










# Psychological impact of COVID-19 pandemic among healthcare workers in Paraguay: A descriptive and preliminary study

## Impacto psicológico de la pandemia de COVID-19 en trabajadores de la salud en Paraguay: un estudio descriptivo y preliminar

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## ABSTRACT

**Introduction:** Healthcare workers exposed to SARS-CoV-2 are vulnerable to psychological distress. **Methodology:** A descriptive cross-sectional study was carried out in 5 tertiary hospitals in the Central, San Pedro and Caaguazú Departments of Paraguay during the COVID-19 pandemic from April to June 2020. The pilot study included 125 healthcare workers as participants, 25 for each hospital. Demographic data and occupational exposure data were collected with an ad-hoc questionnaire. Symptoms of depression and anxiety were evaluated employing the Patient Health Questionnaire-9, and the Generalized Anxiety Disorder scale-7. The prevalence of post-traumatic stress was determined using the Post-Traumatic Stress Disorder Check List-C. **Results:** Of the 125 participants, 68 (54.8%) were doctors, 37 (29.8) nurses, 7 (5.6%) biochemists, 3 (2.4%) obstetricians, and 9 (7.3%) other healthcare workers. Most participants were females (86 [68.8%]), with an average age of 33.8 years (SD ± 7.4), single (71 [56.8%]), with a postgraduate educational level (83 [66.4%]), and reporting a junior level of work experience (52 [41.6%]). A total of 71 (57.3%) were classified as high-risk healthcare workers after exposure to SARS-CoV-2. 61 (48.8%) of participants presented symptoms of depression, and 68 (54.4%) presented symptoms of anxiety. **Conclusion:** Healthcare workers in Paraguay reported a significant prevalence of depressive and anxious symptoms during the COVID-19 pandemic. These findings lend support to the idea that healthcare workers are vulnerable to psychological distress and that they may require specific mental health interventions.

**Keywords:** Healthcare workers; mental health; COVID-19; anxiety; depression; post-traumatic stress

## RESUMEN

**Introducción:** los trabajadores de la salud expuestos al SARS-CoV-2 son vulnerables a la angustia psicológica. **Metodología:** se realizó un estudio descriptivo transversal en 5 hospitales de tercer nivel de los Departamentos Central, San Pedro y Caaguazú de Paraguay durante la pandemia de COVID-19, de abril a junio de 2020. El estudio piloto incluyó a 125 trabajadores de la salud, 25 de cada hospital. Los datos demográficos y sobre la exposición ocupacional se recopilaron con un cuestionario ad-hoc. Los síntomas de depresión y ansiedad se evaluaron empleando la escala Patient Health Questionnaire-9 y la escala Generalized Anxiety Disorder scale-7. La prevalencia de estrés postraumático fue determinada usando la escala Post-Traumatic Stress Disorder Check List-C. **Resultados:** de los 125 participantes, 68 (54,8%) eran médicos, 37 (29,8) enfermeros, 7 (5,6%) bioquímicos, 3 (2,4%) obstetras y 9 (7,3%) otros trabajadores de la salud. La mayoría de los participantes eran mujeres (86 [68,8%]), con una edad media de 33,8 años (DE ± 7,4), solteros (71 [56,8%]), con un nivel de estudios de posgrado (83 [66,4%]), y reportaban un nivel junior de experiencia laboral (52 [41,6%]). Un total de 71 (57,3%) fueron clasificados como trabajadores de la salud de alto riesgo después de la exposición al SARS-CoV-2. 61 (48,8%) de los participantes presentaron síntomas de depresión y 68 (54,4%) presentaron síntomas de ansiedad. **Conclusión:** los trabajadores de la salud en Paraguay reportaron una prevalencia significativa de síntomas depresivos y ansiosos durante la pandemia de COVID-19. Estos hallazgos apoyan la idea de que los trabajadores de la salud son vulnerables a la angustia psicológica y que pueden requerir intervenciones específicas de salud mental.

**Palabras clave:** trabajadores de la salud; salud mental; COVID-19; ansiedad; depresión; estrés postraumático

## INTRODUCTION

Designing special interventions aimed at protecting the mental health of healthcare has become a particularly crucial public health issue during the COVID-19 pandemic (1). Measuring the impact of psychological distress in this vulnerable population may help in the design of these interventions (2).

Previous studies carried out during the SARS (Severe-Acute Respiratory Syndrome) epidemic of 2003 confirmed the presence of adverse psychological reactions among healthcare workers (3-5). Healthcare workers reported fear getting infected, and of passing the infection to their family, friends, and colleagues; they also reported feelings of uncertainty and stigmatization. In addition, they showed increased levels of subjective stress, anxiety, and depressive symptoms (5). Also, in 2003, hospital employees exposed to SARS (due to quarantining themselves, or to working in high-risk settings such as SARS wards), as well as those who reported having friends or family members with SARS, were more likely to show symptoms of post-traumatic stress, compared to those without any exposure (6).

In 2020, in the Wuhan region, the original epicenter of COVID-19 pandemic, it has been described that front-line healthcare workers, exposed to patients with COVID-19, reported a significantly higher rate of anxious symptoms, depression, insomnia and malaise, compared to unexposed healthcare workers (7).

In Latin America some studies have been carried out to determine the psychological effects of the COVID-19 pandemic on the general population (8, 9). However, data on the psychological impact of the pandemic in Latin American healthcare workers are not available.

The aim of the present study is to describe the psychological impact of COVID-19 among healthcare workers in Paraguay. Findings may provide helpful evidence that could become the basis of strategies designed for the prevention and promotion of mental health in healthcare workers.

## METHODOLOGY

This is a preliminary study carried out in five tertiary referral centers in the departments of Central, San Pedro and Caaguazú, Paraguay, during the two-month period from April to June 2020. The participants included healthcare workers, with age ranging from 18 to 65 years. The tertiary referral hospitals included in this pilot study were the following: "Hospital de Clínicas" in the city of San Lorenzo; General Hospital of the Department of San Pedro, in the city of Santa Rosa del Aguaray; Regional Hospital of the city of Coronel

Oviedo, IPS Hospital of the City of Coronel Oviedo, and Regional Hospital of the city of Pedro Juan Caballero. All the participants were selected using an intentional, non-probabilistic sampling. 125 participants, 25 from each hospital, were included.

The study was approved by the Ethics Committee of the Faculty of Medical Sciences of the National University of Asunción. Informed consent was obtained verbally and in writing by each participant before starting the research recruitment and data collection. Confidentiality of the information was ensured. However, personal contact information was also collected in order to provide further assessment and management if required.

Demographic data included occupation (nurse, doctor, others), sex (male or female), age (21-30, 31-40, 41-50, 51-60 years old), marital status, educational level (undergraduate, graduate or postgraduate), place of residence (urban or rural), type of hospital (secondary, tertiary), and area of work.

Healthcare workers responded to questions regarding their exposure to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), including occupational exposure or a friend and/or family member with COVID-19. Occupational exposure was considered as high for those workers practicing in high-risk settings (COVID-19 ward, emergency department, respiratory medicine department, or X-ray imaging) during the pandemic. COVID-19 diagnosis was considered as well as having been in direct contact with a COVID-19 positive patient either at work, home, or in any other setting.

The present study detected symptoms of depression, anxiety and post-traumatic stress disorder, employing instruments with a validated Spanish version: The Patient Health Questionnaire (PHQ-9, range 0-27) (10, 11), and the 7- item Generalized Anxiety Disorder scale (GAD-7, range, 0-21) (12). For the assessment of PTSD (Post- Traumatic Stress Disorder) symptoms, the PCL-C PTSD- checklist was used (13), with a score  $\geq 50$  indicating significant symptoms of PTSD (14-16).

Because of social distancing rules and the lockdown instituted by the government, data were collected through Google forms, sent by various digital platforms of communication, including e-mails, or digital version of a self-administered form, through Epi-info 7, provided through a tablet. Data were transferred into a Microsoft Excel electronic spreadsheet, version 19.

## RESULTS

In the present pilot study, 125 healthcare workers were selected and completed the survey. Of them, 68

(54.8%) were doctors, 37 (29.8%) nurses, 7 (5.6%) biochemists, 3 (2.4%) obstetricians, and 9 (7.3%) other healthcare workers.

Most participants were females (86 [68.8%]), with an average age of 33.8 years old (SD ± 7.4); 71 [56.8%] were single, 83 (66.4%) reported a postgraduate educational level, 52 (41.6%) with a junior level of work experience. 71 (57.3%) were considered to be high-risk

healthcare workers due to practicing in COVID-19 wards, emergency departments, respiratory medicine departments or X-ray imaging. Most of participants were from urban areas (118 [94.4%]). 61 (48.8%) participants presented depressive symptoms, and 68 (54.4%) reported anxious symptoms. A small group reported symptoms of post-traumatic stress (9 [7.2%]). Detailed results are shown in Table 1.

TABLE 1. CHARACTERISTICS OF THE SAMPLE (N=125).

Characteristics	n (%)	PTSD symptoms# n (%)	Depressive Symptoms <sup>s</sup> n (%)	Anxiety Symptom* n (%)
<b>Sex</b>				
Male	39 (31.2)	4 (10.2)	15 (38.5)	20 (51.2)
Female	86 (68.8)	5 (5.8)	46 (53.5)	48 (55.8)
Total	125 (100)	9 (7.2)	61 (48.8)	68 (54.4)
<b>Age (years old)</b>	33.8 ± 7.4	31.4 ± 4.1	33.5 ± 7.5	33.6 ± 7.3
<b>Marital Status</b>				
Married	38 (30.4)	1 (2.6)	15 (39.5)	22 (57.9)
Divorced/Separated	7 (5.6)	1 (14.3)	6 (85.7)	5 (71.4)
Domestic Partnership	5 (4.0)	0 (0)	0 (0)	0 (0)
Single	71 (56.8)	7 (9.9)	38 (53.5)	40 (56.3)
Widow	4 (3.2)	0 (0)	2 (50)	1 (25)
<b>Residence</b>				
Rural	7 (5.6)	0 (0)	3 (42.8)	3 (42.8)
Urban	118 (94.4)	9 (7.6)	58 (49.1)	65 (55.1)
<b>Educational Level</b>				
Technician	2 (1.6)	0 (0)	1 (50)	1 (50)
Graduate student	1 (0.8)	0 (0)	1 (100)	0 (0)
Graduate completed	39 (31.2)	1 (2.6)	20 (51.3)	23 (58.9)
Post graduate (specialty doctor)	59 (47.2)	8 (13.5)	25 (42.3)	29 (49.1)
Post graduate (internship)	16 (12.8)	0 (0)	9 (56.2)	9 (56.25)
Post graduate (MSc)	8 (6.4)	0 (0)	5 (62.5)	6 (75)
<b>Occupation</b>				
Nurse	37 (29.8)	2 (5.4)	18 (48.6)	19 (51.3)
Biochemist	7 (5.6)	0 (0)	4 (57.1)	5 (71.4)
Doctor (Physician)	68 (54.8)	6 (8.82)	30 (44.1)	37 (54.4)
Obstetrician	3 (2.4)	0 (0)	2 (66.7)	1 (33.3)
Other	9 (7.3)	0 (0)	7 (77.7)	4 (44.4)
<b>Work Experience</b>				
Junior level (less than 5 years)	52 (41.6)	5 (9.6)	27 (51.9)	26 (50)
Intermediate level (5 -10 years)	31 (24.8)	4 (12.9)	14 (45.1)	18 (58.1)
Senior level (more than 10 years)	42 (33.6)	0 (0)	20 (47.6)	24 (57.1)
<b>Frontline Healthcare workers</b>				
Yes	71 (57.3)	7 (9.8)	33 (46.5)	38 (53.5)
No	53 (42.7)	1 (1.9)	28 (52.8)	30 (56.6)
<b>Positive COVID-19 Diagnosis</b>				
Yes	33 (26.4)	5 (15.15)	17 (51.5)	20 (60.6)
No	92 (73.6)	4 (4.3)	44 (47.8)	48 (52.2)
<b>Relatives or Friends with Positive COVID-19 Diagnosis</b>				
Yes	14 (11.2)	2 (14.3)	7 (50)	7 (50)
No	111 (88.8)	7 (6.3)	54 (48.6)	61 (54.9)
<b>Tertiary Hospital</b>				
“Hospital de Clínicas” – San Lorenzo	25 (20)	4 (16)	14 (56)	14 (56)

Regional Hospital of Coronel Oviedo	25 (20)	2 (8)	8 (32)	13 (52)
Regional Hospital of P.J. Caballero	25 (20)	3 (12)	16 (64)	15 (60)
General Hospital of San Pedro	25 (20)	0 (0)	8 (32)	8 (32)
IPS Hospital of Coronel Oviedo	25 (20)	0 (0)	15 (60)	18 (72)
<b>Work area</b>				
Consulting room	49 (39.2)	4 (8.1)	26 (53.1)	27 (55.1)
Laboratory	7 (5.6)	0 (0)	3 (42.8)	5 (71.4)
Respiratory ward	10 (8.0)	2 (20)	5 (50)	5 (50)
ICU	1 (0.8)	0 (0)	0 (0)	0 (0)
Emergency Department	37 (29.6)	2 (5.4)	17 (45.9)	22 (59.5)
Surgery	8 (10.4)	1 (7.7)	9 (69.2)	8 (61.5)
Other	13 (10.4)	0 (0)	1 (12.5)	1 (12.5)
<b>Resting place after work shifts</b>				
Temporary lodging	6 (4.8)	1 (16.7)	4 (66.7)	4 (66.7)
Home	119 (95.2)	8 (6.7)	57 (47.9)	64 (53.8)
<b>Availability of Personal Protective Equipment</b>				
Never	10 (8.0)	1 (10)	7 (70)	5 (50)
Rarely	10 (8.0)	1 (10)	4 (40)	2 (20)
Sometimes	13 (10.4)	1 (7.7)	8 (61.5)	7 (53.8)
Almost always	47 (37.6)	3 (6.4)	18 (38.3)	29 (61.7)
Always	45 (36.0)	3 (6.7)	24 (53.3)	25 (55.6)

#: PTSD: Post-Traumatic Stress Disorder. COVID-19: Coronavirus Disease in 2019. #: PTSD-checklist. §: The Patient Health Questionnaire (PHQ-9). \*: Generalized Anxiety Disorder scale (GAD-7)

## DISCUSSION

The present cross-sectional pilot study included 125 participants and revealed a high prevalence of psychological symptoms among healthcare workers involved in the management of patients with COVID-19 in Paraguay. Approximately half of the subjects reported symptoms of anxiety and depression, while less than 10% presented symptoms of post-traumatic stress.

To the best of our knowledge, this is one the first studies in Latin America on the prevalence of symptoms of post-traumatic stress, depression and anxiety in healthcare workers occupationally exposed to SARS-CoV-2. A study involving 204 Latin American surgeons has shown that 22% (n = 45) of them had a score over 10 in the PHQ-9; they were not assessed for anxious or post-traumatic stress symptoms (17).

The prevalence of 7.2% of PTSD symptoms is similar to previous studies conducted during the SARS pandemic, which was in the range between 5% and 10%, and also similar to the prevalence of severe PTSD symptoms (6.2% to 10.5%) found in recent studies in China (4, 7, 18). In addition, frontline healthcare workers occupationally exposed to COVID-19 had a higher prevalence of post-traumatic stress symptoms, similar to a previous study conducted during the COVID-19 pandemic (7).

In our sample, a large proportion presented symptoms of anxiety and depression, 54.4% and 48.8%,

respectively. The prevalence rates of depressive and anxious symptoms are similar to those described in the studies conducted during the SARS epidemic and other reports published during the COVID-19 pandemic (5, 7): higher rates of anxiety and depression in frontline healthcare workers (especially in nurses) were found compared to healthcare workers not-occupationally exposed workers to SARS-CoV-2 (19-21). Limitations of this study include a small sample size and a disproportionately large representation of doctors (7, 20).

The higher prevalence of symptoms of depression and anxiety in females is in line with previous studies in healthcare workers and in the general population. This suggests a vulnerability of females to suffer from psychological distress during high stress situations such as epidemics or pandemics (22).

Regarding the limitations of the study, the cross-sectional nature, the sample size and the non-probabilistic sampling are worth noting. We hope that the full study with a larger sample size and detailed statistical analyses will shed light on the prevalence of psychological distress and post-traumatic stress in healthcare workers and its association or lack of association with occupational exposure to SARS-CoV-2.

This preliminary study was conducted among Paraguayan healthcare workers exposed or not exposed to COVID-19. Workers exposed to COVID-19 reported a high prevalence of symptoms of depression, anxiety. This suggests that prevention of mental health

issues and psychological distress among healthcare workers is mandatory (23).

Our following research study will add more details and information regarding the unexplored psychological impact of COVID-19 among healthcare workers in Paraguay.

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