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Depression and anxiety in nursing professionals during the covid-19 pandemic

Depressão e ansiedade em profissionais de enfermagem durante a pandemia da covid-19

Depresión y ansiedad en profesionales de enfermería durante la pandemia del covid-19

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ABSTRACT

Objective: To analyze the prevalence of symptoms of depression, anxiety and associated factors in Nursing staff during the Covid-19 pandemic. **Method:** A cross-sectional web survey study, with 490 Nursing professionals from medium and high complexity services in a state in northeastern Brazil. The association between the outcomes and the independent variables was through the Rao-Scott chi-square test and the Poisson regression model. **Results:** The occurrence of symptoms suggestive of mental disorders (anxiety and depression) was related to female Nursing professionals, brown skin color or race, with a monthly income below 5 minimum wages and working in the private sector, having symptoms of the Burnout Syndrome and living with their parents. The occurrences were more accentuated when the services did not have adequate working conditions, especially for coping with the Covid-19 pandemic. **Conclusion and implications for the practice:** Actions that aim to improve the working conditions and that encourage the practice of physical activities can be beneficial for the maintenance and strengthening of the mental health conditions of this population.

Keywords: Coronavirus infections; Psychological Stress; Mental Health; Depression; Anxiety.

RESUMO

Objetivo: Analisar a prevalência de sintomas depressão, ansiedade e fatores associados em profissionais da equipe de enfermagem durante a pandemia da Covid-19. **Métodos:** Estudo seccional do tipo *web survey,* com 490 com profissionais de enfermagem dos serviços de média e alta complexidade em um estado do nordeste do Brasil. A associação entre os desfechos e as variáveis independentes foi através do teste de qui-quadrado de Rao-Scott e do modelo de regressão de Poisson. **Resultados:** A ocorrência de sintomas sugestivos de transtornos mentais (ansiedade e depressão) estava relacionada a profissionais de enfermagem do sexo feminino, cor ou raça parda, com renda mensal inferior a 5 salários mínimos que trabalhavam no setor privado, ter sintomas de Síndrome de Burnout e morar com os pais. As ocorrências foram mais acentuadas quando os serviços não apresentavam condições adequadas de trabalho, em especial para o enfrentamento da pandemia de Covid-19. **Conclusão e implicações para a prática:** Ações que visem à melhoria das condições de trabalho e que estimulem a prática de atividades físicas podem ser benéficas para o a manutenção e fortalecimento das condições de saúde mental dessa população.

Palavras-chave: Infecções por Coronavírus; Sofrimento Mental; Saúde Mental; Depressão; Ansiedade.

RESUMEN

Objetivo: Analizar la prevalencia de síntomas de depresión, ansiedad y factores asociados en el personal de enfermería durante la pandemia de Covid-19. **Métodos:** Estudio de encuesta web seccional, con 490 profesionales de enfermería de servicios de mediana y alta complejidad en un estado del noreste de Brasil. La asociación entre los resultados y las variables independientes se realizó mediante la prueba de chi-cuadrado de Rao-Scott y el modelo de regresión de Poisson. **Resultados:** La ocurrencia de síntomas sugestivos de trastornos mentales (ansiedad y depresión) se relacionó con mujeres profesionales de enfermería, de color o raza morena, con ingresos mensuales inferiores a 5 salarios mínimos que trabajaban en el sector privado, presentaban síntomas de Síndrome de Burnout y vivían con los padres. Los episodios eran más acentuados cuando los servicios no contaban con las condiciones laborales adecuadas, especialmente para hacer frente a la pandemia Covid-19. **Conclusión e implicaciones para la práctica:** Las acciones que tengan como objetivo mejorar las condiciones laborales y que incentiven la práctica de actividades físicas pueden ser beneficiosas para el mantenimiento y fortalecimiento de las condiciones de salud mental de esta población.

Palabras clave: Infecciones por Coronavirus; Estrés Psicológico; Salud Mental; Depresión; Ansiedad.

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INTRODUCTION

A new acute respiratory syndrome with a highly infectious potential caused by a new Coronavirus (SARS-CoV-2) was identified in December 2019, appearing in the province of Wuhan, China. In January 2020, the World Health Organization (WHO) declared an outbreak of new coronavirus infections (COVID-19) and, on March 11th, 2020, the WHO declared COVID-19 as a pandemic.[1]

Dealing with the new Coronavirus has become an emerging global challenge in the management of infectious diseases. The most common symptoms last a mean of 2 to 14 days and include fever, fatigue, dry cough, myalgia and dyspnoea.[2] As of July 22th, 2020, there are 14,765,256 confirmed cases in 216 countries of the world and 612,054 deaths according to the Word Health Organization.[3] In Brazil, as of this same date, there are already 2,227,514 confirmed cases, more than 82,000 deaths with a lethality rate of 3.7%.[4]

To date, no antiviral treatment or vaccine has been explicitly recommended for COVID-19. Thus, the application of preventive measures to control the COVID-19 infection is still considered the most effective intervention.[5]

In this context, previous studies have shown that, during epidemics such as SARS and Ebola, the appearance of a sudden disease with a high risk of death leads to a great increase in psychological pressure on health professionals.[6] During these events there is an increase in workload, physical exhaustion, lack of protective equipment, high hospital transmissibility, and the need for ethically difficult decision-making about rationing care that can mitigate their physical and mental well-being.[7,8]

In addition to these factors, a number of studies claim that their resilience can be further compromised by having to practice isolation and to reflect on the loss of social support, for representing a risk of infection for friends and relatives. In this way, health professionals are therefore especially vulnerable to mental health problems, including fear, anxiety, depression and insomnia.[7,8] These professionals are considered emotionally resilient in the workplace but, within the context of the COVID-19 pandemic, there is a new set of standards perhaps never experienced by this group.

The pressure to care for the patients intensifies in the context of a virus with human-human transmission and without any specific treatment to save lives;[9] in addition, their lives are constantly at risk, bringing a real danger situation. Other stressors can still be elucidated, such as patient severity, limited numbers of mechanical ventilators and of intensive care beds[10] and such factors can directly imply the onset of anxiety and depression crises.

Knowing that the professionals who make up the Nursing team work at the forefront of the fight against COVID-19, considering the elucidated aspects that can have an impact on the mental health of these professionals, this study aimed to analyze the prevalence of symptoms of depression, anxiety and associated factors in Nursing team professionals during the COVID-19 pandemic.

METHOD

This is a cross-sectional study, of the web-survey type, conducted in the state of Rio Grande do Norte (RN), located in northeastern Brazil, aimed at professionals from the Nursing team who work in medium and high complexity health services. The data collection period extended from June 4th to June 17th, 2020. On the first day of data collection, the state had 14,437 cases and 444 confirmed deaths due to the disease, with an incidence of 494 cases per day.[11] Data collection occurred through electronic forms on *Google* forms sent by email and social media (*Whatsapp*®, *Facebook*© and *Instagram*®).

The study sample consisted of 490 participants, the sample size being calculated using the Open Epi platform, considering the lowest estimated prevalence among the outcomes considered in the study ("depression symptoms" outcome – prevalence of 32.6%),[12] an absolute error of 5%, and the number of Nursing professionals registered in the National Register of Health Establishments (*Cadastro Nacional de Estabelecimentos de Saúde*, CNES) totaling 10,017 professionals, resulting in a sample of 329 individuals. In order to obtain a sample compatible with the analysis by subgroups, a percentage of 50% was added. The inclusion criteria of the sample consisted of Nursing professionals who work in medium and high complexity health services in the state of RN, and the sampling method was for convenience through the *Snowball* technique.

The study dependent variables consisted of the following outcomes: prevalence of moderately severe or severe depression symptoms according to the Brazilian version of the Patient Health Questionnaire[13] and prevalence of moderately severe or severe anxiety symptoms according to the General Anxiety Disorder[14] for measuring anxiety symptoms. The study independent variables consisted of biological characteristics, socioeconomic and family characteristics, work characteristics, self-care practices, mental health characteristics, and the impact of COVID-19 on life and work.

For the composition of the COVID-19 impact scale variable, we employed an instrument adapted from the Gois and Fidalgo scale, originally used to assess the impact of the pandemic in the context of resident physicians. These questions are presented in Chart 1 and their items were measured on a Likert scale from 1 to 5, where in dimension I, 1 meant "totally agree" and 5 "totally disagree", while in dimension II, 1 meant "not a little" and 5 "extremely".

We opted for the solution of three groups, considering the theoretical interpretation and the discrimination capacity of the components of each group. The three groups were defined based on the characteristics of the impact scale; thus, they are characterized as follows: 1) service professionals least impacted by the pandemic; 2) service professionals minimally prepared for the pandemic, considering organizational factors, and 3) service professionals without a work structure for the pandemic; for such, the characterization was based on the availability of Personal Protective Equipment (PPE) and other instruments/equipment, assistance facilities, distancing and rest, and trained professionals.

Chart 1. Description of the items that make up the impact scale of the COVID-19 pandemic.

	Scale items
Dimension I	I look for news about the pandemic whenever I have time
	I am afraid of contracting the disease and transmitting it to the people I love
	I am afraid to persist with exaggerated concern about hygiene and contact after the pandemic
	I am avoiding suspected or confirmed COVID-19 patients
	I feel safe at work
	I work in a sector with a high risk of contamination
	We have a service prepared to meet the demands of the pandemic
	The service in which I work provides PPE
	I believe that the PPE available is effective for my protection
	The service in which I work provides enough PPE
	I am convinced that I will be a better qualified professional for having experienced the pandemic
	Fake news items have hindered my work process
Dimension II	My alcohol consumption increased during the pandemic
	My marijuana use increased during the pandemic
	My tobacco use increased during the pandemic
	My consumption of stimulants, like cocaine or amphetamines, increased during the pandemic
	I have been experiencing physical reactions such as sweating, difficulty breathing, nausea or palpitation
	I feel qualified to act in compliance with COVID-19
	I realize that my social relationships are compromised

Source: Adapted from Gois and Fidalgo, 2020.

For data analysis, the absolute and relative frequencies of the analyzed variables were calculated. For the bivariate analysis, the association between the outcomes and the independent variables was estimated using the Rao-Scott chi-square test and its respective prevalence ratios. Multivariate modeling was performed using the Poisson regression model for each of the evaluated outcomes, considering a p-value>0.2 as an inclusion criterion in the model and as a criterion of permanence in the final model, a p-value<0.05. The variable: "I had a diagnosis of a mental disorder in the last 12 months" was maintained in both models as a confounding variable for both outcomes.

This research was approved by the National Research Ethics Commission (*Comissão Nacional de Ética em Pesquisa*, CONEP), under CAAE No. 30476120.0.0000.5568 and opinion No. 4,068,729.

RESULTS

A total of 490 professionals answered the questionnaire: 292 (59.6%) nurses and 198 (40.4%) nursing technicians. Most of the respondents were female (86.7%), with an income between 3 and 4 minimum wages (35.3%) Most of the professionals work in direct contact with patients with COVID-19 (89.6%). Regarding mental health, 30.4% of the respondents were diagnosed with a mental disorder in the last 12 months, 39.6% (95% CI=35.3-44.0) presented moderately severe or severe anxiety symptoms, 38.0% had symptoms of moderately severe or severe depression, and the presence of symptoms of the Burnout Syndrome was present in 62.4% of the professionals. Other characteristics can be seen in Table 1.

The following were observed as factors associated with moderately severe or severe anxiety: being brown-skinned (PR=1.23; p=0.048), working in with private contract (PR=1.70; p<0.001) or having public and private contracts (PR=1.68; p<0.001), having symptoms of the Burnout Syndrome (PR=2.07; p<0.001), being a service professional with no structure for the pandemic (PR=2.12; p<0.001) or greater impact (PR=1.75; p=0.012). The factors associated with a lower prevalence of moderately severe or severe anxiety were performing mind-body activities (PR=0.46; p=0.003) and having the habit of talking with friends and family members (PR=0.74; p=0.003) (Table 2).

As factors associated with moderately severe or severe depression, the following stood out: being female (PR=1.62; p=0.032), having a monthly income of 3 to 4 minimum wages (PR=1.41; p=0.035), living with parents and siblings (PR=1.32; p=0.012), working only in private services (PR=1.57; p=0.002), having left the service or having their role changed due to the pandemic (PR=1.35; p=0.012), having symptoms of the Burnout

Table 1. Biological, socioeconomic, family and work characteristics of Nursing professionals working during the COVID-19 pandemic in the state of Rio Grande do Norte, Brazil, 2020.

Variables	N	% (95% CI)
Biological characteristics		
Gender		
Female	425	86.7 (83.4-89.5)
Male	65	13.3 (10.5-16.6)
Age		
21-30 years old	150	30.6 (26.7-34.9)
31-36 years old	185	37.8 (33.6-42.1)
37 years old or more	155	31.6 (27.7-35.9)
Skin color		
White	237	48.4 (43.9-52.8)
Brown	206	42.0 (37.7-46.5)
Black	33	6.7 (4.8-9.3)
Asian	14	2.9 (8.2-16.7)
Socioeconomic and family characteristics		
Professional's Monthly Income		
Above 5 minimum wages	102	20.8 (17.4-24.7)
3 to 4 minimum wages	173	35.3 (31.2-39.7)
1 to 2 minimum wages	163	33.3 (29.2-37.6)
1 minimum wage	52	10.6 (8.2-16.7)
Who they live with		
Spouse or partner	260	53.1 (48.6)
Family (parents and/or siblings)	150	30.6 (26.7-34.9)
Other relatives or friends	35	7.1 (5.2-9.8)
Alone	45	9.2 (6.9-12.1)
With children		
Yes	246	50.2 (45.8-54.6)
No	244	49.8 (45.3-54.2)
Work characteristics		
Professional category		
Nurse	292	59.6 (55.2-63.87)
Nursing technician	198	40.4 (36.1-44.8)
Total weekly workload		
30 hours	105	21.4 (18.0-25.3)
40 hours	180	36.7 (32.6-41.11)
60 hours	205	41.8 (37.5-46.3)
Types of contract		
Public	384	78.4 (74.5-81.8)
Private	63	12.9 (10.1-16.1)
Both	43	8.8 (6.5-11.6)

Source: Research data, 2020.

Table 1. Continued...

Variables	N	% (95% CI)
Works in ICU		
Yes	117	23.9 (20.3-27.9)
No	373	76.1 (72.1-79.7)
Size of the municipality where they work		
Up to 50,000 inhabitants	110	22.4 (18.9-16.4)
Between 50,001 and 100,000 inhabitants	86	17.6 (14.4-21.2)
Between 100,001 and 900,000 inhabitants	294	60.0 (55.6-64.3)
Current work situation		
I still work normally	357	72.9 (68.7-76.6)
I am a suspected, probable or diagnosed case of COVID-19	68	13.9 (11.1-17.24)
I was distanced/had the role changed	65	13.3 (10.5-16.6)
I had the weekly workload changed after the pandemic		
Yes	106	21.6 (18.2-25.5)
No	384	78.4 (74.5-81.8)
Operates in direct contact with patients with COVID-19		
Yes	438	89.6
No	52	10.6 (8.2-13.7)
Self-care practices		
Has done psychotherapy		
Yes	40	8.2 (6.0-10.9)
No	450	91.8 (89.0-93.9)
Has been supported by co-workers		
Yes	174	35.5 (31.4-39.8)
No	316	64.5 (60.1-68.6)
Has done physical activity		
Yes	152	31.0 (27.1-35.3)
No	338	69.0 (64.7-72.9)
Has talked with relatives and friends		
Yes	334	68.2 (63.9-72.1)
No	156	31.8 (27.8-36.1)
Has done mind-body activity		
Yes	66	13.5 (10.7-16.8)
No	424	86.5 (83.2-89.3)
Has not performed self-care practices		
Yes	130	26.5 (22.8-77.2)
No	360	73.5 (22.8-30.6)
Mental health characteristics and impact of COVID-19		
I had a diagnosis of a mental disorder in the last 12 months		
Yes	149	30.4 (26.5-34.6)

Source: Research data, 2020.

Table 1. Continued...

Variables	N	% (95% CI)
No	341	69.6 (65.3-73.5)
Classification of the severity of anxiety		
Minimum or Moderate	296	60.4 (56.0-64.7)
Moderately severe or Severe	194	39.6 (35.3-44.0)
Classification of the severity of depression		
Minimal or none, Slight or Moderate	304	62.0 (57.6-66.2)
Moderately severe or Severe	186	38.0 (33.8-42.4)
Burnout Diagnosis		
Absence	184	37.6 (33.3-41.9)
Presence of Burnout	306	62.4 (58.1-66.6)
COVID-19 impact scale		
Professionals least impacted by the pandemic	82	16.7 (13.7-20.3)
Service professionals minimally prepared for the pandemic	214	43.7 (39.3-48.1)
Service professionals without a work structure for the pandemic	194	39.6 (35.3-44.0)

Source: Research data, 2020.

Table 2. Prevalence and factors associated with moderately severe or severe anxiety symptoms in Nursing professionals working during the COVID-19 pandemic in the state of Rio Grande do Norte, Brazil, 2020.

	Moderately severe and severe anxiety		Bivariate analysis		Final model	
	No n (%)	Yes n (%)	*p*	PR (95% CI)	*p* (adj.)	PR (95% CI) (adj.)
Biological characteristics						
Gender						
Male	45(69.2)	20(30.8)	-	1	-	-
Female	251(59.1)	174(40.9)	0.226	1.33(0.84-2.11)	-	-
Age						
21 to 31 years	82(54.7)	68(45.3)	-	1	-	-
31-36 years old	115(62.2)	70(37.8)	0.288	0.83(0.60-1.17)	-	-
37 years old or more	99(63.9)	56(36.1)	0.209	0.80(0.56-1.13)		-
Skin color						
White	155(65.4)	82(34.6)	-	1	-	1
Brown	113(54.9)	93(45.1)	0.079	1.30(0.97-1.76)	0.048*	1.23(1.01-1.51)
Black	18(54.5)	15(45.5)	0.331	1.31(0.76-2.28)	0.453	1.15(0.79-1.68)
Asian	10(71.4)	4(28.6)	0.709	0.82(0.30-2.25)	0.289	0.70(0.38-1.34)
Socioeconomic and family characteristics						
Professional's Monthly Income						
Above 5 minimum wages	67(65.7)	35(34.3)	-	1	-	-

Hosmer-Lemeshow test: Chi-square 278.52, p-value=1.0; Source: Research data, 2020.

Table 2. Continued...

	Moderately severe and severe anxiety		Bivariate analysis		Final model	
	No n (%)	Yes n (%)	*p*	PR (95% CI)	*p* (adj.)	PR (95% CI) (adj.)
3 to 4 minimum wages	102(59.0)	71(41.0)	0.386	1.97(0.78-1.79)	-	-
1 to 2 minimum wages	95(58.3)	68(41.7)	0.348	1.22(0.81-1.83)		-
1 minimum wage	32(61.5)	20(38.5)	0.684	1.12(0.65-1.94)		-
Who they live with						
Spouse or partner	161(61.9)	99(38.1)	-	1	-	-
Family (parents and/or siblings)	77(51.3)	73(48.7)	0.112	1.28(0.94-1.73)	-	-
Other relatives or friends	29(82.9)	6(17.1)	0.058	0.45(0.20-1.03)	-	-
Alone	29(64.4)	16(35.6)	0.799	0.93(0.55-1.58)	-	-
With children						
Yes	151(61.4)	95(38.6)	-	1	-	-
No	145(59.4)	99(40.6)	0.731	1.05(0.79-1.39)	-	-
Work characteristics						
Professional category						
Nurse	183(62.7)	109(37.3)	-	1	-	-
Nursing technician	121(61.1)	77(38.9)	0.430	0.88(0.66-1.18)	-	-
Total weekly workload						
30 hours	63(60.0)	42(40.0)	-	1		-
40 hours	102(56.7)	78(43.3)	0.676	1.08(0.74-1.58)		-
60 hours	131(63.9)	74(36.1)	0.595	0.90(0.62-1.32)		-
Types of contract						
Public	249(64.8)	135(35.2)	-	1		1
Private	29(46.0)	34(54.0)	0.026*	1.54(1.05-2.24)	<0.001*	1.70(1.30-2.24)
Both	18(41.9)	25(58.1)	0.021*	1.65(1.08-2.53)	<0.001*	1.68(1.31-2.16)
At what level of care do you work						
Secondary care	122(64.6)	67(35.4)	-	1		-
Tertiary care	84(58.7)	59(41.3)	0.395	1.16(0.82-1.65)		-
Both	90(57.0)	68(43.0)	0.260	1.21(0.87-1.70)		-
Works in ICU						
No	225(60.3)	148(39.7)	-	1	-	-
Yes	71(60.7)	46(39.3)	0.957	0.99(0.71-1.38)	-	-
Size of the municipality where they work						
Up to 50,000 inhabitants	76(69.1)	34(30.9)	-	1	-	-
Between 50,001 and 100,000 inhabitants	56(65.1)	30(34.9)	0.629	1.13(0.69-1.84)	-	-

Hosmer-Lemeshow test: Chi-square 278.52, p-value=1.0; Source: Research data, 2020.

Table 2. Continued...

	Moderately severe and severe anxiety		Bivariate analysis		Final model	
	No n (%)	Yes n (%)	*p*	PR (95% CI)	*p* (adj.)	PR (95% CI) (adj.)
Between 100,001 and 900,000 inhabitants	164(55.8)	130(44.2)	0.063	1.43(0.98-2.09)	-	-
Current situation at work						
I still work normally	221(61.9)	136(38.1)	-	1	-	-
I am a suspected, probable or diagnosed case of COVID-19	37(54.4)	31(45.6)	0.367	1.20(0.81-1.77)	-	-
I was distanced/had the role changed	31(47.7)	34(52.3)	0.681	1.09(0.72-1.65)	-	-
I had the weekly workload changed after the pandemic						
No	213(60.2)	153(39.8)	-	1	-	-
Yes	65(61.3)	41(38.7)	0.866	0.97(0.69-1.37)	-	-
Operates in direct contact with patients with COVID-19						
No	35(67.3)	17(32.7)	-	1	-	-
Yes	261(59.6)	177(40.4)	0.404	1.24(0.75-2.03)	-	-
Self-care practices						
Has done psychotherapy						
No	280(62.2)	170(37.8)	-	1	-	-
Yes	16(40.0)	24(60.0)	0.034*	1.59(1.04-2.44)	-	-
Has been supported by co-workers						
No	193(61.1)	123(38.9)	-	1	-	-
Yes	103(59.2)	71(40.8)	0.752	1.05(0.78-1.40)	-	-
Has done physical activity						
No	187(55.3)	151(44.7)	-	1	-	-
Yes	109(71.7)	43(28.3)	0.008*	0.63(0.45-0.89)	-	-
Has talked with relatives and friends						
No	73(46.8)	83(53.2)	-	1	-	1
Yes	223(66.8)	111(33.2)	0.001*	0.62(0.47-0.83)	0.003	0.74(0.60-0.90)
Has done mind-body activity						
No	241(56.8)	183(23.2)	-	1	-	1
Yes	55(83.3)	11(16.7)	0.002*	0.39(0.21-0.70)	0.003	0.46(0.27-0.77)
Has not performed self-care practices						
No	238(66.1)	122(33.9)	-	1	-	-
Yes	58(44.6)	72(55.4)	0.001*	1.63(1.22-2.19)	-	-
Mental health characteristics and impact of COVID-19						

Hosmer-Lemeshow test: Chi-square 278.52, p-value=1.0; Source: Research data, 2020.

Table 2. Continued...

	Moderately severe and severe anxiety		Bivariate analysis		Final model	
	No n (%)	Yes n (%)	*p*	PR (95% CI)	*p* (adj.)	PR (95% CI) (adj.)
I had a diagnosis of a mental disorder in the last 12 months						
No	230(67.4)	111(32.6)	-	1	-	1
Yes	66(44.3)	83(55.7)	<0.001*	1.71(1.29-2.27)	<0.001*	1.43(1.17-1.74)
Burnout Diagnosis						
Absence	149(81.0)	35(19.0)	-	1	-	-
Presence of Burnout	147 (48.0)	159(52.0)	<0.001*	2.73(1.89-3.94)	<0.001*	2.07(1.52-2.82)
COVID-19 impact scale						
Service professionals least impacted by the pandemic	65(79.3)	17(20.7)	-	1	-	-
Service professionals minimally prepared for the pandemic	143(66.8)	71(33.2)	0.082	1.60(0.94-2.72)	0.091	1.47(0.94-2.29)
Service professionals without structure for the pandemic	88(45.4)	106(54.6)	<0.001*	2.63(1.58-4.40)	<0.001*	2.12(1.39-3.22)

Hosmer-Lemeshow test: Chi-square 278.52, p-value=1.0; Source: Research data, 2020.

Syndrome (PR=2.16; p<0.001), and being a service professional with no structure for the pandemic (PR=1.82; p=0.002). The factors associated with a lower prevalence of moderately severe or severe depression were practicing physical activities (PR=0.64; p=0.002) and having the habit of talking to friends and family members (PR=0.74; p=0.003) (Table 3).

DISCUSSION

In the present study, it was observed that professionals who work in private services, who have symptoms of the Burnout Syndrome, and who work in services with no structure to cope with the COVID-19 pandemic have a higher prevalence of anxiety and depression symptoms; while the habit of having conversations with friends and family members proved to be a factor that reduces the prevalence of anxiety and depression symptoms in Nursing professionals, during the Covid-19 pandemic.

Similar results were observed in the study by Que et al.[15], conducted with health professionals in China during the COVID-19 pandemic, who identified that almost half of the nurses interviewed reported symptoms of depression, anxiety and insomnia. It was also observed that having a higher family income and practicing physical activities were protective factors against the symptoms of depression.

The Nursing professionals are more prone to mental distress, with depression being one of three of the diseases that most affect them. This is due not only to the nature of the activity they carry out; which is directly related to the physical and emotional suffering of those to whom they render their services, but also to the working conditions and to lack of professional recognition.[16]

Another impact of the current pandemic was the adoption of social distancing, which caused changes in the way people relate.[17] When considering the sociable nature of individuals, who have needs for interactions, and that such interactions are fundamental for individual construction, development, learning, teaching, and creating bonds; distancing is a negative factor in psychic restructuring.[18] And it can generate uncertainties, apprehensions, panic, anxiety, fear and loneliness, among others, triggering mental suffering.

The other related factor that stood out in relation to depression was the professionals' monthly income, where professionals with a monthly income of 3 to 4 minimum wages obtained a prevalence of symptoms of moderately severe or severe depression 41% higher than those with a monthly income equal to or higher than 5 minimum wages. However, it is important to note that the effect of income was not observed in the lower income strata.

Regarding income, a number of studies show that the lower it is, the greater the prevalence of depression, which may be related to this fact, the evidence of this prevalence in professionals with only one employment contract. However, the more employment contracts, the greater the increase in income and also the greater the impact on mental health, due to professional exhaustion.[16] In most situations, this increase in employment contracts is related to low wages, absence of a wage floor, and double or triple shifts in order to increase earnings, which are factors that aggravate or cause physical and psychological stress.[19]

Table 3. Prevalence and factors associated with moderately severe or severe depression symptoms in Nursing professionals working during the COVID-19 pandemic in the state of Rio Grande do Norte, Brazil, 2020.

	Moderately severe or severe depression		Bivariate analysis		Final model	
	No n (%)	Yes n (%)	*p*	PR (95% CI)	*p* (adj.)	PR (95% CI) (adj.)
Biological characteristics						
Gender						
Male	51(78.5)	14(21.5)	-	1	-	1
Female	253(59.5)	172(40.5)	0.023*	1.88(1.09-3.24)	0.032*	1.62(1.04-2.52)
Age						
21-31 years old	82(54.7)	68(45.3)	-	1	-	-
31-36 years old	122(65.9)	63(34.1)	0.102	0.75(0.53-1.06)	-	-
37 years old or more	100(64.5)	55(35.5)	0.177	0.78(0.55-1.12)	-	-
Skin color						
White	161(67.9)	76(32.1)	-	1	-	-
Brown	115(55.8)	91(44.2)	0.039*	1.38(1.02-1.87)	-	-
Black	18(54.5)	15(45.5)	0.217	1.42(0.81-2.47)	-	-
Asian	10(71.4)	4(28.6)	0.822	0.89(0.33-2.44)	-	-
Socioeconomic and family characteristics						
Professional's Monthly Income						
Above 5 minimum wages	72(70.6)	30(29.4)	-	1	-	1
3 to 4 minimum wages	98(56.6)	75(43.4)	0.073	1.47(0.97-2.25)	0.035*	1.41(1.02-1.94)
1 to 2 minimum wages	95(58.3)	68(41.7)	0.111	1.42(0.92-2.18)	0.052	1.38(1.00-1.91)
1 minimum wage	39(75.0)	13(25.0)	0.625	0.85(0.44-1.63)	0.913	0.92(0.58-1.44)
Who they live with						
Spouse or partner	171(65.8)	89(34.2)	-	1	-	1
Family (parents and/or siblings)	80(53.3)	70(46.7)	0.052	1.36(1.00-1.86)	0.012*	1.32(1.06-1.65)
Other relatives or friends	26(74.3)	9(25.7)	0.413	0.75(0.38-1.49)	0.514	0.85(0.52-1.39)
Alone	27(60.0)	18(40.0)	0.547	1.17(0.70-1.94)	0.480	1.15(0.78-1.68)
With children						
Yes	160(65.0)	86(35.0)	-	1	-	-
No	144(59.0)	100(41.0)	0.280	1.17(0.88-1.56)	-	-
Work characteristics						
Professional category						
Nurse	183(62.7)	109(37.3)	-		-	-
Nursing technician	121(61.1)	77(38.9)	0.783	1.04(0.78-1.39)	-	-
Total weekly workload						
30 hours	67(63.8)	38(36.2)	-	1	-	-
40 hours	112(62.2)	68(37.8)	0.832	1.04(0.70-1.55)	-	-

Hosmer-Lemeshow test: Chi-square 270.73; p-value=1.000. Source: Research data, 2020.

Table 3. Continued...

	Moderately severe or severe depression		Bivariate analysis		Final model	
	No n (%)	Yes n (%)	*p*	PR (95% CI)	*p* (adj.)	PR (95% CI) (adj.)
60 hours	125(61.0)	80(39.0)	0.702	1.08(0.73-1.59)	-	-
Types of contract						
Public	245(63.8)	139(36.2)	-	1		1
Private	33(52.4)	30(47.6)	0.173	1.32(0.89-1.95)	0.002*	1.57(1.18-2.01)
Both	26(60.5)	17(39.5)	0.731	1.09(0.66-1.81)	0.928	1.01(0.72-1.44)
At what level of care do you work						
Secondary care	120(63.5)	69(36.5)	-	1	-	-
Tertiary care	88(61.5)	55(38.5)	0.773	1.05(0.74-1.50)	-	-
Both	96(60.8)	62(39.2)	0.680	1.07(0.76-1.51)		
Works in ICU						
No	232(62.2)	141(37.8)	-	1	-	-
Yes	72(61.5)	45(38.5)	0.919	1.02(0.73-1.42)	-	-
Size of the municipality where they work						
Up to 50,000 inhabitants	80(72.7)	30(27.3)	-	1	-	-
Between 50,001 and 100,000 inhabitants	56(65.1)	30(34.9)	0.340	1.28(0.77-2.12)	-	-
Between 100,001 and 900,000 inhabitants	168(57.1)	126(42.9)	0.026*	1.57(1.06-2.34)	-	-
Current situation at work						
I still work normally	236(66.1)	121(33.9)	-	1	-	1
I am a suspected, probable or diagnosed case of COVID-19	37(54.4)	31(45.6)	0.141	1.35(0.91-2.00)	0.979	1.00(0.73-1.39)
I was distanced/had the role changed	31(47.7)	34(52.3)	0.025*	1.54(1.05-2.26)	0.012*	1.35(1.07-1.71)
I had the weekly workload changed after the pandemic						
No	239(62.2)	145(37.8)	-	1	-	-
Yes	65(61.3)	41(38.7)	0.892	1.02(0.72-1.45)	-	-
Operates in direct contact with patients with COVID-19						
No	36(69.2)	16(30.8)	-	1	-	-
Yes	268(61.2)	170(38.8)	0.374	1.26(0.76-2.11)	-	-
Self-care practices						
Has done psychotherapy						
No	289(64.2)	161(35.8)	-	1	-	-
Yes	15(37.5)	25(62.5)	0.009*	1.75(1.15-2.66)	-	-

Hosmer-Lemeshow test: Chi-square 270.73; p-value=1.000. Source: Research data, 2020.

Table 3. Continued...

	Moderately severe or severe depression		Bivariate analysis		Final model	
	No n (%)	Yes n (%)	*p*	PR (95% CI)	*p* (adj.)	PR (95% CI) (adj.)
Has been supported by co-workers						
No	196(62.0)	120(38.0)	-	1	-	-
Yes	108(62.1)	66(37.9)	0.994	1.00(0.74-1.35)	-	-
Has done physical activity						
No	187(55.3)	151(44.7)	-	1	-	1
Yes	117(77.0)	35(23.0)	<0.001*	0.52(0.36-0.74)	0.002*	0.64(0.48-0.85)
Has talked with relatives and friends						
No	75(48.1)	81(51.9)	-	1	-	1
Yes	229(68.6)	105(31.4)	0.001*	0.61(0.45-0.81)	0.003*	0.74(0.60-0.90)
Has done mind-body activity						
No	252(59.4)	172(40.6)	-	1	-	-
Yes	52(78.8)	14(21.2)	0.020*	0.52(0.30-0.90)	-	-
Has not performed self-care practices						
No	246(68.3)	114(31.7)	-	1	-	-
Yes	58(44.6)	72(55.4)	<0.001*	1.75(1.30-2.35)	-	-
Mental health characteristics and impact of COVID-19						
I had a diagnosis of a mental disorder in the last 12 months						
No	236(69.2)	105(30.8)	-	1	-	1
Yes	68(45.6)	81(54.4)	<0.001*	1.77(1.32-2.36)	0.002*	1.38(1.13-1.71)
Burnout Diagnosis						
Absence	152(82.6)	32(17.4)	-	1	-	1
Presence of Burnout	152(49.7)	154(50.3)	<0.001*	2.89(1.98-4.23)	<0.001*	2.16(1.56-2.98)
COVID-19 impact scale						
Service professionals least impacted by the pandemic	64(78.1)	18(21.9)	-	1	-	1
Service professionals minimally prepared for the pandemic	153(71.5)	61(28.5)	<0.330	1.30(0.94-2.72)	0.597	1.12(0.73-1.74)
Service professionals without structure for the pandemic	87(44.9)	107(55.1)	<0.001*	2.51(1.53-4.14)	0.003*	1.82(1.22-2.73)

Hosmer-Lemeshow test: Chi-square 270.73; p-value=1.000. Source: Research data, 2020.

When assessing the characteristics of the work, it was verified that the prevalence of moderately severe or severe depression among professionals who work in services without a structure to fight the pandemic was 86% higher than in service professionals less impacted by the pandemic. A possible explanation for this finding was the circumstantial increase in the demand for services and the scarcity of supplies and personnel, which was aggravated by the absences and licenses that occur, or by belonging to the risk group or due to illness. This scarcity provokes a feeling of devaluation, intensifying wear out and suffering at work.[19]

The influence of these factors is not only found among the professionals who remain in activity, considering that professionals who reported being distanced or having their role changed due to the COVID-19 pandemic, had a 35% higher prevalence of severe depression symptoms than individuals who continue to work normally. It is worth mentioning that these professionals may have been dismissed because they are suspected or confirmed COVID-19 cases, which has an impact on the mental health condition of such professionals.[20]

It has been observed that the work structure influences the emergence of mental suffering, having been related to unhealthy environments, precarious conditions, internal conflicts, demands from companions, lack of professional autonomy, insecurity in the development of their activities, work overload and demands of the institution.[16] The current sanitary situation has amplified such conditions; in many cases, the professionals perform their activities in risky situations, with inadequate physical structure, scarcity of material resources, overload of functions, extensive workload, and lack of professional training.[19]

As a result, the Federal Nursing Council (*Conselho Federal de Enfermagem*, COFEN) has been acting in the inspection of the working conditions, especially regarding the lack of PPE, emphasizing that the deficit of professionals resulting from leaves may cause a collapse in the Unified Health System. In relation to the impacts on mental health, together with the National Commission on Nursing in Mental Health, the provision of virtual services has been promoted, directed to the Nursing professionals who work on the front line to fight against COVID-19 and which take place through an intermittently available platform.[17]

However, this situation is not restricted to Nursing professionals. In a research study conducted with physicians, it was observed that logistical support was a factor associated with the mental well-being of professionals working on the front lines to fight against the pandemic. For the authors, the work overload associated with the precariousness of the work environment, with regard to insecurity and the scarcity of PPE, can increase the perception of risk. The result is an increased fear of contagion and exposure of family members, reflecting the presence of negative feelings such as despair and guilt and lack of motivation for work.[20]

According to the Ministry of Health, until July 8th, 2020 786,417 suspected cases and 173,400 confirmed cases were reported in health professionals in Brazil, with the most affected being nursing technicians and assistants (34.4%) and nurses (14.8%). Nursing technicians and assistants also recorded a higher percentage of serious cases that required hospitalization (35.6%), and a higher percentage of deaths (42.0%) due to SARS-CoV-2.[21] The perception of risk negatively impacts on the health professionals, especially nurses, given the high spread and mortality rates of COVID-19 among them.

With regard to hereditary and biological factors, female professionals had more expressive results in terms of depression symptoms, with a prevalence 62% higher than that observed in males. This finding was also observed in the study by Lai et al.[22], where nurses reported more severe symptoms of anxiety, depression and anguish. However, the influence of gender was not observed regarding the prevalence of anxiety symptoms in the present study.

In a recent systematic review and meta-analysis, which sought to examine the evidence of the effects of the COVID-19 epidemic on the mental health of health workers, it was observed that the prevalence of depression and anxiety was significantly higher among female workers. According to the authors, this finding seems to be related to the gender difference, already established in the literature, in the prevalence of symptoms of these mental disorders. It was also identified that the Nursing team professionals presented the highest rates of depression and anxiety among the health workers.[23]

Regarding the effect of race/ethnicity, brown-skinned professionals presented a 23% higher prevalence of symptoms than white-skinned professionals. There were no associations between yellow and black skin; however, the small number of professionals with these characteristics in the study stands out. The absence of black-skinned individuals can be associated with poor access to education; it is known that this population is more likely to suffer the impacts of the pandemic due to historical negligence, resulting in greater social and economic vulnerability and less access to the services, wither as a health professional or as a user.[24]

Regarding the family factors, it was observed that living with parents or siblings is a factor associated with symptoms of depression. One hypothesis for this finding is that living with older adults in their family circle increases the concern about the possible transmission of the disease as a result of their exposure at work. The fact that age is a strong risk factor for death due to COVID-19 may have generated greater concern regarding the protection and encouragement of social distancing measures among the professionals who have older adults in their homes.[25,26]

Liu et al. identified that the health professionals who do not live with family members were at higher risk for depression, which differs from the findings in the present study. Although the findings are divergent, both have important implications. Living with family members can represent a risk for the presence of symptoms, as found in this study, since the risk of contamination and transmission to loved ones, associated with the effects that the disease caused in the lives of these professionals, and added to physical and mental exhaustion, contribute to the emergence of mental suffering.[27]

On the other hand, according to Liu et al.,[6] the prevalence of symptoms of depression among the professionals who do not live with family members can be justified by family support as an important point of emotional support for the professionals working on the front lines to fight against the disease. The present study corroborates these findings, since the habit of talking with family members and friends was a protective factor against severe symptoms of anxiety and depression.

Family life is a protective factor, but complications in this relationship are contributing factors for depressive symptoms, aspects inherent to the profession impact on family contact,

whether due to tiredness and overwork that impair living and dialog, family losses, absence of family support and even lack of contact; these factors favor the emergence of depression and the risk of suicide.[16] Therefore, family life needs to be analyzed as to whether it constitutes a risk or protective factor for the development of symptoms of depression among the professionals working in the current scenario.

In addition, the practice of mind-body activities reduced by 54% the prevalence of severe anxiety symptoms, and the practice of physical activities reduced by 36% the prevalence of severe symptoms of depression among Nursing professionals. Thus, it is recommended to adopt healthy habits, focusing on activities aimed at the well-being of the body and mind in prevention and, as an adjunct, considering the scientific evidence on the benefits and the absence of negative effects for such interventions.[28] Therefore, physical activities are configured as protective factors against other chronic non-communicable diseases.

CONCLUSIONS AND IMPLICATIONS FOR THE PRACTICE

A high prevalence of severe symptoms of anxiety and depression was observed among the Nursing professionals who work in medium and high complexity services during the COVID-19 pandemic. The factors associated with a more pronounced prevalence of both outcomes were having an employment contract in the private sector, having symptoms of the Burnout Syndrome, and working in services without a structure for a pandemic. And, as a protective factor against both outcomes, having the habit of talking to family members and friends. Such results support the findings in the literature that demonstrate the increase in mental suffering among Nursing professionals during the pandemic.

The results indicate that actions aimed at improving the working conditions and that encourage the practice of physical activities can be beneficial for the maintenance and strengthening of the mental health conditions of this population. It is worth mentioning the importance of actions such as those that the body representing the profession, the COFEN, has promoted: virtual assistance; in view of its collaboration, either directly for these professionals, or indirectly, for the population that is assisted through the SUS, avoiding the risk of collapse in the system due to lack of professionals, due to psychological distress.

Finally, understanding the importance of these professionals in the health services and considering that many of the contributing factors to mental suffering are related to the working conditions, strategies for promoting and valuing the profession through their representative and public bodies are suggested.

As limitations of the study, the methodological design of this research stands out as a web-survey, which, although presenting advantages due to the speed and possibility of data collection in a virtual environment, is subjected to selection bias of the participants since it is affected by the effect of *"self-selection"*, in which the bias effect increases the prevalence of the outcome in the population.[29] The measures used to reduce the selection bias were the following: selection of seed professionals in all high and medium complexity services in the state for the dissemination of the electronic questionnaire and the support of the Regional Nursing Council that distributed the questionnaire to all registered professionals.

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