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Review articles

Occupational stressors and implications for the mental health of primary care workers in the pandemic and post pandemic periods: An integrative review

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ABSTRACT

Purpose: to systematize stress factors related to work changes during the pandemic and the implications for the mental health of Primary Healthcare workers in the post-pandemic period.

Methods: an integrative literature review of the BVS, CAPES Journals, PubMed, SciELO, ScienceDirect, and Web of Science databases, with a score of 80% or higher, according to the *Critical Appraisal Skills Programme checklist*. Data processing and analysis considered personal, organizational, and social aspects in the study design.

Literature Review: a total of 17 studies were included, which indicated that, during the pandemic, workers faced significant stressors, such as increased working hours and absenteeism, adaptation to new technologies, resource shortages, high levels of anxiety, depression, and stress, as well as negative social implications, such as discrimination and stigmatization, which contributed to high levels of burnout and other mental health problems. In the post-pandemic period, high prevalences of mental health problems persisted, indicating the lasting nature of impacts.

Conclusion: the findings show that the organizational and psychosocial stressors, during the pandemic, continue to have a negative impact on the mental health of Primary Healthcare (PHC) workers, highlighting the need for support policies and ongoing interventions focused on the well-being of these professionals.

Keywords: Occupational Stress; Primary Healthcare; COVID-19; Occupational Health

INTRODUCTION

The COVID-19 pandemic, unprecedented in its magnitude and global impact, imposed several occupational stressors that uniquely affected the mental health of Primary Healthcare (PHC) workers[1]. Work overload, insecurity regarding infection, and emotional pressure, resulting from the management of health crises, were determinants to worsen the mental health conditions of these professionals[1]. The context of the pandemic, not only increased pre-existing vulnerabilities, but also introduced new challenges that require in-depth and contextualized analysis.

Professionals worked on the front lines in health units and in territories to reduce the virus transmissibility, as well as in pre-screening, referrals to more complex services, clinical care and monitoring, health awareness about risks, signs and symptoms, and ensured the continued availability of services to meet other daily demands[2]. The pandemic scenario revealed significant pressures on the work of health professionals, with expansion of duties, working hours and workload, without breaks and under high and urgent demands with greater risk of contamination[3]. The challenges experienced included lack of Personal Protective Equipment (PPE), work overload or reassignments to other sectors and services, inadequate or even absent training, besides non-existent, developing or even imprecise treatment protocols, impairing the accomplishment of activities[3,4].

Recent studies indicate that the prevalence of anxiety and depression disorders among Primary Healthcare workers increased exponentially during the pandemic, with rates exceeding 45%[3]. A study conducted on professionals from the Spanish national health service, using data from the UK Biobank[4], investigated the differences in severe manifestations of COVID-19 among various groups of workers in situations of risk and insecurity, with clinical repercussions and need for monitoring physical and mental health[5-7]. Similarly, the study evidenced the need to investigate the persistence of psychological symptoms, including anxiety, depression, somatic symptoms and burnout during the pandemic, as well as the implications for mental health[7] in the post-pandemic context. These data highlight the urgency of understanding the factors that contribute to the psychological distress of these professionals and the pressing need for effective interventions.

The relationship between occupational stressors and mental health is widely recognized in the literature, especially in health systems operating under the Primary Care model. Primary care, which is the first gateway to the health system, has become a particularly vulnerable field, since professionals deal with the complexity of the population's health needs, especially during times of crisis, such as pandemics or natural disasters[8]. However, research[9,10] related to work stress and psychological adaptation in health professionals in the post-pandemic period is scarce. This lack of data can compromise the establishment of adequate occupational health policies, which are fundamental to promoting a healthy and sustainable work environment.

Another aspect that should be highlighted is the transition from pandemic to endemic, in which comprehensive and continuous approaches are needed to ensure the well-being of health professionals, including the need to adapt to changes in work demands and the emotional recovery of professionals[9]. Adapting to a new normal requires reassessment of occupational stressors and their repercussions on mental health, highlighting the need for integrated approaches that consider the well-being of workers as priority. In this sense, the identification and analysis of specific stressors faced by these professionals are essential for the development of effective mitigation strategies[10].

The choice to study the context of PHC is justified by the specificities of the work, which differ from other care levels. PHC professionals act as the first line of defense in the health system, dealing with a variety of health problems and social issues that affect the community. Working directly in the area where people live, they are exposed to a significant emotional burden, since they frequently face situations of vulnerability and suffering of patients, besides the pressure to offer quality care with limited resources. This complexity increases the demand for workers, who must not only diagnose and treat diseases, but also address social and economic issues that impact on the patients' health.

Therefore, this paper aims to systematize the stressors related to work changes, during the pandemic, and the implications for the mental health of Primary Healthcare workers in the post-pandemic period.

METHODS

This is an integrative review, used to evaluate and synthesize data from various sources in order to answer research questions and provide a comprehensive overview of current knowledge on a topic of interest, conducted in six steps: 1) identification of the subject and selection of the hypothesis or research

question; 2) establishment of inclusion and exclusion criteria and literature search; 3) definition of information to be extracted from the selected studies; 4) evaluation of included studies; 5) interpretation of results; and 6) synthesis of knowledge[11]. The choice of a rapid review is justified by the need to quickly gather and synthesize the available evidence on occupational stressors and their impact on workers' mental health, especially in a dynamic and rapidly evolving context as the pandemic. This methodology allows for the immediate identification of gaps in the literature, formulation of practical recommendations, and guidance of health policies that respond quickly to emerging needs. In addition, the rapid review provides a preliminary analysis that can serve as basis for more in-depth investigations in the future, thus contributing to a more comprehensive and contextualized understanding of the mental health of the Primary Healthcare workforce.

The planning, development and dissemination of this study were based on recent recommendations from the Cochrane Collaboration's COVID-19-related research[12].

For the purposes of this study, the "post-pandemic period" was defined as the interval of ≥ 36 months following the WHO's declaration of the pandemic (March 2020), coinciding with the endemic phase and the end of the public health emergency in May 2023[13].

The question that guided the study was structured using the PCC (Population, Concept, Context) strategy. Thus, the elaboration occurred as follows: P – Health professionals, C – Mental health and occupational stressors, and C – post-COVID-19 pandemic context. This led to the research question: What are the stressors related to work changes in Primary Healthcare during the COVID-19 pandemic that may have long-term repercussions on the mental health of professionals in the post-pandemic period?

To answer the guiding question, searches were conducted in March 2023 by two researchers, independently and blindly, in the following scientific databases and libraries: National Health Library (BVS), Capes Journals, Pubmed, Scielo.org, Science direct, Web of Science. Selected descriptors from DeCS were used: "covid-19"; "post-covid"; "sequelae covid-19"; "health workforce"; "Primary Healthcare"; "mental health" associated with Boolean operators AND and OR for combining the adapted strategy, according to the database surveyed: ("covid-19") AND ("health workforce" or "health professionals") AND ("primary care" OR "Primary Healthcare" OR "Primary Care") AND ("Coronavirus Infections" OR "COVID-19" OR "POST-COVID) AND" AND "Mental Health" OR "Mental Health" OR "stress factors") AND (year cluster:[2020 TO 2023]), in Portuguese and English.

Qualitative primary studies published between March 2020 and May 2023, conducted in the primary care setting, that addressed workplace stressors during the pandemic and their consequences or persistence in the post-pandemic period, were included. Quantitative studies were excluded because this review emphasized the understanding on the subjective experiences and perceptions of Primary Healthcare workers, which are better captured by qualitative approaches. This methodological choice aimed to provide a more comprehensive view. A rich and contextualized account of challenges faced allows the identification of nuances and aspects that quantitative data may not reveal.

For eligibility, studies published between March 2020 and March 2023 were included in the context of Primary Healthcare (PHC), were included, ensuring that the results were applicable to the specific work environment of health professionals, covering the pandemic period and its consequences in the post-pandemic context. Only studies addressing stressors in PHC work during the pandemic and their consequences or the persistence of these effects in the post-pandemic period were considered. Since the study objective was to understand the specific impacts of the COVID-19 pandemic and its consequences, the research excluded studies that did not present sufficient data or information for a strong analysis; opinions, comments, or analyses that did not present original research; and studies focused on previous outbreaks, such as SARS, MERS, H1N1, H5N1, Zika, Ebola, and West Nile Fever. Finally, any studies that presented duplication of data or results were excluded, ensuring the originality of evidence included in the review. These criteria were established to ensure that the review focused on relevant and high-quality evidence, reflecting the specific experiences and challenges faced by Primary Healthcare workers during and after the pandemic.

Studies that did not provide sufficient data or information on the mental health impacts on workers in the post-pandemic period were excluded, as such gaps would preclude a robust analysis. Opinions, comments, or analyses lacking original research were also excluded, as were studies focused on previous outbreaks (SARS, MERS, H1N1, H5N1, Zika, Ebola, and West Nile fever), as the objective was to understand the specific impacts of the COVID-19 pandemic and its

consequences. Finally, any studies with duplicate data or results were excluded, ensuring the originality of the included evidence. These criteria were established to ensure that the review focused on relevant, high-quality evidence capable of reflecting the specific experiences and challenges faced by PHC workers during and after the pandemic.

The selection of articles was initially conducted by two researchers using the Rayyan – Intelligent Systematic Review14 software, which assisted in identifying duplicate studies and applying the inclusion and exclusion criteria while reading the titles and abstracts. In cases of disagreement, a third researcher conducted the evaluation and resolved the tie.

The selection of papers was initially conducted by two researchers, using the Rayyan – Intelligent Systematic Review software[14], which assisted in identifying duplicate studies and applying the inclusion and exclusion criteria for articles when reading the titles and abstracts. In cases of disagreement, a third researcher performed the evaluation.

In the first search, 900 publications were identified. Subsequently, 350 duplicates were excluded, leaving 550 articles for reading the titles and abstracts. Among these, 466 were discarded because they did not meet the eligibility criteria. The remaining 84 articles were read in full, and 67 were excluded according to the criteria, leaving 17 articles selected for analysis.

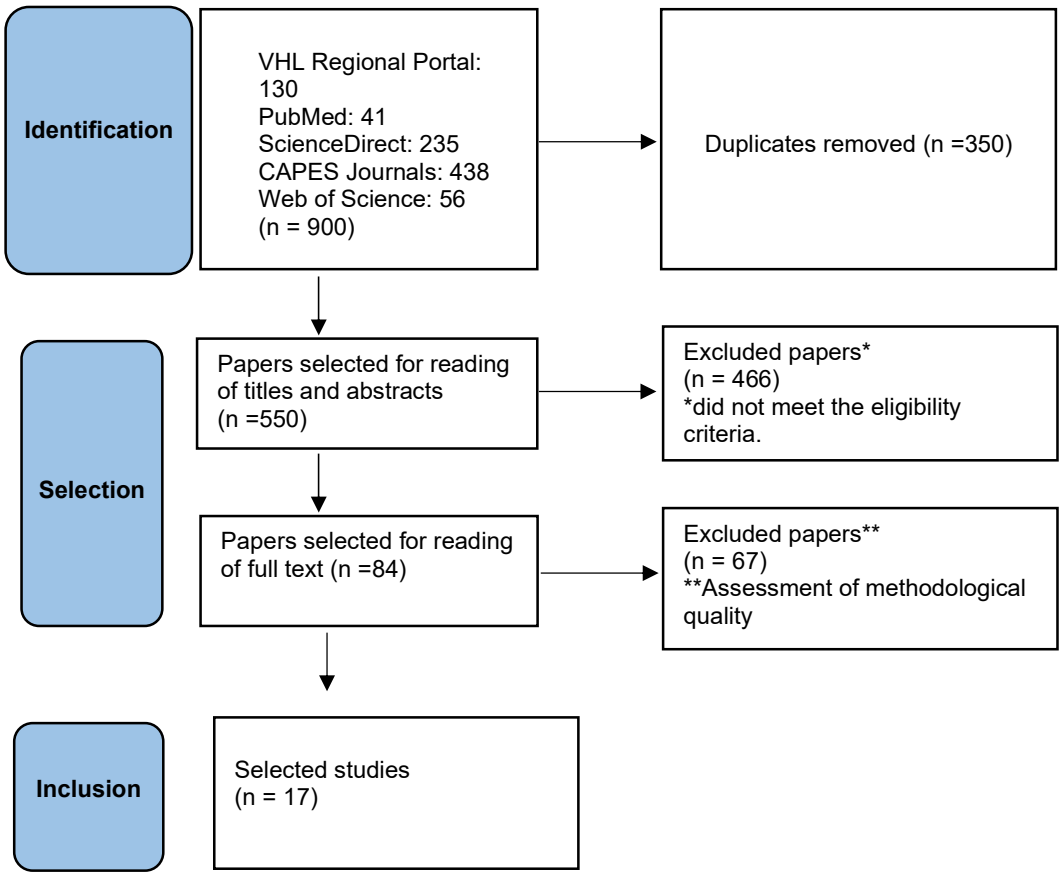
Next, the Critical Appraisal Skills Programme (CASP)[15] was used to assess the methodological quality of articles, which presents ten questions related to the rigor, credibility, and relevance of the study. Studies that met at least eight of these ten items, i.e., 80% of the score, were selected for full reading, which led to exclusion of two papers. Chart 1 presents the application of the CASP criteria to select the rigor, credibility, and relevance of the study[15]. For this purpose, the studies were classified into two categories: A, high methodological rigor, when at least 9 of the 10 items were met; and B, moderate methodological rigor, when at least 5 of the 10 items were met.

Chart 1. Assessment of methodological quality of papers selected in the review

Author/Year/Country	Assessment of methodological quality ≥ 80% in the CASP checklist										
	1	2	3	4	5	6	7	8	9	10	Total
Londoño-Ramírez et al., 2021/Spain[17]	✔	✔	✔	✔	X	X	✔	✔	✔	✔	80%
Paiano et al., 2020/Brazil[18]	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	100%
Lai et al., 2020/China[19]	✔	✔	✔	✔	X	✔	X	✔	✔	✔	80%
Halcomb et al, 2022/Australia[20]	✔	✔	✔	✔	X	X	✔	✔	✔	✔	80%
Mira et al., 2020/Spain[21]	✔	✔	✔	✔	✔	✔	X	✔	✔	✔	90%
Gemine et al., 2021/United Kingdom[22]	✔	✔	✔	✔	X	X	✔	✔	✔	✔	80%
Vanhaecht et al.,2021/Belgium[23]	✔	✔	✔	✔	X	✔	✔	✔	✔	✔	90%
Deng; Naslund. 2020/USA[24]	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	100%
Bell et al., 2021/New Zeland[25]	✔	✔	✔	✔	✔	✔	X	✔	✔	✔	90%
Lamb et al., 2021/United Kingdom[26]	✔	✔	✔	✔	✔	✔	X	✔	✔	✔	90%
Apaydin et al., 2021/UEA[27]	✔	✔	✔	✔	X	X	✔	✔	✔	✔	80%
Salaton; Bulgiba, 2022/Malaysia[28]	✔	✔	✔	✔	✔	✔	X	✔	✔	✔	90%
Breton et al., 2021/Canada[29]	✔	✔	✔	✔	X	X	✔	✔	✔	✔	80%
Roca; Vicens; Gili, 2020/Spain[30]	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	100%
Breton *et al*., 2021/Canada[29]	✔	✔	✔	✔	✔	✔	X	✔	✔	✔	90%
Roca; Vicens; Gili, 2020/Espanha[30]	✔	✔	✔	✔	✔	✔	X	✔	✔	✔	90%

Source: prepared by the authors, according to the CASP criteria (2024).

The final body of the review consisted of 17 papers. Finally, the process of study search and selection was simplified using a flowchart recommended by PRISMA – Preferred Reporting Items for Systematic Reviews and Meta-Analyses[16] (Figure 1).



Source: prepared by the authors (2024)

*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).
**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools. Source: Page M.J. et al. BMJ. 2021;372(71). Available at: https://doi.org/10.1136/bmj.n71

Figure 1. Identification and selection of papers in the databases

LITERATURE REVIEW

This review retrieved 17 papers (Chart 1), including review articles, theoretical articles, temporal analyses, and longitudinal studies with secondary data. The geographical distribution revealed that five studies were conducted in North America (Canada and the USA), three in South America (Brazil), two in Asia (China and Malaysia), five in Europe (Belgium, Spain, and the United Kingdom), and two in Oceania (Australia and New Zealand).

Regarding work changes during the COVID-19 pandemic, as shown in Chart 2, the analyzed studies consensually indicated that, at the onset and throughout the COVID-19 pandemic, healthcare professionals experienced significant changes in working conditions, resulting from the expansion of working hours and shifts (10/17), incorporation of health information technologies (5/17), constant changes in care protocols (3/17), reduced workforce due to absences during the pandemic (2/17), and insufficiency of Personal Protective Equipment (PPE) (3/17).

Chart 2. Synthesis and description of work changes during the Covid-19 pandemic, considering author, year and country of publication of selected papers

Work changes	Description of changes	Author, Year/Country
Sector changes and work intensification	Extra shifts, unpredictable working hours	Paiano et al., 2020/Brazil[18] Gemine et al., 2021/United Kingdom[22] Kock et al., 2021/United Kingdom [36]
	Performance of tasks that do not belong to the daily routine	Salaton; Bulgiba, 2022/Malaysia[28] Roca; Vicens; Gili, 2020/Spain[30]
	Change of sector and team; redistribution to frontline sectors	Vanhaecht et al., 2021/Belgium[23] Bell et al., 2021/New Zealand[25] Apaydin et al., 2021/USA[27] Lai et al., 2020/China[19]
Incorporation of health information technology	Protocols in online format	Mira et al., 2020/Spain[21] Breton et al., 2021/Canada[29] Vanhaecht et al., 2021/Belgium[23]
	Incorporation of online work (health information technology); telephone and video conference consultations	Teixeira et al., 2020/Brazil[15] Mira et al., 2020/Spain[21] Breton et al., 2021/Canada[29] Apaydin et al., 2021/USA[27]
	Implementation of online continuous education and training programs	Roca; Vicens; Gili, 2020/Spain[30] Breton et al., 2021/Canada[29]
Changes/adaptation in organizational and care protocols	Redistribution of human resources	Londoño-Ramírez et al., 2021/Spain[17] Deng; Naslund. 2020/USA[24]
	Constant changes in protocols, care flows, and biosafety standards; intense sharing of technical updates	Roca; Vicens; Gili, 2020/Spain[30] Deng; Naslund. 2020/USA[24]
Reduction of workforce	Absenteeism / significant decrease in the number of health workers	Roca; Vicens; Gili, 2020/Spain[30] Apaydin et al., 2021/USA[27] Price et al., 2021/USA[16] Mira et al., 2020/Spain[21] Gemine et al., 2021/United Kingdom[22] Lamb et al., 2021/United Kingdom [26]
Insufficient material resources	Insufficient Person Protective Equipment	Halcomb et al., 2022/Australia[20] Gemine et al., 2021/United Kingdom [22] Lamb et al., 2021/United Kingdom [26] Vanhaecht et al., 2021/Belgium[23] Londoño-Ramírez et al., 2021/Spain[17] Teixeira et al., 2020/Brazil[15]

Source: prepared by the authors, 2024.

The combined effects of morbidity and mortality, the presence of young medical and nursing professionals, staff shortages and increased workload, besides constant changes in policies and procedures, characterized the organizational, social, and personal stressors faced by healthcare professionals during the pandemic, many of which persisted in the post-pandemic period, as shown in Chart 3.

Chart 3. Synthesis of findings regarding organizational, personal, and social stressors in the pandemic and post-pandemic periods and implications for mental health

PANDEMIC PERIOD		
Organizational Stressors (Material and physical conditions, salary, communication, biosafety)	**Implications for mental health**	**Reference**
Intensification of work: Long working shifts	Hypervigilance, mental exhaustion, depression, anxiety, insomnia and psychological stress, reduced sleep quality, increased drug use, decreased cognitive functions	Paiano et al., 2020/Brazil[18] Apaydin et al., 2021/USA[27] Salaton; Bulgiba, 2022/Malaysia[28] Roca; Vicens; Gili, 2020/Spain[30] Halcomb et al., 2022/Astralia[20]
Macro-organizational: lack of training, absence of emergency plan, lack of safety equipment (PPE), precarious workforce; use of healthcare technologies	Exhaustion, fatigue; psychological exhaustion and Burnout symptoms	Breton et al., 2021/Canada[29] Londoño-Ramírez et al., 2021/Spain[17] Price et al., 2021/USA[16] Mira et al., 2020/Spain[21] Deng; Naslund. 2020/USA[24]
Incorporation of health information technology	Fear, anxiety, insecurity, psychological exhaustion	Teixeira et al., 2020/Brazil[15] Mira et al., 2020/Spain[21] Breton et al., 2021/Canada[29] Price et al., 2021/USA[16] Apaydin et al., 2021/USA[27]
Exposure to contamination risks: suspected cases at work; insufficient personal protective equipment (PPE); constant changes in biosafety protocols	Fear, anxiety, psychosomatic symptoms, fear of becoming infected or infecting family members	Teixeira et al., 2020/Brazil[15] Roca; Vicens; Gili, 2020/Spain[30] Salaton; Bulgiba, 2022/Malaysia[28] Paiano et al., 2020/Brazil[18] Mira et al., 2020/Spain[21]
Social stressors (Policies, media, social context)	**Implications for mental health**	**Reference**
Stigmatization and violence against healthcare workers by the population; social unrest (public resistance to containment measures)	Psychological suffering associated with stigma and fear of illness; feelings of sadness and irritability, development of chronic insomnia; fear of social violence against healthcare workers	Vanhaecht et al., 2021/Belgium[23] Teixeira et al., 2020/Brazil[15] Bell et al., 2021/New Zealand[25] Lamb et al., 2021/United Kingdom[26] Gemine et al., 2021/United Kingdom[22] Price et al., 2021/USA[16]
Corruption and mismanagement in response to Covid-19	Anxiety or stress related to COVID-19	Paiano et al., 2020/Brazil[18] Teixeira et al., 2020/ Brazil[15]
Media coverage of the number of deaths and spread	Increased abuse of substances such as alcohol, painkillers and illegal drugs, somatic symptoms	Lamb et al., 2021/United Kingdom[26] Salaton; Bulgiba, 2022/Malaysia[28] Breton et al., 2021/Canada[29] Price et al., 2021/USA[16]
Personal Stressors (Feelings/emotions)	**Implications for mental health**	**Reference**
Distrust on protective and work measures; challenging conditions (with exposure to potentially traumatic events)	Fear of infection, traumatic stress and exhaustion, clinically significant mental distress	Bell et al., 2021/New Zealand[25] Lamb et al., 2021/United Kingdom [26] Salaton; Bulgiba, 2022/Malaysia[28] Deng; Naslund. 2020/USA[24] Halcomb et al., 2022/Australia[20]

Concern for family; grief and ethical dilemmas, close friends or relatives infected with COVID-19	Cognitive and affective changes, lack of concentration, sadness and anxiety	Halcomb et al., 2022/Australia[20] Lamb et al., 2021/United Kingdom[26] Mira et al., 2020/Spain[21] Roca; Vicens; Gili, 2020/Spain[30] Londoño-Ramírez et al., 2021/Spain[17]
POST PANDEMIC PERIOD		
Organizational Stressors (Material and physical conditions, salary, communication, biosafety)	**Implications for mental health**	**Reference**
Scarce resources and low workforce capacity	Uncertainty in decision-making, post-outbreak mental disorders; lack of empathy in patient treatment	Lamb et al., 2021/United Kingdom[26] Roca; Vicens; Gili, 2020/Spain[30] Salaton; Bulgiba, 2022/Malaysia[28] Paiano et al., 2020/Brazil[18] Teixeira et al., 2020/Brazil[15] Londoño-Ramírez et al., 2021/Spain[17]
Increase in leaves from work	Psychological exhaustion and Burnout symptoms	Vanhaecht et al., 2021/Belgium[23] Gemine et al., 2021/United Kingdom[22] Halcomb et al., 2022/Australia[20] Deng; Naslund. 2020/USA[24] Breton et al., 2021/Canada[29] Roca; Vicens; Gili, 2020/Spain[30]
Personal Stressors (Feelings/emotions)	**Implications for mental health**	**Reference**
Absenteeism, low commitment of some professionals	Burnout symptoms	Roca; Vicens; Gili, 2020/Spain[30] Bell et al., 2021/New Zealand[25] Vanhaecht et al., 2021/Belgium[23] Breton et al., 2021/Canada[29]
Lack of psychosocial support in work institutions; grief and loss of family and friends	Psychological exhaustion; decreased cognitive functions and lack of concentration	Londoño-Ramírez et al., 2021/Spain[17] Halcomb et al., 2022/Australia[20] Vanhaecht et al., 2021/Belgium[23] Gemine et al., 2021/United Kingdom[22] Lamb et al., 2021/United Kingdom[26] Price et al., 2021/USA[16]

Source: prepared by the authors, 2024.

During the most critical periods of the pandemic, organizational aspects were marked by the absence of emergency plans and working in stressful and unfavorable environments, characterized by a lack of clear guidelines on the management of COVID-19, ineffective risk communication strategies, inadequate access to PPE, and insufficient training for emergency situations. Additional stressors included the lack of defined validated treatment strategies, constant risk of contamination due to high exposure, care of patients without the presence of family members, and frequent changes in care protocols (Chart 3).

The implications related to work overload, lack of support, ambiguity of roles, incorporation of new information technologies, and perception of the disease threat are all correlated with burnout and feelings of emotional and physical exhaustion, as well as symptoms of post-traumatic stress disorder. These factors also manifest in cognitive and affective conditions, with intense symptoms of lack of concentration and sadness[17].

Burnout has led to an increase in sick leave or medical absences and has been associated with workplace stress during the pandemic, resulting from extended shifts or working hours, which can culminate in sleep deprivation and emotional exhaustion. These are fundamental components of adverse mental health

and burnout, compromising the ability of healthcare professionals to accurately perceive work demands[18-20].

Regarding personal aspects, the risk of transmitting COVID-19 to family members, which could result in death, and the worker's fear of following guidelines that conflict with their professional standards or fundamental values were highlighed[21-25]. Evidence points to a dual trend among workers during the pandemic: on the one hand, they drew on their personal skills and resources as coping strategies; on the other hand, there were increases in anxiety, depression, impaired sleep quality, hypervigilance, and increased consumption of alcohol and other illicit substances, as well as psychosomatic symptoms and suicidal ideation[26-30].

Regarding social stressors, studies have reported the suffering and moral damage faced by Primary Healthcare workers because of negative attitudes from the community, such as discrimination associated with the nature of their work and the risk of exposure to COVID-19. The media's focus on healthcare professionals as "heroes" worsened the burden on nurses, medical doctors, and other professionals during health emergencies[31]. The media's portrayal of healthcare workers as "heroes" exacerbates the burden that nurses, doctors, and other professionals have borne during health emergencies.[30] Other studies link public resistance to healthcare workers to the spread of irrational panic and misinformation (fake news), resulting in episodes of violence, stigmatization, and anti-Asian sentiment [32,33].

Workers are still processing the trauma they witnessed and physical exhaustion, which severely impacts mental health and work capacity, especially in primary healthcare settings, where resources are often more limited, resulting in persistent staff shortages and the need for long working hours during the post-pandemic era[32]. In both the pandemic and post-pandemic contexts, understanding the reality experienced by Primary Healthcare workers is essential to define the necessary adjustments to provide better working conditions and ensure the effective functioning of universal health systems around the world[34].

In the post-pandemic period, there was an increase in absenteeism, with a significant decrease in the number of professionals due to absences or medical leaves[35]. Factors such as high workload persisted, indicating the urgent need to establish balanced work schedules and create a supportive environment for health professionals, aiming to reduce burnout and ensure the quality of health and occupational safety.

Even though mental symptoms have shown some improvement after the pandemic, prevalence rates of depression, anxiety, and stress remain high, for a period following the pandemic (Chart 3). Psychological symptoms reported or associated with the post-pandemic era include fear, anxiety, stress, depressive symptoms, uncertainty, and frustration, which can lead to medical errors, lack of empathy in patient treatment, lower productivity, and higher turnover rates.

Scientific production related to COVID-19 has experienced exponential growth in recent years, especially after the end of the most critical phases of the pandemic[36]. According to a recent systematic review with meta-analysis[37], most research has focused on the fields of infectiology and virology, with significant contributions from countries such as China, United States, Italy, and United Kingdom. However, investigations are incipient, especially concerning the inherent psychosocial impacts in the context of the pandemic[38], and the need for continuous monitoring of the mental health of PHC workers.

Evidence [36-38] shows that stressors resulting from work changes in Primary Healthcare (PHC) during the pandemic may have long-term repercussions on the mental health of health professionals. The results analyzed indicate the predominance of changes in assignments and work modes, which generated organizational stressors, such as the intensification of functions and the poor working conditions, exacerbating mental health problems already recognized in the literature[38]. These changes occurred in a fragile social and economic context, in which the demand for healthcare was increased, requiring a coordinated set of actions to mitigate the adverse effects of the pandemic.

The stressors identified, both organizational and personal, reveal the urgent need for attention to the mental health of Primary Healthcare workers, who face constant risks, including exposure to communicable diseases and lack of Personal Protective Equipment (PPE). Ensuring adequate working conditions and implementing protection policies are fundamental to prevent illness among these professionals[39]. Previous studies[40] corroborate this need, pointing to the risks of infectious disease pandemics for the mental health of health workers and the importance of effective policy interventions during and after health crises.

The scenario observed in Primary Healthcare reflects similar situations found in hospital environments, characterized by high workloads, exhausting shifts, and

the constant fear of infection, both for professionals and their families. These factors contributed to an increase in conditions such as burnout, post-traumatic stress disorder, anxiety, and depression[40].

However, the literature reveals a significant weakness in the emotional support offered to these professionals. The example of Australia, which implemented an Emergency Response Plan focused on Primary Healthcare during the pandemic, illustrates the effectiveness of strategies that prioritize the protection of health workers and the continuity of care[40]. The implementation of measures to ensure the physical and mental health of workers, along with job protection, are crucial elements, but they should be integrated into the daily routine of professional practice, and to a feedback system that allows professionals to express their concerns and needs, promoting mental health in a continuous manner.

Therefore, the development of interventions for stress management and psychosocial support services should be prioritized in the post-pandemic era. Identifying specific stressors and challenges faced by healthcare workers can support the development of appropriate and sustainable support policies and programs over time.

Limitations of the study: this review is subject to temporal constraints that may have affected the depth and scope of evidence analyzed. Future studies may elucidate, in more detail, the challenges faced by the workforce in the post-pandemic era. In addition, these investigations should serve as basis for the formulation of prevention policies and strategies aimed at mitigating the impacts on the mental health of workers, thus ensuring more effective and contextualized support.

CONCLUSION

The main stressors related to work changes during the pandemic were the intensification of workload and working hours, scarcity of PPE, frequent changes in protocols, accelerated incorporation of new technologies, and reduction of the workforce, due to absences. These organizational factors, combined with the workers' fear of becoming infected and infecting their family members, resulted in damage to mental health evidenced by burnout, anxiety, depression, symptoms of post-traumatic stress, and suicidal ideation, which persisted in the post-pandemic period, as residual stressors.

Although the post-pandemic period is characterized by a reduction in community transmission and the end of the public health emergency declared by the WHO in May 2023 (1), primary care health professionals continue to report significant fear of SARS-CoV-2 infection. This phenomenon can be explained by three mechanisms: first, the traumatic experience of the acute phase generated conditioned aversive memories associated with PPE shortages and the loss of colleagues, which are not automatically extinguished with the reduction of objective risk (2); second, long COVID has emerged as a feared and disabling consequence, keeping the perception of threat high, even in the face of mild infections (3); third, uncertainty surrounding new variants and reinfections perpetuates a state of hypervigilance among frontline workers (4). Thus, the fear of infection in the post-pandemic period does not represent an irrational phobia, but rather a persistent adaptive response to real, albeit attenuated, risks, and constitutes a factor that sustains the anxiety, depression, and burnout observed in the sample.

The findings demonstrate that the organizational and psychosocial stressors, experienced during the pandemic, continue to negatively impact the mental health of Primary Healthcare workers, indicating the need for support policies and continuous interventions aimed at the well-being of these professionals.

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Authors' contributions:

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ELCM: Research; Methodology; Writing - Original draft.

JCEAN: Visualization; Writing - Original draft.

MDAS: Validation; Writing - Review and editing.

LLT: Visualization; Validation.

NMBLP: Data curation; Visualization; Writing - Original draft; Writing - Review and editing.

Data Sharing Statement:

Data collected during this study will be shared to promote transparency and allow other researchers to verify and build upon our findings. Data will be available after publication and will remain accessible indefinitely.

Access to data will be granted to researchers who request it, upon presentation of a research proposal justifying the use of data. Criteria such as relevance of the proposed research, compliance with ethical regulations, and the guarantee that data will be used responsibly and for scientific purposes will be considered. Also, researchers will have to sign a commitment agreement taking responsibility for maintaining the confidentiality and integrity of shared data.

Artificial Intelligence tools statement:

During the preparation of this study, the authors used OpenAI. (2024) CHATGPT-4 version to correct the grammar and fluency of the text. After using this tool, the authors revised and edited the content as needed. Furthermore, they assume full responsibility for the content of the publication.