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DA VIDA E DA NATUREZA (ILACVN)**

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SAÚDE MENTAL DOS PROFISSIONAIS DA SAÚDE EM PAÍSES LATINO-AMERICANOS DURANTE O PERÍODO DA COVID-19: UMA REVISÃO

OSCAR IVAN CRUZ BARRIENTOS

Foz do Iguaçu

2023

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OSCAR IVAN CRUZ BARRIENTOS

Trabalho de Conclusão de Curso apresentado ao Instituto Latino-Americano de Ciências da Vida e da Natureza da Universidade Federal Latino-Americana, como requisito parcial à obtenção de título de Bacharel em Medicina.

Orientador: Prof. Dr. Robson Zazula

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Assinatura do Responsável

Dedico este trabajo a todas las personas que Dios puso en mi camino cuando más lo necesité: a la familia y amigos de mi abuela en Indiana, Nuevo México y Florida, y a los amigos de mi hermano en Geórgia y Virginia, todos se convirtieron en mi familia. Sin ellos yo no habría logrado llegar hasta aquí.

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Muito Obrigado!

*La esperanza, ¿no será la prueba de un sentido oculto de
la Existencia, una cosa que merece se luche por ella?*
Ernesto Sabato

APRESENTAÇÃO

O presente trabalho é parte de um trabalho de revisão de literatura conduzido pelo discente em colaboração com outros discentes e com o professor Robson Zazula. A versão final do trabalho, intitulado *Mental health of healthcare workers of Latin American countries: a review of studies published during the first year of COVID-19 pandemic* foi publicado na revista *Psychiatry Research*. A versão final do trabalho pode ser acessada na íntegra, por meio do link: [Mental health of healthcare workers of Latin American countries: a review of studies published during the first year of COVID-19 pandemic](#).

RESUMO

A sobrecarga de trabalho, a falta de equipamentos de proteção individual, as longas horas sem dormir e o medo de levar a COVID-19 para casa tornaram os profissionais de saúde (HCW) um dos grupos mais vulneráveis a desenvolver transtornos de saúde mental. Este estudo teve como objetivo identificar e revisar artigos que avaliaram a saúde mental de profissionais de saúde de países da América Latina (excetuando o Brasil), publicados durante o primeiro ano da pandemia de COVID-19. Para sua elaboração, foi realizada uma busca sistemática no PUBMed/Medline e Web of Science. Para a seleção dos artigos, foi realizada uma revisão com base nos títulos e resumos e, seguidamente, os dados foram extraídos dos textos completos dos estudos elegíveis. Os resultados incluíram variáveis de saúde mental, país onde o estudo foi realizado, período de coleta de dados, categorias de profissionais de saúde, desenho do estudo, medidas de saúde mental e principais resultados. A avaliação de qualidade e risco também foi realizada. Na primeira busca, foram identificados 19 estudos e na segunda busca, 41, totalizando 60 estudos (após a remoção de estudos duplicados). Destes, 10 estudos preencheram os critérios de elegibilidade e foram incluídos na revisão. Maiores escores de ansiedade foram observados em diferentes estudos, assim como maior nível de depressão entre os HCW. Ser do sexo feminino, mais jovem e atuar mais perto do epicentro da epidemia aumentou a probabilidade de desenvolver um distúrbio de saúde mental. Os resultados desta revisão destacam os efeitos deletérios do *burnout* que os profissionais de saúde na América Latina experimentaram em sua luta contra o COVID-19, demonstrando a importância das políticas de bem-estar psicológico para eles durante a crise do COVID-19.

Palavras-chave: COVID-19; Saúde mental; trabalhadores de saúde; América Latina; Síndrome de *burnout*; Depressão; Ansiedade.

RESUMEN

La sobrecarga de trabajo, la falta de equipo de protección individual, las largas horas sin dormir y el miedo a llevar el COVID-19 a casa han convertido a los trabajadores de la salud (HCW) en uno de los grupos más vulnerables para desarrollar trastornos de salud mental. Este estudio tuvo como objetivo identificar y revisar artículos que evaluaron la salud mental de los HCW de países de América Latina (excepto Brasil), publicados durante el primer año de la pandemia de COVID-19. Para su elaboración fue realizada una búsqueda sistemática en PUBMed/Medline y Web of Science. Para la selección de los artículos se realizó una revisión basada en los títulos y resúmenes, y luego se extrajeron los datos de los textos completos de los estudios elegibles. Los resultados incluyeron variables de salud mental, país en donde se realizó el estudio, período de recopilación de datos, categorías de profesionales de la salud, diseño del estudio, medidas de salud mental y principales resultados. También se realizó evaluación de calidad y riesgo. En la primera búsqueda fueron identificados 19 estudios y en la segunda búsqueda 41, totalizando 60 estudios (después de eliminar los duplicados). De estos, 10 estudios cumplieron con los criterios de elegibilidad y se incluyeron en la revisión. Se observaron puntuaciones más altas de ansiedad en diferentes estudios, así como un mayor nivel de depresión entre HCW. Ser mujer, una edad más joven y una actuar a una distancia más cercana al epicentro de la epidemia aumentó la probabilidad de desarrollar un trastorno de salud mental. Los hallazgos de esta revisión destacan los efectos nocivos del agotamiento que los HCW de América Latina han experimentado en su lucha contra el COVID-19, lo que demuestra la importancia de las políticas de bienestar psicológico para ellos durante la crisis del COVID-19.

Palabras clave: COVID-19; Salud mental; trabajadores de la salud; América Latina; Síndrome de *burnout*; Depresión; Ansiedad.

ABSTRACT

Work overload, lack of personal protective equipment, long hours without sleep and the fear of bringing COVID-19 home have left healthcare workers (HCW) one of the vulnerable groups to develop mental health disorders. This study aimed to identify and review articles that evaluated mental health of HCW of Latin American countries (except Brazil), published during the first year of COVID-19 pandemics. For its elaboration, a systematic search was performed in PUBMed/Medline and Web of Science. For the selection of the articles, a review was carried out based on the titles and abstracts, and then data was extracted from the full texts of the eligible studies. The outcomes included mental health variables, country where the study was conducted, period of data collection, healthcare professional categories, study design, mental health measurements and main outcomes. The quality and risk assessment were also performed. In the first search, 19 studies were identified and 41 in the second search, totaling 60 studies (after removing duplicates). From those, 10 studies matched eligibility criteria and were included in the review. Higher score of anxiety were reported in different studies, as well as an increased level of depression among HCW. Being a female, younger age, and closer distance of the epicenter of the outbreak increased the likelihood to develop mental health disorder. The findings of this review highlight the deleterious effects of burnout that HCW of Latin America has experienced in their fight against COVID-19, demonstrating the importance of psychological well-being policies for them during the COVID-19 crises.

Keywords: COVID-19; Mental Health; Healthcare Workers; Latin-America; Burnout syndrome; Depression; Anxiety.

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LISTA DE ABREVIATURAS E SIGLAS

ABNT	Associação Brasileira de Normas Técnicas
BIPQ	Brief Illness Perception Questionnaire
CI	Confidence interval; COVID-19:Coronavirus disease 2019
DD	Depersonalization/ derealization inventory
DES	Dissociative Experiences Scale
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, 5th ed
FCV-19S	Fear of COVID Scale
GAD-7	7-item Generalized Anxiety Disorder
GAD	Generalized anxiety disorder
GADS	Goldberg Depression and Anxiety Scale
H-YBOCS	Hypochondriasis Yale-Brown Obsessive-Compulsive Scale
HADS	Hospital Anxiety and Depression Scale;
HCW	Health care workers
ISI	Insomnia Severity Index
K6	Kessler Screening Scale for Psychological Distress
PHQ-9	9-item Patient Health Questionnaire on Depression
PPE	Personal protective equipment
PSQI	Pittsburgh Sleep Quality Index
PTSD	Post-traumatic stress disorder
SD	Standard deviation
SSOM	Somatic Symptoms without Organic or Medical Cause Current Status Assessment Questionnaire
STAI	State-Trait Anxiety Inventory
SWIFT	Sleepiness-Wakefulness Inability and Fatigue Test
WHO	World Health organization.

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1 INTRODUCTION

Coronavirus disease 2019 (COVID-19) emerged in December 2019 in China, where it was identified for the first time and from where it spread quickly worldwide. The disease was declared a global pandemic in March 2020 and, since then, it has infected more than 110 million people and surpassed around 2,5 million deaths (World Health Organization [WHO], 2021). In general, infected persons could develop a wide range of severity, from severe to mild symptoms or even being asymptomatic, which could still transmit the virus to other people. The average time from exposure to the virus to the beginning of the symptoms is around five days, and most individuals who develop symptoms do so within 11.5 days of infection (WIERSINGA *et al.*, 2020). In general, the most common symptoms of the COVID-19 are fever, shortness of breath, and dry cough (WU *et al.*, 2020). Although most of the patients are considered to show a favorable prognosis, both elderly and those with chronic conditions are more susceptible to develop a severe condition. Those patients might require intensive care unit admission and are likely to suffer substantial sequelae (WIERSINGA *et al.*, 2020).

Currently, more than 200 countries worldwide have been affected by COVID-19 and their health systems are suffering to deploy technical and human resources to minimize the spread of the virus and its respective morbidity and mortality (MORGANTINI *et al.*, 2020). The first case in Latin America was confirmed in Brazil at the end of February of 2020. Even with late identification of its first case and death, when compared with the rest of the world, the region has become one of the world epicenters of the disease, and since then has been in an epidemiological emergency. According to the Pan American Health Organization (PAHO), Latin American and Caribbean, the region surpassed 1 million deaths as of May 21, 2021.

One of the key points in this context is related to mental health, which has been a concern among researchers, healthcare workers (HCW), and governmental leaders. Several studies have been describing the impacts of the COVID-19 and measures to minimize its spread on mental health (POLLOCK *et al.*, 2020), in particular among HCW, which were considered, at the same time, as essential workers during the pandemics and one of the most affected groups. In addition, they also may be considered as one of the most vulnerable groups to develop mental disorders, such as depression, anxiety, or stress (ESPERIDIÃO *et al.*, 2020). The most common factors

that contribute to mental health deterioration are excessive working journeys and shifts, employment contracts, insufficient personal protective equipment, and continuous exposure to a new virus, which may represent a risk for their health (LAI *et al.*, 2020; LU *et al.*, 2020; MONTERROSA-CASTRO *et al.*; 2020; ZHANG *et al.*, 2020).

However, even with a high prevalence and mortality of the COVID-19 in Latin America and the known effects of the pandemics in the mental health of HCW, there were only a few studies published reporting their mental health of during the first year of the COVID-19 pandemics. Even more, to our knowledge, there was no published review identifying those studies as well as describing their main characteristics and outcomes, which makes the present review more relevant. Then, considering the effect of the COVID-19 pandemics, its consequences on mental health, and the lack of studies focusing on mental health of HCW from this region, and the fact that Latin America has become one of the epicenters of the disease since its outbreak, the current review aimed to identify and review articles that evaluated mental health of HCW of Latin American countries (except Brazil) published during the first year of COVID-19 pandemics.

2 METHOD

An integrative review was performed, aiming to identify and review articles published during the first year of COVID-19 pandemics, since its outbreak in the region (from March 2020 to March 2021). There was no previous published protocol.

2.1 SEARCH STRATEGY

Two electronic databases were systematically searched: PUBMed/ Medline, and Web of Science. Additional search was also conducted on Scielo with no results. The search was performed from November 2020 to March 2021. The first search extraction was on the 17th of November of 2020 and the second search extraction was on the 21st of March 2021. The search terms were ((COVID-19) AND (MENTAL HEALTH) AND (HEALTH PERSONNEL) AND [Latin American countries]). An excerpt of the search term is in the supplementary material.

2.2 ELIGIBILITY AND EXCLUSION CRITERIA

The present study included only studies published during the first year since the COVID-19 outbreak in the region (from March 2020 to March 2021), which were written either in English or Spanish. Additionally, a broad eligibility criterion was used to capture all potential studies, based on PECO model described as follow: (a) population: HCW from Latin American countries (only Spanish speakers' countries); (b) exposure: the main exposure was the COVID-19 pandemics since its outbreak in the region; (c) control: there were no specific inclusion or exclusion criteria for a comparison group in the selected studies; (d) outcomes: one or more aspects of mental health (either as primary or secondary outcomes) of the selected population.

2.3 STUDY SELECTION

All studies were imported into Mendeley (version 1.19.8), where they were screened. During this first selection process, the eligibility was based on the titles and abstracts. Then, during the second selection process, abstracts and full-texts were read and, if the latter were not available online, corresponding authors were contacted. Unclear articles were discussed with the supervisor.

2.4 DATA EXTRACTION

Relevant data was extracted from the selected articles based on an extraction form, which was developed based on the objectives of the current review. The extraction form contained the following information: article code, title, authors, DOI number, primary aim, country of data collection, sample size, the average age of participants (or any related information), professional categories, general measures, mental health measurements/ inventories, COVID related measurements/ questionnaires, main outcomes, COVID related outcomes, and conclusions.

2.5 DATA ANALYSIS

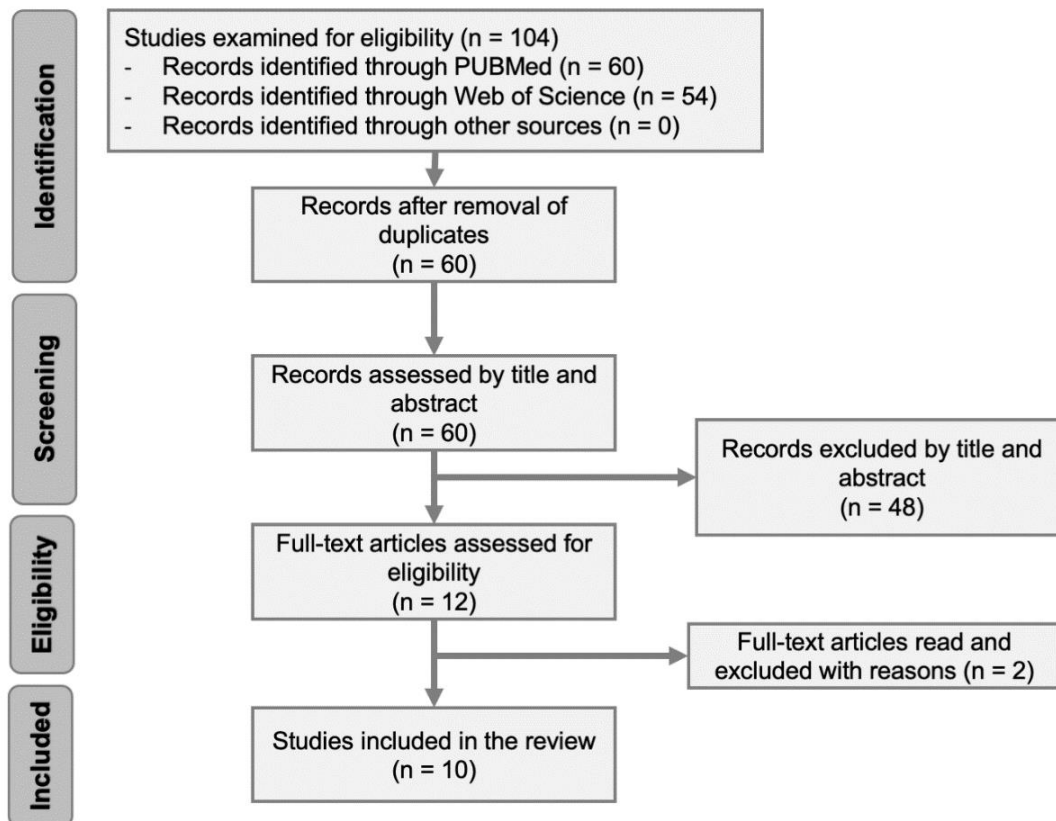
A qualitative analysis was performed, in which the evidence was summarized and organized around the following topics: primary aim, variables assessed, study designs, sample population and country in which the study was conducted, mental health and COVID-19 measurements, and main outcomes. Quality and risk assessment was also assessed using the STROBE checklist for cohort, case-control, and cross-sectional studies (combined)¹. All items and subitems from the checklists were assessed and rated as 0, if the information was not reported, 1, if the information was reported, and X, if the information was not applicable, reaching a maximum of 34 points. Then, final scores were converted into percentages concerning the relation to the number of assessed items (0 or 1), ranging from 0% to 100%.

¹ To see all available STROBE checklists: <https://www.strobe-statement.org/index.php?id=available-checklists>

3. RESULTS

The first literature search, conducted in November 2020, identified 19 studies in total (after removal of duplicates), whereas the second literature search, conducted in March 2021, identified 41 studies (after removal of duplicates), totaling 60 studies. From those studies identified in both searches, 48 were excluded by title and abstracts, and 12 initially matched eligibility criteria. Two studies were later excluded after a discussion with the supervisor. The flowchart diagram is presented in Figure 1.

Figure 1. Prisma flowchart diagram showing study identification and selection process



Source: prepared by the author.

3.1 PRIMARY AIM AND MAIN VARIABLES ASSESSED

Mental health problems and the needs of health professionals involved in the fight against the COVID-19 pandemic in Latin America were related to individual

characteristics, and the severity of the pandemic observed in each country. All studies included in the present review evaluated one or more aspects of the psychological impact of the COVID-19 pandemic on HCW, such as anxiety and depressive symptoms, stress and/or sleep patterns (see Table 1 for more information). Additionally, four studies assessed the frequency of generalized anxiety disorder symptoms, using the 7-Item Generalized Anxiety Disorder Scale (GAD-7), while one study evaluated the influence of pre-existing symptoms on the development of post-traumatic stress disorder (PTSD) among those professionals. A single study aimed to show the impact of belief in conspiracy theories as a negative predictor of mental health among HCW whereas other study aimed to estimate the long-term impact of compulsory social isolation on the psychological well-being of HCW. When COVID-19 specifically was taken into account, only three studies included either questionnaires or isolated questions to assess COVID-19 related aspects, such as fear, coping needs, and conspiracy theories. With regards to non-modifiable factors, such as age, sex, demographic characteristics, and professional category, all studies collected those data and analysed their association to mental health variables.

Table 1. Mental health variables assessed in reviewed studies

Study	Psychosocial variables assessed
MONTERROSA-CASTRO <i>et al.</i> (2020)	Anxiety Stress Fear (related to COVID-19)
CHEN <i>et al.</i> (2020)	Anxiety Psychological distress Well-being and life satisfaction
GUIROY <i>et al.</i> (2020)	Depression
YÁÑEZ <i>et al.</i> (2020)	Anxiety Psychological distress Turnover intention
MIGUEL-PUGA <i>et al.</i> (2020)	Resilience Depression Stress Anxiety Dissociative symptoms PTSD
ERAZO <i>et al.</i> (2020)	Depression Anxiety Stress Sleep Posttraumatic stress disorder

CHAPA-KOLOFFON <i>et al.</i> (2020)	Stress
ROBLES <i>et al.</i> (2020)	Well-being Anxiety Depression Somatophorm symptoms PTSD
GIARDINO <i>et al.</i> (2020)	Depression Sleep Anxiety
RODANTE <i>et al.</i> (2020)	Depression Anxiety

Source: prepared by the author.

3.2 STUDY DESIGN, SAMPLE POPULATION, AND COUNTRY

The studies included in this review were conducted in the following countries: Colombia, Ecuador, Mexico, Argentina, and Peru. Although the study conducted by Guiroy *et al.* (2020) collected data from 13 different countries of the region (including Brazil), there were reported less than two participants from seven different countries of the region and only five participants from one of the countries, in comparison with the whole sample ($n = 204$). Regarding studies designs, nine of ten studies included were identified as a cross-sectional study. The only exception was the study conducted by Miguel-Puga *et al.* (2020), identified as a cohort study.

Concerning the target population of those studies, HCW from multiple areas were included, from specialist doctors to technicians, nurses, pharmacists, laboratory workers. A large range of sample size was also observed in the studies. The largest sample size was identified in the study conducted by Robles *et al.* (2020) ($n = 5938$), whereas the smallest sample size was found in the study conducted by Miguel Puga *et al.* (2020) ($n = 204$) (see Table 2).

Table 2. Characteristics of studies included in the present review

Study	Country (n)*	Sample (n)	Period of data collection	Age (years) $\bar{x} \pm SD$ (min-max)	Professional category	Study design	Measurements
MONTE-OSA-CASTRO	Colombia	531	24 th to 30 th March 2020	33±9.3 (21-70)	- Physicians (General Practitioners)	Cross-sectional	- Fears and perceptions concerning

<i>et al.</i> (2020)							medical work during COVID-19 - 7-Item Generalized Anxiety Disorder (GAD-7) - Work-related Stress Test - Fear of COVID Scale (FCV-19S)
CHEN <i>et al.</i> (2020)	Ecuador	252	10 th April to 2 nd May, 2020	(18-69)	- Healthcare workers (categories not specified)	Cross-sectional	- 7-Item Generalized Anxiety Disorder (GAD-7) - K6 Screening scale - Life and job satisfaction questionnaire - Conspiracy theory specific to COVID-19 questions
GUIROY <i>et al.</i> (2020)	Argentina (n=122) Chile (n=13) Colombia (n= 7) Costa Rica (n=1) Ecuador (n=2) Guatemala (n=1) Mexico (n=12) Panama (n=3) Paraguay (n= 1) Dominican Rep. (n=5) Uruguay (n=1) Venezuela (n=1)	204	4 th to 6 th April 2020	44.77	- Spine surgeons	Cross-sectional	- Patient Health Questionnaire on Depression (PHQ-9)
YÁÑEZ <i>et al.</i> (2020)	Peru	303	10 th April to 2 nd May 2020	From 18 years onwards (did not specify an average age)	- Physicians - Nurses - Pharmacists - Technical workers - Volunteers	Cross-sectional	- 7-Item Generalized Anxiety Disorder (GAD-7) - K6 Screening scale

MIGUEL-PUGA <i>et al.</i> (2020)	Mexico	204	Information not available (Submitted in 16 th Oct 2020)	(19-58)	- Clinical staff - Support personnel - Physicians - Laboratory and imaging personnel	Cohort	- Hospital Anxiety and Depression Scale (HADS) - Dissociative Experiences Scale (DES) - Resilience scale - Pittsburgh Sleep Quality Index (PSQI) - Depersonalization / derealization inventory (DD) - Stanford Acute Stress Questionnaire - State-Trait Anxiety Inventory (STAI) - Burnout Measure - Posttraumatic Stress Disorder Symptom Severity Scale-Revised
ERAZO <i>et al.</i> (2020)	Ecuador	1028	30 th March to 22 nd April 2020	From 18 years onwards (did not specify an average age)	- Physicians - Nurses - Laboratory workers - Paramedics - Psychologists - Respiratory therapists	Cross-sectional	- 7-Item Generalized Anxiety Disorder (GAD-7) - Patient Health Questionnaire on Depression (PHQ-9) - Insomnia Severity Index (ISI)
CHAPA-KOLOFFO N <i>et al.</i> (2020)	Mexico	206	23 rd April to 23 rd May 2020	Resident physicians: 28.6±2 Attending physicians: 39.9±10.2 Nursing personnel: 40.7±7.5	- Resident physicians - Attending physicians - Nursing personnel	Cross-sectional	- Acute stress disorder scale
ROBLES <i>et al.</i> (2020)	Mexico	5,938	7 th April to 7 th May 2020	39.6±11.9	- Physicians - Nurse - Psychologists - Social workers - Paramedics	Cross-sectional	- PTSD Checklist for DSM- 5 - Physician Well-Being Index - 5-item Anxiety Scale from the

							field study for ICD-11 PHC - SSOM Current Status Assessment Questionnaire (first 8 items) - Patient Health Questionnaire-2 - COVID-19 coping needs of health care workers
GIARDINO <i>et al.</i> (2020)	Argentina	1059	5 th to 25 th June 2020	41.7±10.7 (21-70)	- Physicians - Nurse - Psychologists - Nutritionists - Physician in trainee residency - Administrative staff - Security personnel	Cross-sectional	- Pittsburgh Sleep Quality Index (PSQI) - Insomnia severity index (ISI) - Sleepiness-Wakefulness Inability and Fatigue Test (SWIFT) -Goldberg-depression and anxiety scale (GADS)
RODANTE <i>et al.</i> (2020)	Argentina	350	1 st April to 31 st May 2020 (first data collection) 1 st July to 31 st August 2020 (second data collection)	38.85±9.6 (23-68)	- Physicians - Nurses - Psychologists - Support personnel - Social workers - Speech therapists - Occupational therapists - Psychopedagogues	Cohort	- Patient Health Questionnaire on Depression (PHQ-9) - The Hypochondriasis Yale-Brown Obsessive-Compulsive Scale (H-YBOCS) - State-Trait Anxiety Inventory (STAI) - Brief Illness Perception Questionnaire (BIPQ)

Source: prepared by the author.

Notes. * only in the studies conducted in two or more countries.

3.3 MENTAL HEALTH AND COVID-19 MEASUREMENTS

Anxiety symptoms were evaluated in eight of the selected studies, using instruments such as 7-Item Generalized Anxiety Disorder (GAD-7), used in four of the studies, and the STAI (State-Trait Anxiety Inventory), used in two of the studies. Robles *et al.* (2020) used the 5-item Anxiety Scale from the field study for ICD-11 Primary Health Care (PHC) to assess anxiety, and the Patient Health Questionnaire-2 to assess symptoms of depression. Miguel-Puga *et al.* (2020) in addition to STAI, evaluated both depression and anxiety using the Hospital Anxiety and Depression Scale (HADS) whereas Giardino *et al.* (2020) used the Goldberg depression and anxiety scale (GADS) for the same purpose. Three studies used the Patient Health Questionnaire on Depression (PHQ-9) to evaluate symptoms of depression. Additionally, it is important to highlight that PHQ-9 was the only evaluative instrument used by Guiroy *et al.* 2020.

Both sleep patterns and disorders of HCW were also evaluated through the following instruments: the PSQI (Pittsburgh Sleep Quality Index) and the ISI (Insomnia Severity Index), which were used respectively by Miguel-Puga *et al.* (2020) and Erazo *et al.* (2020). Giardino *et al.* (2020) not only used PSQI and ISI, but also used Sleepiness-Wakefulness Inability and Fatigue Test (SWIFT).

The evaluation of psychological distress was assessed in two different studies through the Kessler Screening Scale for Psychological Distress (K6) scale to evaluate psychological distress. Stress and burnout were assessed in most of the studies through a wide range of instruments. Monterrosa-Castro *et al.* (2020) used the Work-related Stress Test; Chen *et al.* (2020) used Life and job satisfaction questionnaire; Robles *et al.* (2020) used the first eight items from the Somatic Symptoms without Organic or Medical Cause Current Status Assessment Questionnaire (SSOM), the Physician Well-Being Index and PTSD Checklist for DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, 5th ed); Rodante *et al.* (2020) used Brief Illness Perception Questionnaire (BIPQ) and analyzed hypochondria symptoms through the Hypochondriasis Yale-Brown Obsessive-Compulsive Scale (H-YBOCS); Chapa-Koloffon *et al.* (2020) only used the Acute stress disorder scale. Finally, it is important to highlight that Miguel-Puga *et al.* (2020) used five stress and burnout assessment instruments as follow as the Dissociative Experiences Scale (DES), Resilience Scale, PTSD Symptom Severity Scale-Revised, Stanford Acute Stress Questionnaire, and Burnout Measure.

Instruments directly related to the assessment of COVID-19 aspects were used by two of the selected studies. Chen *et al.* (2020) used questions to assess conspiracy theory specific to COVID-19 whereas Monterrosa-Castro *et al.* (2020) used the Fear of COVID Scale (FCV-19S) (See Table 2).

3.4 MAIN OUTCOMES

In general, all studies identified high frequencies of HCW reporting mental health problems. Eight studies evaluated one or more aspects related to anxiety, and the frequency of participants reporting anxiety ranged from 10.6% in the study conducted by Robles *et al.* (2020) to 76.5% in the study conducted by Giardino *et al.* (2020). The following frequencies of individuals reported anxiety in each study: 21.7% (Yáñez *et al.* 2020, who completed two data collections, in which 45.4% of all HCW met the criteria for anxiety disorders in the first data collection, while 48.3% met criteria for anxiety disorders in the second data collection), 32.5% (CHEN *et al.* 2020), 39.2% (ERAZO *et al.*, 2020), 39.3% (MONTERROSA-CASTRO *et al.*, 2020) and 76.5% (GIARDINO *et al.*, 2020). Robles *et al.* (2020) also identified that 15.6% of their sample presented both anxiety and somatization.

Regarding depression, in the study conducted by Giardino *et al.* (2020), 81% of all participants reported symptoms of depression, while in the studies conducted by Erazo *et al.* (2020) and Robles *et al.* (2020), it was found among 27.3% and 31.3% of all professionals, respectively. When participants who reported depressive symptoms were evaluated according to the severity of their symptoms, in the study conducted by Erazo *et al.* (2020), 35.7% of all participants met criteria for mild depression, 17.5% met the criteria for moderate depression, and 9.8% for severe depression. Likewise, in the study conducted by Guilroy *et al.* (2020), from those 48.5% of participants who reported depressive symptoms, 54.5% met criteria for mild depression, 15.2% met the criteria for moderate depression and 5.1% for severe depression. In the study of Rodante *et al.* (2020), 50.7% of all professionals met the

criteria for major depressive disorders in the first data collection while 61.4% met the criteria in the second one, conducted around two months from the first one.

Although stress was investigated by four studies, each study investigated different aspects of this variable, using a wide range of instruments (See Table 2). The study conducted by Erazo *et al.* (2020) classified 19.3% of all the subjects with severe stress, whereas, in the study conducted by Chapa-Koloffon *et al.* (2020), 88.8% of all participants reported at least 9 symptoms of stress. Studies conducted by Monterrosa-Castro *et al.* (2020) identified 64.4% of work-related stress factors, which could be associated with burnout syndrome, while Robles *et al.* (2020) identified 5.4% of all participants with a high risk of burnout. Posttraumatic stress disorder was the focus of three studies. Robles *et al.* (2020) identified 29.4% of all participants with posttraumatic stress disorders symptoms while Erazo *et al.* (2020) identified the same among 43.8% of the participants of their study. Additionally, it is important to highlight that the study conducted by Miguel-Puga *et al.* (2020) did not report the frequency of participants who met the criteria to any of the disorders investigated, such as depression, anxiety, or stress. However, they identified that pre-existing depression and anxiety symptoms, as well as acute stress or anxiety increase the likelihood to develop posttraumatic stress disorders. Finally, it is important to highlight that each study adopted different criteria to classify if their sample were able to or not to meet criteria for anxiety, depression, or stress.

Psychological distress was investigated by two studies, in which 32.5% and 26.1% of the participants experienced severe mental distress (respectively Chen *et al.*, 2020 and Yáñez *et al.*, 2020). Regarding sleep problems and insomnia, all studies which investigated those variables identified an overall bad quality of sleep in most participants. Erazo *et al.* (2020) identified 16.3% of the sample with insomnia, of which 38.6% presented mild symptoms, 15.0% presented moderated symptoms and 1.4% presented severe symptoms. Similarly, in the study of Giardino *et al.* (2020), 84.7% of all participants reported poor quality of sleep, 73.7% reported insomnia and 58.9% reported nightmares during the pandemic.

3.5 QUALITY AND RISK ASSESSMENT

The quality and risk assessments of studies included in the present review ranged from 65.5% to 92.0%. The average value was 75.9%. The inter-rater reliability was $K = 0.86$ ($SD = 0.03$, 95% $CI = 0.81, 0.92$). The final quality and risk assessment ratings could be seen in Table 3.

Table 3. Quality and risk assessment for each item according to STROBE checklist

Study	1a	1b	2	3	4	5	6a	6b	7	8	9	10	11	12a	12b	12c	12d	12e	13a	13b	13c	14a	14b	14c	15	16a	16b	16c	17	18	19	20	21	22	Study quality (%)
MONTERROSA-CASTRO <i>et al.</i> (2020)	1	1	1	1	1	1	1	X	1	1	X	1	1	1	1	1	1	X	X	X	X	1	0	X	1	1	1	X	0	1	1	1	1	X	92
CHEN <i>et al.</i> (2020)	1	1	1	1	1	1	0	X	1	1	0	0	1	1	1	X	0	0	X	X	X	1	0	X	1	1	1	X	1	1	1	1	1	X	76.9
GUIROY <i>et al.</i> (2020)	1	1	1	1	1	1	0	X	1	1	X	0	1	1	0	0	0	0	X	X	X	1	0	X	1	0	0	X	1	1	1	1	1	X	65.4
YÁÑEZ <i>et al.</i> (2020)	1	1	1	1	1	1	1	X	1	1	0	0	0	0	0	0	0	0	X	X	X	1	X	X	1	1	1	X	1	1	1	1	1	X	69.2
MIGUEL-PUGA <i>et al.</i> (2020)	1	1	1	1	1	1	1	X	0	0	0	0	0	1	1	0	0	1	1	0	X	1	0	1	1	1	1	X	1	1	1	1	1	X	70.0
ERAZO <i>et al.</i> (2020)	1	1	1	1	1	1	1	X	1	1	1	0	1	1	1	0	0	1	X	X	X	1	0	X	1	1	1	X	1	1	1	1	1	X	85.2
CHAPA-KOLOFFOI <i>et al.</i> (2020)	1	1	1	1	1	1	1	X	0	1	1	0	0	1	1	0	0	0	0	X	X	1	0	X	1	0	0	X	0	1	1	1	0	X	57.1
ROBLES <i>et al.</i> (2020)	1	1	1	1	1	1	0	X	1	1	0	0	1	1	1	0	0	0	0	0	X	1	0	X	1	1	0	X	1	1	1	1	1	X	65.5
GIARDINO <i>et al.</i> (2020)	1	1	1	1	1	1	0	X	1	1	X	0	1	1	1	0	X	1	1	X	X	1	0	X	1	1	1	1	1	1	1	1	1	X	85.2
RODANTE <i>et al.</i> (2020)	1	1	1	1	1	1	1	X	1	1	X	0	1	1	1	0	1	1	1	0	0	1	0	1	1	1	1	X	1	1	1	1	1	X	83.3

Source: Prepared by the author using the STROBE checklist for cohort, case-control, and cross-sectional studies (combined).

4. DISCUSSION

The main findings of the present study support previous studies reporting the mental health of HCW in comparison with the general population. However, the situation had worsened during the COVID-19 and the most frequent factors that affected their mental health during this period were anxiety, stress, fatigue, depression, and burnout in countries such as Colombia, Ecuador, Argentina, Peru, Chile, and Mexico. One of the variables that were reported in the studies was the capacity of public healthcare systems to treat patients with COVID-19. Given the imminent collapse of the health system throughout Latin America, it had been necessary to increase the number of healthcare workers and maximize their service capacity. There is broad consensus that these professionals, while responding to social changes and emotional stressors, also faced an increased risk of exposure to illness, extreme workloads, and moral dilemmas.

As indicated by Monterrosa-Castro *et al.* (2020), in the first stages of epidemics, fear and anxiety were present as unconscious mechanisms of survival and defense against the attacks of infectious agents. Later, those mechanisms became pathological, affecting their general well-being and their ability to make decisions. Additionally, situations like COVID-19 pandemics could impact their ability to provide adequate treatment and care and to be part of frontline working, compromising their well-being and quality of life (BARBORE *et al.*, 2020). In the same direction, we found that some studies identified that pre-existing anxiety, depression, or stress disorders could have contributed to the presentation of more severe mental health symptoms as well as the development of mental disorders among those professionals. In a study conducted among Mexican HCW, Chapa-Koloffon *et al.* (2020) identified that the development of PTSD could be related to pre-existing anxiety, depression, and acute stress and pre-existing resilience skills could be understood as protective factors to minimize the development of this disorder. Several studies record posttraumatic stress disorder symptoms related to a high degree of anxiety and depression, as well as exhaustion among HCW evaluated.

According to Walton *et al.* (2020), mental health disorders have negative impacts not only on health providers but also in the patients, and the entire population. We can reaffirm that the negative influence of these disorders during a peak of inpatient

admissions at COVID-19 may contribute to the development of posttraumatic disorder symptoms in frontline health professionals (PUGA *et al.*, 2020). Similar outcomes were identified by Maiorano *et al.* (2020), who identified the protective role of resilience skills in the development of mental disorders, in particular PTSD. According to Blekas *et al.* (2020), HCW that reported higher levels of negative mental health symptoms, such as insomnia, depression, and anxiety, were more likely to present PTSD in comparison with those who did not report those symptoms.

When sociodemographic variables were taken into account, significant correlations were identified in each of the studies reviewed. In general, gender and age were identified as risk factors either to develop mental disorders or present worse mental health outcomes. In the study conducted by Chapa-Koloffon *et al.* (2020), younger and female professionals were more likely to develop PTSD in comparison to the rest of the group. Similarly, the study conducted by Guiroy *et al.* (2020) identified higher levels of depression, anxiety, and hypochondria in women in comparison to men and lower age was also a significant factor. According to them, high rates of depression in the COVID-19 pandemic, associated with the youth of professionals, and neurosurgery as a field of action.

Furthermore, the fact of being a woman is another factor associated with the presence of mental disorders (ERAZO *et al.* 2020). Similar outcomes were reported by Chapa-Koloffon *et al.* (2020) and Guiroy *et al.* (2020). This is a concern, as more than 70% of healthcare workers, including those who work in care institutions are women, and even so, the inequality between them and male professionals is enormous (BONNIOL *et al.* (2019). In Argentina, for example, female HCW were more likely to work more overtime in comparison with their male colleagues, regardless of the salary difference. Additionally, it is important to highlight that in the context of the pandemic, female healthcare workers are exposed to countless forms of violence in their workplace, on the street, and even in their own homes due to stigmatization and unsympathetic reactions driven by the fear of COVID 19 (EAST *et al.* 2020). Despite being the most important force of action of the health system around the world, female healthcare workers are at a great disadvantage both in terms of their physical and mental health, as well as their social and economic well-being. Our outcomes in the present review show that their reality is not different among Latin American countries, as reported by different studies.

Additionally, both psychosocial and demographic factors have also been associated with a greater number of disorders, such as generalized anxiety disorder (GAD). In Colombia, four out of ten clinical profiles present symptoms of GAD (MONTERROSA-CASTRO *et al.*, 2020). Long working hours, fear of being exposed or infected by COVID-19, unavailability of personal protective equipment (PPE), patient demands, lack of effective treatment against COVID-19, death of colleagues after exposure to COVID-19, social distancing, and isolation from their loved ones are just a few of the many negative events that affect the mental health of HCW during the pandemic (JAVED *et al.*, 2020). Similar outcomes were found in different countries, such as the United Kingdom, as reported by Greene *et al.* (2020). However, due to the lack of resources and the limited number of HCW, we could hypothesize that the situation worsened throughout Latin American countries. Although differences in mental health outcomes of HCW were clear, it is not possible to compare them directly due to the fact that studies were different in their methods.

Regarding burnout outcomes among HCW, we might conclude that they were related to some variables such as long working hours, and both insomnia and stress symptoms. The collapse of public healthcare systems throughout Latin American countries might have played a fundamental role in the deterioration of the physical and emotional well-being of those professionals. According to the United Nations report named *The Impact of Covid-19 in Latin America and The Caribbean*, “The region faces extraordinary situations that have exposed and exacerbated the deficiencies of its social protection and healthcare systems”. Burnout has been associated with different factors according to the income of each country. In this context, limited access to PEP, as well as life and death decisions due to the shortage of medical supplies, might be a trigger for burnout among HCW in Latin American during COVID-19 crises (MORGANTINI *et al.* 2020). Furthermore, symptoms of post-traumatic stress appear to be greater according to the geographical location of action of health professionals and the distance from the epicenters of the pandemic. Both Yañez *et al.* (2020) and Puga *et al.* (2020) identified the association between both factors in their studies.

This study has valuable academic relevance as it is the first of its kind, an integrative review being much broader than other studies that also focus on the mental health of health professionals in Latin American territories. An important point

to clarify is the deliberate exclusion of Brazil in this review. Although it could be considered a limitation, it would be very difficult to fit the study to the reality of a continental country that, in addition to having a linguistic, cultural, and demographic difference, also has a public healthcare system that is different from healthcare systems of other Latin American countries and the overwhelming political crisis that the country has experienced since the beginning of the pandemic. In addition, quarantines and effective closure measures were not implemented in Brazil, contrasting with most Spanish-speakers' countries of Latin America. The absence of effective measures to prevent and minimize the infection led the country to a rapid increase in the number of infections (COTRIN *et al.* 2020). With this, there is no intention to express that the rest of Latin America acted in better ways to confront the COVID-19 pandemic, simply the political reality of this country has been more difficult to handle than in the rest of Latin America during this period of emergency health. Another important point is that this integrative review focused only on studies published during the first year of the pandemic, from March 2020, when the first case was reported in the region, to March 2021. This review demonstrates the fragility of mental health of health professionals in Latin America in the face of the first large wave of COVID-19 contagion, at a time when uncertainty had still prevailed, and the world was waiting for an effective vaccine and treatment against COVID-19 that at the time was still under development.

This review identified mental health outcomes of HCW from Mexico, Argentina, Ecuador, Peru, Colombia, and Chile, showing high levels of anxiety, depression, and PTSD during the first year of the COVID-19 pandemic in this population. In particular, depression symptoms might get worse over time, from mild to moderate, or even to severe. In this context, stress related to work, with long hours shifts, the limited availability of PPE, inefficient routine biosecurity protocols, and poor sleep quality are variables that could be related to higher psychological distress and might contribute to the increased depression among HCW. We can also affirm that there would be an association between the presence of anxiety and depression symptoms as risk factors for the development of PTSD in the long term. The most relevant factors associated with the presence of mental disorders, according to this review are, professional specialty of the HCW, age, and gender. Also, it was identified that the mental health of HCW worsened according to the distance from the epicenter of the pandemic. In general, increased levels of generalized anxiety disorder prevailed

in more populated cities, where the level of contagion was higher, and the demand for hospital service exceeded the service capacity of the healthcare systems. These findings allow us to understand the need for early mental health screening in HCW during periods of public health emergencies and highlight the importance of timely psychotherapeutic and psychopharmacological interventions directed for those individuals. It is fundamental to change the perception of COVID-19 through psychological interventions and adaptation strategies to different scenarios, aiming to reduce symptoms associated to mental disorders. Therefore, we can conclude that it is essential to know the epidemiological behavior of each mental disorder and the variables associated with the increase in its incidence among HCW, in particular in Latin America countries.

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