

The mental health care of healthcare workers: an analysis of knowledge production through a scoping review

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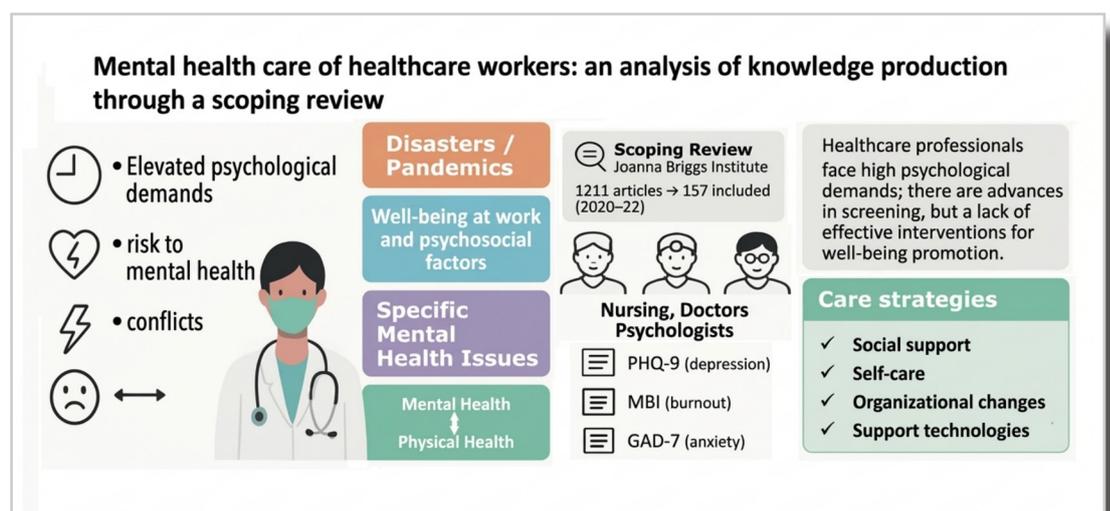
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Highlights

- Publications on the mental health of healthcare professionals increased during the pandemic.
- Few intervention studies addressing the mental health of healthcare professionals.
- Technologies are underutilized, and there is limited ethical reflection in mental health care.

Graphical Abstract



Abstract

Globally, studies have devoted considerable attention to the psychosocial aspects of work and to the ways in which these factors impact healthcare workers across different levels of care. Findings indicate the need for improvements in overall working conditions and in the provision of social support to healthcare professionals, while also highlighting the paradox of illness among professionals whose work objective is the care of themselves and others. The present article was motivated by the psychological demands faced by professionals, including long and intense working hours, professional devaluation, interpersonal conflicts, and emotional overload resulting from patient care. The study aimed to analyze actions and strategies for promotion, prevention, screening, and care in mental health among healthcare professionals. This study consists of a scoping review on the mental health of healthcare professionals, focusing on promotion, prevention, screening, and care, through the identification and presentation of available data in national and international literature. The method proposed by the Joanna Briggs Institute was employed. A total of 1211 articles were identified, of which 157 were included, covering the period from 2007 to 2022. Considering the entire set of articles, 94 studies identified the need for mental and/or physical health interventions with healthcare professionals, among which 60 (63.83%) occurred in disaster and catastrophe contexts. The low number of interventional studies (14.28%) becomes concerning when considering research that demonstrates healthcare workers' reluctance to seek mental health assistance in the workplace. The importance of interventions during pandemics is highlighted, including support and welcoming approaches, as well as the use of technologies. It is concluded that there is a scarcity of studies prior to 2020 and of intervention-based research aimed at understanding and addressing the impacts on mental health, well-being, and quality of life among healthcare professionals. The use of information technologies is understood to assume particular relevance for future research, as well as for guiding actions in health management.

Keywords: Review. Healthcare professional. Occupational health. Mental health. Disasters.

Associate Editor: Edison Barbieri
Mundo Saúde. 2026,50:e18002025
O Mundo da Saúde, São Paulo, SP, Brasil.
<https://revistamundodasaude.emnuvens.com.br>

Received: 23 august 2025.

Accepted: 05 march 2026.

Published: 27 march 2026.

INTRODUCTION

Globally, 1 in every 7 individuals—representing approximately 1.1 billion people—lives with a mental disorder, with anxiety and depression being the most prevalent conditions. This scenario generates a massive economic impact, with productivity losses estimated at USD 1 trillion annually, which may represent up to 1% of the GDP of several nations. In addition to financial losses, these disorders account for one in every six years lived with disability worldwide and contribute to high rates of premature mortality, including suicide, which is responsible for one in every hundred deaths globally. Despite the severity of this situation, investment remains insufficient, with governments allocating on average only 2% of their health budgets to this area, resulting in a substantial treatment gap in which approximately 91% of individuals with depression do not receive adequate treatment^{1,2,3}.

At the global level, studies have devoted considerable attention to the psychosocial aspects of work and to how these aspects impact healthcare workers across different levels of care. Findings indicate the need for improvements in general working conditions and in the provision of social support to healthcare professionals, while also warning of the paradox of illness among professionals whose work objective is to care for others^{4,5,6}.

Precisely because it is a profession centered on care, involving relational and intersubjective dimensions and focused on the encounter between user and professional, work in healthcare requires a substantial psychological workload^{7,8}.

Some authors, when studying specific healthcare professionals, have identified particular demands emerging within this field, such as extensive and intense working hours, professional devaluation, interpersonal conflicts, lack of involvement in service management, workload overload due to team size, lack of work instruments, overlapping tasks, low remuneration, lack of career advancement prospects, and the absence of spaces for listening and care^{9,10,11}.

It is important to emphasize that this workforce is also impacted by gender, class, and race differences, as well as by structural aspects related to access to education and training, labor market insertion, and the ways these dynamics are reproduced in the daily relationships within healthcare services. Such factors may lead to the invisibilization of certain professionals^{12,13}. This is reflected, for example, in more frequent reports of stress, anxiety, and fear among nurses and among women, as highlighted by Chigwedere *et al.* (2021)¹⁴ when studying healthcare workers in epidemic and pandemic contexts.

Considering the recent pandemic context, numerous observations have emerged in the literature regarding how the changes resulting from this situation have affected healthcare workers. In a systematic review with meta-analysis aimed at reviewing and synthesizing available evidence on the psychological impact of disease outbreaks among healthcare professionals — which searched for articles published up to June 2020 — it was observed that the SARS-CoV-2 pandemic emerged as the second most studied viral outbreak context regarding the mental health of healthcare workers, second only to the SARS epidemic¹⁴. Pre-existing conditions of physical and psychological exhaustion were intensified by the number of infected individuals and by the scarcity of Personal Protective Equipment (PPE), as well as by fear of contamination and factors such as emotional and physical efforts required to care for a growing number of patients with potential for clinical deterioration, caring for colleagues who may become infected, concerns about infecting family members, shortages of care equipment, new clinical roles, anxiety-inducing workloads, and limited access to mental health services^{11,13}.

In 2005, the Hyogo Framework for Action was established as part of the strategies developed by the United Nations (UN) to reduce disaster risks. In March 2015, the Sendai Framework for Disaster Risk Reduction 2015–2030 was created¹⁵. Support for professionals must also occur after the epidemic or pandemic period, since symptoms related to depression, anxiety, traumatic stress, avoidance, and burnout continue to be reported after the outbreak period and as a consequence of it^{14,16}.

Considering that the quality of health services is affected by the satisfaction and working conditions of healthcare professionals¹⁰, and recognizing the role of scientific knowledge in identifying realities and producing meaning — by interpreting information, problematizing work and health organizations, and constructing socially oriented meanings and practices¹⁷ — there is a clear need to develop actions and interventions aimed at assisting and supporting workers. To achieve this, it is essential to understand what has already been produced on this topic in order to support future proposals.

In this sense, the present study, by examining national and Ibero-American literature (in Portuguese and Spanish), distinguishes itself by presenting a more detailed regional overview and, by identifying existing gaps and actions, aims to support the improvement of public health and occupational health policies.

In recent years, advances in mobile health technologies have represented an additional possibility for promoting mental health care among healthcare professionals, as observed during the COVID-19 pandemic. However, challenges remain for their improvement, including regulatory and ethical concerns, data protection issues, access to devices, and technological and social inequalities¹⁸, which

justifies a more attentive examination of the scientific production on this topic.

Thus, the objective of this study was to analyze actions and strategies for promotion, prevention, screening, and care in mental health among healthcare professionals, as well as the role of mobile applications in emerging interventions, and the actions that occur within disaster and catastrophe contexts.

METHODOLOGY

This literature review study was conducted using the scoping review methodology proposed by the Joanna Briggs Institute (JBI)¹⁹. The study sought to answer the research question regarding which actions of promotion, prevention, screening, and care in mental health among healthcare professionals are explored in the literature, in addition to specific questions related to the use of mobile applications as a care strategy and to actions developed in disaster and catastrophe contexts. Thus, this study adopted a descriptive and exploratory research design (Gil, 2002)²⁰. The eligibility criteria were guided by the Population, Intervention, Comparison, Outcome, and Study Design strategy (PICOS), advocated by the Joanna Briggs Institute¹⁹, in which: (1) the defined population comprised healthcare professionals with a university degree and aged over 18 years; (2) the concept of interest involved actions and interventions for promotion, prevention, screening, and care in Mental Health; and (3) the context considered exclusively the Health field, with particular – but not exclusive – attention to disaster and catastrophe situations. Studies published in Portuguese, English, and Spanish were searched in the following databases: Cochrane, PubMed, Scielo, BVS, and Scopus, based on the relevance of national and international health research production. The search strategy consisted of the use of descriptors validated by the Health Sciences Descriptors/Medical Subject Headings (DeCS/MeSH), defined through an initial exploratory search. Three searches were performed in each selected database, one for each inclusion language, using the Portuguese search string as the base: (“pessoal de saúde”) AND (“saúde do trabalhador”) AND (“autocuidado” OR “saúde mental” OR “promoção da

saúde” OR “prevenção de doenças” OR “sistemas de apoio psicossocial”). Searches were conducted between August and September 2022. The review process was carried out through paired selection using the Rayyan software. All stages of the research were recorded and reported according to the PRISMA-ScR criteria. The sources of evidence considered included texts available in Portuguese, English, and/or Spanish, with open access or access through the CAPES portal, including only scientific articles such as literature reviews, clinical trials, epidemiological studies, experience reports, and qualitative studies. No temporal restriction was applied. Additional exclusion criteria were also applied during the review, including studies conducted with healthcare professionals and studies that were not situated within Primary Health Care. To promote open and transparent science, and following JBI recommendations, a review protocol was registered and made publicly available for consultation, providing further methodological detail²¹.

To address the study objectives, four main thematic categories were identified: Disasters/Catastrophes, investigating the impact of outbreaks, pandemics, or epidemics on workers’ health and related interventions (with emphasis on COVID-19); Well-being in the Workplace and Related Psychosocial Factors, addressing violence, job satisfaction, workload, and healthy working conditions; Specific Mental Health Issues, including burnout, stress (occupational and post-traumatic), anxiety, depression, alcohol abuse, quality of life, resilience, and sleep disorders; Interrelation between Mental and Physical Health, which, although less frequent, connects mental health with physical activity, musculoskeletal injuries, post-traumatic stress injuries, and breast cancer.

RESULTS AND DISCUSSION

Initially, 1211 records were identified and uploaded to the Rayyan online platform, which enabled the identification and removal of duplicate materials, as well as blinded peer review of titles and abstracts. Conflicts were resolved among the reviewers and a third adju-

dicator. The materials resulting from this first screening stage were read in full and methodologically evaluated using the Critical Appraisal Skills Programme (CASP) checklists, in order to ensure greater methodological rigor. Only studies that obtained more than five posi-

tive responses in the assessment questionnaires were included. The exception was experience reports, since determining the methodological quality of such reports was considered highly complex. Studies that did not correspond to any CASP checklist were evaluated using an adapted questionnaire (author-developed adaptation), which was applied, for example, to cross-sectional epidemiological studies and scoping

or integrative reviews. For the analysis of the selected material, an instrument for collecting basic bibliographic information was used (authors, title, year, language, and journal of publication), along with an evidence synthesis instrument¹⁹. The review ultimately included a total of 157 articles. The process of identification, screening, and inclusion can be observed in Figure 1, below:

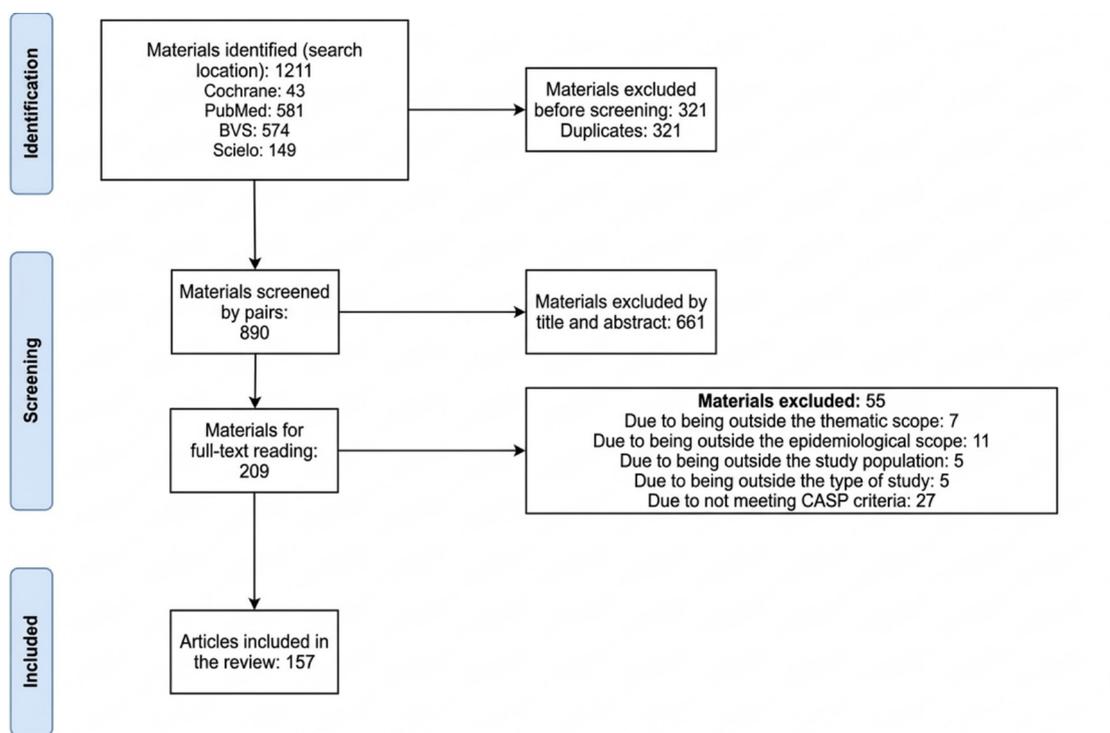


Figure 1 - Selection of articles on the mental health of healthcare professionals (PRISMA-ScR).

Aiming to characterize the included materials, in Figure 2 it is possible to analyze the frequency of publications by year, observing a concentration of publications in the years 2020, 2021 and 2022. As will be discussed below, these numbers are estimated to be influenced by the SARS-CoV-2 pandemic, a

context in which the focus on the health of healthcare professionals increased. Furthermore, considering the material from a methodological perspective, 96 studies use quantitative methods, 25 use qualitative methods, 24 are reviews of different natures and 7 are mixed-method studies.

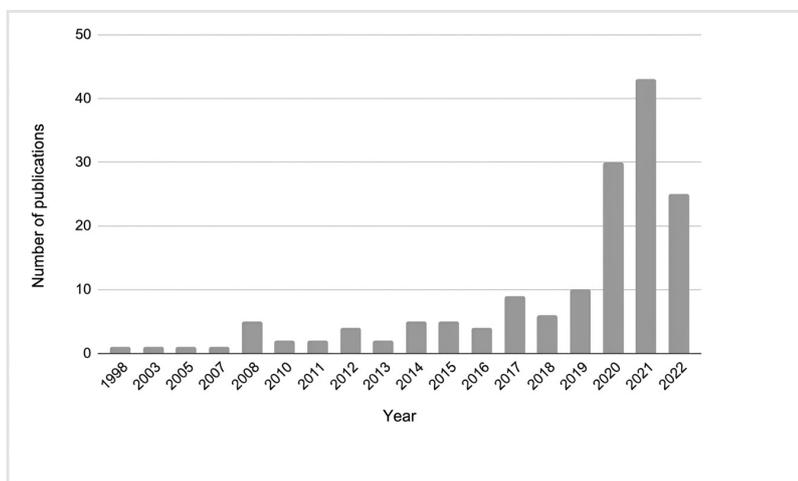


Figure 2 - Frequency of publications of the included articles in relation to the year of publication.

The journals in which the articles most frequently appear are: International journal of environmental research and public health (17 publications), Esc. Anna Nery Rev. Enferm (6), BMJ open (5) and PloS one (4). Regarding languages, 109 publications were exclusively in English (70.3%), 27 in Portuguese (17.4%), 12 in Spanish (7.7%) and 7 were published and made available in more than one language (4.5%). With regard to discussion in disaster and catastrophe contexts, it is observed that 74 materials address this topic, with emphasis on the COVID-19 pandemic, which accounts for 72 mentions. In addition, there are studies on SARS (2 mentions), influenza A, Ebola, MERS and tornadoes (1 mention each), with 2 articles discussing more than one context. It is noteworthy that, considering the totality of materials that analyze disaster/catastrophe contexts, almost all refer to viral epidemics and pandemics, with the exception of tornadoes, mentioned in 1 study.

Among the validated psychometric instruments

used by quantitative or mixed-method studies, those appearing with a frequency greater than or equal to three in the totality of articles, and greater than or equal to five in articles within disaster/catastrophe contexts, can be observed in the table that follows (Table 1). Particular emphasis is placed on the Patient Health Questionnaire - 9 items (PHQ-9), the Maslach Burnout Inventory (MBI), the Generalized Anxiety Disorder scale (GAD-7) and the Impact of Event Scale (IES-R). From these results, a concern in the literature with depressive symptoms, burnout and anxiety is indicated, in addition to associations with potentially impactful and traumatic events and situations within the work environment. Similarities are observed between the most frequently used instruments overall and those used in articles addressing disaster/catastrophe contexts; however, in these cases there is greater concern regarding anxiety and depressive and post-traumatic stress symptoms.

Table 1 - Instruments used by the articles that appear with a frequency greater than or equal to 3, with a distinction between those most frequently used in the totality of articles and those with the highest frequency among texts conducted in disaster/catastrophe contexts.

Instrument	Number of selected articles	Number of articles in disaster and catastrophe contexts
PHQ-9	16	12
MBI	15	7
GAD-7	14	14
IES-R	11	8
SRQ-20	8	-
GHQ	6	2
JCQ	6	-
JSS	4	-
K10	4	-
SATIS-BR	3	-
PCL-5	3	-
PSS	3	-
SF-12	3	-
SUSESO/ISTAS21 - COPSOQ	3	-
CD-RISC (Connor-Davidson Resilience Scale)	3	-

A great variability was observed in the way results from psychometric assessment scales were presented in the studied population; nevertheless, some results referring to the MBI, PHQ-9, GAD-7 and IES-R can be observed, presented in Table 2 (results expressed as percentages of individuals reaching certain thresholds) and Table 3 (results referring to the mean score of the psychometric assessment scale). In addition to the tabulated articles, other studies using the same instruments include: Maun-der *et al.* (2021)²², which uses the emotional exhaus-

tion subscale of the MBI among nurses, clinical staff and other professionals at an initial moment and another in the middle of the COVID-19 pandemic (with mean scores of 28.9, 24.8 and 24.1 in the first moment and 32.6, 25 and 28.3 in the second, respectively); Cruz *et al.* (2019)²³, which separates the GAD-7 score into somatic symptoms (2.4), anxiety symptoms (2.5), social dysfunction (2.3) and depressive symptoms (2); and Zerbini *et al.* (2020)²⁴, which used PHQ-9 and MBI but only presented correlations with other scales used.

Table 2 - Indication of the articles that apply the instruments used with a frequency greater than 10, according to Table 1, and their respective scores presented in percentage format, as well as the way in which the articles qualify this percentage.

Article reference	Instrument			
	PHQ-9	MBI	GAD-7	IES-R
Lopes <i>et al.</i> (2022) ²⁵	19% depressive symptoms	8.7% burnout symptoms	-	-
Kamali <i>et al.</i> (2022) ²⁶	-	31.2% prevalence of exhaustion; 48.7% prevalence of depersonalization; 56.1% prevalence of professional accomplishment	-	-
ALGhasab <i>et al.</i> (2021) ²⁷	52% scored between 0–4; 29.8% between 5–9 and 18.2% between 10–27	-	-	-
Alonso <i>et al.</i> (2021) ²⁸	-	-	22.5% score ≥ 10	-
Carmassi <i>et al.</i> (2021) ²⁹	9.1% presented depression	-	13.6% anxiety	17.7% Post-Traumatic Stress Disorder
Dagne <i>et al.</i> (2021) ³⁰	-	-	26.8% prevalence of anxiety	-
Lasalvia <i>et al.</i> (2021) ³¹	40.6% presented symptoms	38.1% scored above the cut-off point in the 3 subscales	-	72.2% presented symptoms
Repon <i>et al.</i> (2021) ³²	51% of pharmacists presented symptoms, 50% of physicians, 36% of nurses and 40% of medical technicians	-	82% of pharmacists presented symptoms, 80% of nurses, 79% of physicians and 69% of medical technicians	-
Castañeda-Aguillera, de-Alva-García (2020) ³³	-	40.2% burnout syndrome	-	-
Lasalvia <i>et al.</i> (2020) ³⁴	26.6% scored above 10	-	-	53.8% scored above 24
Luceño-Moreno <i>et al.</i> (2020) ³⁵	-	41% high levels of exhaustion; 15.2% high levels of depersonalization; 81.9% high levels of professional accomplishment	-	56.5% presented symptoms
Rodríguez-Rey (2020) ³⁶	-	-	-	73.6% presented severe impact
Yang, Hayes (2020) ³⁷	-	26.62% high levels of exhaustion; 29.01% high levels of depersonalization; 29.35% high levels of professional accomplishment	-	-
Sánchez <i>et al.</i> (2017) ³⁸	-	48.9% high scores (33.7% in one scale, 15.2% in two or three scales)	-	-

Table 3 - Indication of the articles that apply the instruments used with a frequency greater than 10, according to Table 1, and their respective mean scores.

Article reference	MBI			Instrument		
	Exhaustion	Depersonalization	Personal accomplishment	PHQ-9	GAD-7	IES-R
Carmassi <i>et al.</i> (2022) ³⁹	-	-	-	5.57	6.02	19.38
Hendrickson <i>et al.</i> (2022) ⁴⁰	-	-	-	9.9	9.3	-
McGuinness <i>et al.</i> (2022) ⁴¹	8.7	3	14.3	6	4.6	0.9
Debski <i>et al.</i> (2021) ⁴²	-	-	-	7	6	9
Fattori <i>et al.</i> (2021) ⁴³	-	-	-	9.61 (women), 8.43 (men)	5.84	20.56
Roberts <i>et al.</i> (2021) ⁴⁴	28.49	9.32	34.23	8.16	6.79	-
Teo <i>et al.</i> (2021) ⁴⁵	-	-	-	-	4.96	-
Xie <i>et al.</i> (2021) ⁴⁶	-	-	-	-	3.4	-
Zhang <i>et al.</i> (2021) ⁴⁷	19.3	-	-	-	-	13.2
Buselli <i>et al.</i> (2021) ⁴⁸	-	-	-	4.5	4.2	-
Cruz <i>et al.</i> (2019) ²³	17.4	8.7	37.9	-	-	-
Merino-Plaza (2018) ⁴⁹	19.82	5.8	37.86	-	-	-
Franceschini (2017) ⁵⁰	19.4	8.4	33.1	-	-	-
Malabouti <i>et al.</i> (2011) ⁵¹	14.5	2.2	10.4	-	-	-
Matthews (1998) ⁵²	-	-	-	-	-	21.93 (Intervention G), 18.17 (Control A), 26.9 (Control B)

It is necessary to question, at this point, the diversity observed in the presentation of these data and the difficulty that such a situation may generate in the reproducibility of studies. Considering a perspective of open and transparent science, the importance of access to these forms of information is advocated.

The nursing workforce (77 studies) and physicians (62 articles) were the most frequently studied populations, followed by psychologists, dentists and physiotherapists (11 each), pharmacists (9), community health workers (8), occupational therapists and nutritionists (7 each). Paramedics, residents and laboratory technicians were cited in 5, 4 and 4 articles, respectively, and speech-language pathologists in 2. In addition, 22 articles addressed administrative professionals and teams and 4 articles focused on cleaning workers. Most studies analyzed more than one professional category.

Among the articles focusing on fields of practice, 64 studied hospital settings, in addition to 4 that restricted the analysis to ICUs (Intensive Care Units). Primary Health Care (PHC) is the second largest field of study, appearing in 22 materials. Mental health care services, of different types, are studied in 6 materials. Other work contexts appear, but with low frequency, such as emergency services (3), telephone health services (2), ambulance services (2), surgical clinics, polyclinics, outpatient

clinics, oncology units and community residences (1 occurrence each).

Considering the totality of the articles, 94 texts identify the need for mental and/or physical health interventions with healthcare professionals, among which 60 (63.83%) occur in disaster and catastrophe contexts. Through a systematic review, Nicolakakis *et al.* (2022)⁵³ concluded that interventions with this scope directed to this population are an emergency.

Articles on healthcare professionals highlight the need for interventions, with 83 proposing active listening, self-care, peer support and therapeutic communication. Ninety-six studies associated physical and emotional pathologies (such as hypertension, stress and fatigue) with work-related problems. Only two articles addressed alcohol consumption, one of which implemented an intervention consisting of lectures that reduced intake^{54,55}. One study pointed out the importance of a welcoming work environment for professional satisfaction and well-being, reflecting in lower illness and greater dedication⁵⁶. Four articles analyzed satisfaction, such as a study that showed that workers in CAPS view their work as pleasurable and valued⁵⁷.

However, only 22 conducted some form of intervention, 9 of them in disaster and catastrophe contexts. Depret *et al.* (2021)⁵⁸ used art therapy as an intervention aimed at improving stress in the work

environment. The low number of interventional articles (14.28%) becomes concerning when considering research that demonstrates the reluctance of healthcare workers to seek mental health assistance in the workplace due to fear of judgment, familiarity with the care professional or dismissal as a result of seeking help⁵⁹. It is noted that only 3 articles were characterized as case-control studies, establishing an intervention group and a comparison group^{60,61}. Therefore, within the research field, a gap in intervention studies is observed in the domains of promotion, prevention and care in health.

Among the proposals suggested by the studies are: social support; adequate PPE; creation of guidelines, protocols and training; professional compensation mechanisms; breaks and rest between work shifts; physical care; guarantee of psychosocial support services; reliable and high-quality information; staff rotation; teams with experienced professionals; work flexibility; strong and resilient health systems for epidemic situations; mind control and repetition of positive affirmations; professional recognition by the institution and society. The evaluation by managers regarding interventions in team behavior suggested that the inclusion of certain strategies in the work environment is associated with better reports of physical health, satisfaction and work engagement, and lower intention to leave employment⁶². However, the need for studies focused on implementing changes in the work environment and routine in order to minimize the investigated and identified issues is observed.

Considering the strategies suggested in disaster/catastrophe contexts, the most indicated was psychological follow-up, either individual or group-based (19 studies), as well as the development of welcoming groups and social support (9 articles). Other strategies focused on promoting well-being and quality of life, using techniques that could be incorporated into daily routines, such as well-being promotion (10 studies) and resilience (6 studies), the practice of mindfulness⁶³ and treatment of sleep disorders in search of reducing mood disorders⁶⁴. The practice of physical activity is mentioned by 3 articles, one of which highlights some integrative practices such as stretching, therapeutic massage and yoga^{58,63,65}. In addition, 1 study mentions other integrative care practices such as meditation and forms of expression of spirituality and religiosity for strengthening purposes⁵⁶. Fourteen studies discuss actions aimed at improving the work environment, with the main suggestions being the reduction of shifts, working hours and workload in order to reduce professional exhaustion, as well as actions such as improving interpersonal relationships be-

tween managers and teams, improving team planning processes, providing training and health education, implementing mental health programs and working to ensure that employees feel more valued. These strategies are consistent with the instruments used in studies focusing on the relationship between mental health and work context, such as JCQ, JSS and SATIS-BR.

The strategies adopted or mentioned can be considered as belonging to the following categories: (1) mitigation of mental health issues, (2) self-care or (3) structural intervention. The first mainly involve therapeutic support strategies for these professionals and the creation of environments for rest and care, aiming to mitigate problems of psychological suffering already present at the time of intervention. Self-care strategies focus on equipping workers with techniques they can use to prevent or mitigate their own mental health demands or those of colleagues. Few interventions focus on organizational and work processes that may cause illness as a way of preventing the very relationships that generate illness. Although such interventions exist, they appear more as suggestions than actual implementations and in a non-specific and non-directive manner. The impact of the work environment on the mental health of this population is recognized, but little intervention occurs in the problem itself. Furthermore, in general, the strategies proposed in disaster and catastrophe contexts align with those indicated by the totality of the review, presenting few specificities. Such a situation may indicate the effectiveness of these interventions regardless of the context of application, or the need for further studies considering the different demands that may arise under these conditions.

The evidence synthesized in this study presents direct implications for the formulation of public health and occupational health policies. The high prevalence of psychological distress and the urgent need for interventions, identified by a significant number of articles, requires an active position from managing bodies. It is imperative that public policies move beyond an exclusive focus on mitigation and self-care strategies, directing resources and guidelines toward structural intervention in work environments. This includes regulation and supervision of working hours and workloads, ensuring adequate staffing and provision of Personal Protective Equipment (PPE), and fostering mental health programs capable of overcoming the barrier of stigma⁶⁶.

The use of information technologies rarely appears in the materials (30 articles - 19.48%), and when they are used they function as a means of assisting research development, such as data col-

lection or participant recruitment, rather than as instruments of care or intervention (24). In 6 texts this resource is used in different ways: in 3 of them interventions aimed at caring for frontline health-care professionals during the COVID-19 pandemic were developed or studied, either through chat on a social network⁶⁷, through the creation of a platform composed of a website and mobile application⁶⁸, or through a review that identified studies using social networks, websites and applications³⁸; the other 3 materials consist of 1 text describing the use of videos to promote self-care actions and resilience-building, among other in-person interventions⁶⁹, in 1 study digital interventions delivered via smartphone were co-designed, implemented and evaluated⁷⁰, and 1 article consists of a randomized study that used an e-mental health self-help approach consisting of screening followed by personalized feedback and advice combined with access to online interventions to improve work functioning, stress and fatigue among hospital nurses and allied healthcare professionals⁵⁵. These articles used technology mainly for interventions and strategies aimed at disseminating information and encouraging self-care, with 3 texts using “self-screen” and “self-report” techniques and scales^{48,55,68}.

Among these materials, only 4 reflect on the role of technology in this type of intervention. Cheng *et al.* (2020)⁶⁷ discusses anonymity, different communication possibilities, early and daily intervention, easy accessibility and the possibility of articulating micro-level (individual and professional category needs) with macro-level (local and national authorities) aspects as positive points of this form of action, but the lack of bonding and the need to adapt clinical techniques as limitations, as well as the lack of scientific literature on the subject. This study is the only one that reflects on the impact of this use in pandemic situations, by allowing rapid action independent of distance, for example. Schwerman and Stellmeacher (2012)⁶⁹ also state that easy access is one of the main advantages of an online program, as it allows use at more convenient times and in different places, leading to high levels of participation and engagement, while also depending on several factors for proper functioning (such as internet access, development of a good interface, etc.). Ravalier (2022)⁷⁰ only mentions that the use of applications to disseminate interventions has shown promising results, without further reflections or deeper analysis, while Ketelaar *et al.* (2014)⁵⁵ reflects on possible technical problems and/or issues related to digital literacy for the use of online interventions, whereas Mira (2020)⁶⁸ and Buselli *et al.* (2021)⁴⁸ do not discuss this aspect.

When the material is restricted to the national

scope, the articles are reduced to 47 (30.52%), a sample composed of 23 texts using quantitative methods, 13 qualitative (including 3 experience reports), 2 mixed-method studies and 9 literature reviews (7 integrative, 1 scoping and 1 without a defined method). Among these articles, 10 occur in the context of the COVID-19 pandemic and none use mobile applications or information technologies as a form of intervention or mental health care, only for data collection (in the case of 4 materials). The instruments and scales that appear most frequently are: Self-Reporting Questionnaire – SRQ20 (8 mentions), Job Stress Scale – JSS (4), Job Content Questionnaire – JCQ (3), Maslach Burnout Inventory – MBI (3), Demand Control Support (2), IMPACTO-BR – Brazilian Scale for the Assessment of Work Overload (2) and SATIS-BR – Brazilian Scale for the Assessment of Satisfaction (2). The main objectives of these studies are to observe the prevalence of psychiatric disorders among healthcare professionals (9 articles), understand the repercussions of the COVID-19 pandemic on workers’ health, both in terms of mental health and attitudes and perceptions (5), and to reflect on the satisfaction–dissatisfaction relationship in/with work (5).

Still within this national scope, there are only 2 intervention articles, one addressing art therapy applied to healthcare professionals⁵⁷, and another conducting a quasi-experimental study with pre- and post-intervention evaluation in mindfulness⁷¹, but neither of them includes a control group. There is also 1 experience report focused on care experiences in the context of the pandemic⁷². The professionals most frequently focused on, when appearing as a research subset, are the nursing team (17 articles), physicians (10), community health workers (4) and psychologists (4). The most studied fields of practice are PHC (10) and the hospital environment (7). The care strategies suggested or applied by the articles are, in most cases, not very specific, but with emphasis on those aimed at improving working conditions (mentioned in 13 materials), such as reduction of working hours, staff rotation, work flexibility, increased rest periods, etc.; general healthcare assistance (9 texts), such as rehabilitation, monitoring/follow-up and health promotion, including mental health (8 texts); improvements in relational and affective issues (7 texts), aimed at support networks, good interpersonal relationships and welcoming practices, professional recognition and effective communication; informational support (7 texts), through the provision of instructions, training and protocols; individual-level strategies (4 texts), such as mind control, meditation, positive affirmations and strengthening of resilience; and promotion of physical well-being (3 texts).

CONCLUSION

A concern within the literature studied is observed regarding certain specific groups, such as the nursing workforce and hospital teams. Despite the importance of these studies, it is necessary to point out the lack of studies involving other healthcare professionals who may be equally vulnerable, and in contexts that present challenges as significant as the hospital environment (such as PHC). However, this finding may also be related to the intersection with studies addressing the COVID-19 pandemic context, a situation in which hospital workers were widely discussed due to hospital overload.

Furthermore, the discrepancy in publications by year is noteworthy, since a greater concern with publishing on this topic is observed in 2020, 2021 and 2022, the period of pandemic emergence, raising questions regarding the low number of publications in previous years according to the methodological aspects of this study. Considering that most publications discussing the mental health of healthcare professionals in disaster and catastrophe situations refer to viral diseases, we emphasize the relevance this may have in the coming years. In 2019, the WHO already identified influenza, Ebola, Zika, MERS-CoV, SARS and other viral pathogens as threats to global health⁷³.

In general, the articles identified the need for interventions involving healthcare professionals who participated in the studies. High levels of stress, physiological illnesses acquired in the workplace due to chaotic routines, lack of training and absence of available PPE, among other factors, are conditions capable of generating personal and professional impacts and constitute frequent aspects of the daily routine of these workers. Therefore, there is a need to develop rapid and effective forms of welcoming and monitoring this population, with listening, support and adequate working conditions. Studies conducted in disaster and catastrophe contexts propose strategies designed to adapt to the reality experienced in those moments, considering the well-being of these professionals and seeking to promote actions aimed at supporting mental health, which may prevent burnout, post-traumatic stress, anxiety, depression and other forms of psychological distress. Accordingly, strategies such as support and welcoming groups, psychological monitoring and treatment, as well as health education proposals, promotion of self-care and well-being were suggested. Some studies proposed the possibility of conducting these actions through online means, while others emphasized in-person approaches, highlighting the importance of human contact.

The data related to the use of information technologies for the implementation of strategies are also noteworthy. This is a resource that is rarely used and

whose integration into the field of care is little reflected upon regarding its potential and limitations, as well as ethical issues. It is argued here that this constitutes an important field for the development of studies and interventions because it allows immediate and early reach with minimal geographical restriction to target populations, as well as accessibility. Moreover, it assumes particular relevance in disaster and catastrophe contexts, especially when measures such as social isolation are implemented. The perspective adopted here recognizes the impact that such events have on the immediate mental health of healthcare professionals and considers the use of these technologies as a means of preventing long-term consequences, precisely due to the characteristics mentioned. At the same time, however, intervention cannot occur only in emergency situations; reflections are also necessary regarding issues such as the ethics surrounding the use of data generated by applications and websites, the limits and adaptations of classical clinical techniques, and the most effective interventions in different contexts.

The scarcity of older studies that develop strategies for mental health care for healthcare professionals, regardless of disaster and catastrophe situations but also in their routine work itself, leads to reflection on whether, and how, these professionals have been perceived and supported, since all articles recognize the complex mental health issues involved in this population. Thus, a strong emphasis is observed in the production of materials focused on screening psychological distress, but few studies implement strategies of promotion, prevention and care in this area. Therefore, it is necessary to develop research that not only investigates the conditions of these professionals but also intervenes in them and examines the impacts of such interventions. Furthermore, considering the low number of randomized studies with control groups and pre- and post-intervention evaluations, the need for studies with greater scientific rigor is reinforced, while also recognizing the importance of different methodological approaches in the study of this topic.

Some methodological limitations that may be highlighted in this study include the inclusion of only three languages and the non-inclusion of other search platforms. Although the delimitation was quite broad, this may have limited the inclusion of other relevant articles. In addition, the search strategy may not have been the most adequate to answer the secondary research questions, particularly regarding the use of mobile applications, since this is a more recent discussion and there may not yet be clear ways to identify and search for such materials. Therefore, it is suggested that further studies be conducted in this direction, especially to understand how these texts may be identified.

It is expected that this article may contribute to the discussion on the mental health of healthcare professionals, a topic that has gained relevance in recent years. Despite the number of publications identified between 2020–2021, no review with the same proposal as the one conducted in this article was identified, demonstrating the originality of the search. In addition, it is understood that the use of information technologies assumes particular relevance and importance for future research, as well as for guiding actions in health

management, service planning and preventive or educational actions, due to the impact these technologies may have in disaster and catastrophe situations by enabling rapid and effective responses to situations of distress and overload among healthcare professionals, as occurred during the SARS-CoV-2 pandemic. Such studies are necessary so that this type of intervention may be carried out while considering ethical issues and limitations, making the necessary adaptations to respond to the demands of these workers.

CRedit author statement

Conceptualization: Neto JBB; Martini LC. Methodology: Neto JBB; Martini LC. Validation: Neto JBB; Martini LC; Fernandes AJNL; Fassina FCL; Cruz MG; Rodrigues RCP; Barbosa MMA. Formal analysis: Neto JBB; Martini LC; Fernandes AJNL; Fassina FCL; Cruz MG; Rodrigues RCP; Barbosa MMA. Investigation: Neto JBB; Martini LC. Resources: Neto JBB; Martini LC. Writing – original draft: Neto JBB; Martini LC; Fernandes AJNL; Fassina FCL; Cruz MG; Rodrigues RCP; Barbosa MMA. Writing – review & editing: Neto JBB; Martini LC; Fernandes AJNL; Fassina FCL; Cruz MG; Rodrigues RCP; Barbosa MMA. Visualization: Neto JBB; Martini LC; Fernandes AJNL; Fassina FCL; Cruz MG; Rodrigues RCP; Barbosa MMA. Supervision: Neto JBB; Martini LC. Project administration: Neto JBB; Martini LC.

All authors have read and agreed to the published version of the manuscript.

Funding

This revision was supported by the São Paulo Research Foundation (FAPESP) under grant number 2021/08694-8.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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How to cite this article: Fernandes, A.J.N.L., Martini, L.C., Fassina, F.C.L., Cruz, M.G., Rodrigues, R.C.P., Barbosa, M.M.A., Neto, J.B.B. (2026). The mental health care of healthcare workers: an analysis of knowledge production through a scoping review. *O Mundo Da Saúde*, 50. <https://doi.org/10.15343/0104-7809.202650e180020251>. *Mundo Saúde*. 2026,50:e18002025.

