(46.4)	60(53.6)	
No	733(86.7)	365(49.8)	368(50.2)	
Leadership position				0.354*
Yes	64(7.6)	31(48.4)	33(51.6)	
No	781(92.4)	384(49.3)	397(50.7)	
Work shift				0.041*
Day	566(67)	290(51.2)	276(48.8)	
Night	241(28.5)	104(43.2)	137(56.8)	
No fixed shift	38(4.5)	23(60.5)	15(39.5)	
Relocated to another sector during the pandemic				0.251*
Yes	609(72.1)	124(52.5)	112(47.5)	
No	236(27.9)	293(48.1)	316(51.9)	
Smoking				1.000*
Yes	65(7.7)	32(49.2)	33(50.8)	
No	780(92.3)	385(49.4)	395(50.6)	
Physical activity				<0.001*
Yes	265(31.4)	85(32.1)	180(67.9)	
No	580(68.6)	332(57.2)	248(42.8)	
Increased alcohol consumption				0.001*
Yes	200(23.7)	120(60)	80(40)	
No	645(76.3)	297(46)	348(54.0)	
Medication initiated in the pandemic				<0.001*
Yes	205(24.3)	150(73.2)	55(26.8)	
No	640(75.7)	267(41.7)	373(58.3)	
Assisted patients with COVID-19				0.010*
Yes	727(86)	372(51.2)	355(48.8)	
No	118(14)	45(38.1)	73(61.9)	
Fear felt in the face of exposure to the risk of contamination				<0.000
1 - No fear	34(4.1)	8(23.5)	26(76.5)	
2 -	100(11.9)	29(29)	71(71)	
3 -	230(27.2)	83(36.1)	147(63.9)	
4 -	238(28.1)	131(55)	107(45)	
5 - A lot of fear	243(28.7)	166(68.3)	77(31.7)	

n = 845; Absolute frequency (relative frequency); Median (interquartile intervals); \* = Chi-square test; † = Mann-Whitney test; NT = nursing technician

From the selection of labor, sociodemographic and life and health habits associated with MPD (p < 0.20), the strength of the association of variables was analyzed using the Poisson Regression Model, as presented in Table 2.

Increasing alcohol consumption, not practicing physical activity, initiating the use of medication in the pandemic, not having a fixed work shift and feeling fear in the face of exposure to the risk of

**Table 2.** Poisson regression model with robust variance adjustment for variables associated with minor psychiatric disorders

Variables	Unadjusted PR (95% CI)	p-value	Adjusted PR (95%CI)	p-value
Sex				
Male	1		1	
Female	1.3 (1.1 - 1.7)	0.013	1.2 (0.9 - 1.5)	0.070
Age (years)	1 (0.9 - 1.1)	0.074	1 (0.9 - 1.1)	0.120
Institution where they work				
HD	1		1	
HA	1.5 (1.2 - 1.8)	<0.001	1.2 (0.9 - 1.4)	0.154
HB	1.4 (1.1 - 1.7)	0.010	1.1 (0.9 - 1.4)	0.254
HC	1.2 (1.1 - 1.4)	0.048	1.1 (0.9 - 1.3)	0.513
Work shift				
Night	1		1	
Day	1.2 (1.1 - 1.4)	0.042	1.2 (0.9 - 1.4)	0.062
No fixed shift	1.4 (1.1 - 1.9)	0.025	1.4 (1.1 - 1.9)	0.015
Physical activity				
Yes	1		1	
No	1.8 (1.5 - 2.1)	<0.001	1.5 (1.3 - 1.8)	<0.001
Increased alcohol consumption				
No	1		1	
Yes	1.2 (1.1 - 1.4)	0.012	1.2 (1.1 - 1.4)	0.010
Medication initiated in the pandemic				
No	1		1	
Yes	1.5 (1.3 - 1.7)	<0.001	1.5 (1.3 - 1.7)	<0.001
Assisted patients with COVID-19				
No	1		1	
Yes	1.2 (0.9 - 1.5)	0.135	1.2 (0.9 - 1.5)	0.111
Fear felt in the face of exposure to the risk of contamination	1.2 (1.2 - 1.3)	<0.001	1.2 (1.1 - 1.3)	<0.001

n = 845; PR = Prevalence Ratio; CI = Confidence Interval

contamination were associated with the development of MPD (p<0.05).

## Discussion

There was a high percentage of MPD (49.3%), higher than the result of another investigation conducted with health professionals in the pandemic (40%)<sup>(11)</sup> and with nursing workers before the pandemic, who presented variability between 32.2% and 33.7%.<sup>(7,8,10)</sup> The increase of more than 15% in the prevalence of MPD in the studied group stands out. In Spain, the presence of disabling mental disorders in nursing professionals in the pandemic represented one in seven cases, highlighting the greater severity related to successive waves of COVID-19 and the presence of previous mental disorders.<sup>(12)</sup>

Also, on the prevalence of MPD in the study, nursing technicians/assistants (50.6%) are highlighted compared to nurses (47.7%), although with no statistical difference. This finding is similar to another study, in which nursing assistants presented higher levels of psychic disorders than nurses (59.5% and 50.4%, respectively).<sup>(12)</sup>

The institution where professionals work was associated with the presence of MPD, revealing that the organizational profile and culture can interfere with workers' illness, as well as the support and support measures offered by institutions in the pandemic have been identified as fundamental in maintaining workers' health.<sup>(13,14)</sup>

Not having a fixed shift showed a higher prevalence of MPD, which may be related to the need for scale coverage and replacement of those on leave, with negative repercussions on the bond with patients and the team, as well as lack of familiarity with routines linked to shifts.<sup>(15)</sup> This finding may also be related to changes in metabolism, causing irritability, insomnia and stress, and is similar to the results of a study conducted with nurses in São Paulo, which highlighted the prevalence of stress in professionals who take alternate shifts.<sup>(16)</sup> Although night work is pointed out in the literature as more critical due to sleep deprivation, headache, irritability and stress,<sup>(17)</sup> this study identified the night shift as the one with the lowest exposure to MPD, corroborating another Brazilian study.<sup>(7)</sup>

The performance of physical activity is a factor potentially capable of minimizing the effects of the pandemic on psychological health. Exercise is considered a non-pharmacological method in the treatment of diseases such as anxiety and depression as well as in the adaptive gains of the autoimmune system.<sup>(18)</sup> However, the Brazilian study conducted with data from the COVID survey on health behaviors showed that physical activity fell by around one third during the pandemic.<sup>(19)</sup>

The association between increased alcohol consumption during the pandemic and MPD can be understood as a form of distraction or a strategy of behavioral evasion and also as a consequence of stress, anxiety or depressive symptoms.<sup>(20)</sup> The same relationship was evidenced in the general Brazilian

population, possibly associated with its mediating effects of stress, sadness and anxiety.<sup>(19)</sup>

The pandemic has intensified the demands of work in health services and literature points out causal relationship between the pandemic and the increase in suicide among health professionals, especially among nurses, and is directly related to the presence of mental disorders.<sup>(21)</sup> The findings that show the introduction of drugs during the pandemic highlight the problem of high consumption of drugs among health professionals, especially in nursing.<sup>(22)</sup> Furthermore, the need to use medications during the pandemic associated with MPD may be related to nurses' non-compliance with psychological treatments already mentioned in literature, in addition to low organizational support and psychiatric care.<sup>(14)</sup>

Initial ignorance of the disease, the scarcity of PPE, patients' serious condition, the deaths of co-workers and the collapse in the health systems are experiences of the pandemic that justify the findings that deal with fear and its relationship with MPD. Research conducted in Italy<sup>(23)</sup> highlighted the fear of frontline nurses as aggravating the physical and psychological impact. Brazilian research<sup>(24)</sup> points to psychological disorders in health professionals influenced by fear of infection in the pandemic context.

Additionally, authors<sup>(4,25)</sup> point out that this fear experienced can result in high levels of illness and generate reluctance to work. The fear of contamination is supported by the high rate of contagion among professionals,<sup>(3)</sup> which also affects the mass removal of professionals, increasing the possibility of collapse on the health system.<sup>(26)</sup>

The reverse causality bias is considered as an intrinsic limitation of the cross-sectional study, in which it is not possible to conclude about causal relationships and follow these workers before and after the pandemic. In addition to the healthy worker effect, workers on sick leave were excluded, suggesting that the prevalence of MPD may have been underestimated since workers may be on leave due to psychological disorders.

Some professionals who did not participate in the research justified the decision by the lack of

time, as they were overloaded with double working hours in addition to the increase in family demand, since due to isolation the family nucleus was present at home. In this way, the results are influenced by having been answered by professionals who were healthy enough to be working and who were still able to organize themselves in the face of the situation they faced to respond to the survey.

The study contributes to the viability of strategies focused on psychological health. Associated variables should be considered within the institution and public policies as important factors in the implementation of measures that promote workers' health, with an impact on less physical and mental illness. To this end, we highlight the tool to support nursing professionals' mental health, available on COFEN website.<sup>(3)</sup>

## Conclusion

A high prevalence of MPD was identified among nursing workers who worked during the COVID-19 pandemic. Variables associated with mental illness were increased alcohol consumption, not performing physical activity, starting medication in the pandemic, not having a fixed work shift, and feeling afraid of being exposed to the risk of contamination.

## Collaborations

Olino L, Tavares JP, Magnago TSBS, Ampos LF, Vieira LS, Dal Ongaro J and Dal Pai D contributed to the study design, data analysis and interpretation, article writing, relevant critical review of the intellectual content and approval of the final version to be published.

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