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Mental health in health professionals facing Covid-19: A systematic review

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Abstract

The objective was to systemically review the scientific literature findings on mental health indicators of health professionals engaged in coping with the Covid-19 pandemic. The review followed the PRISMA guideline recommendations, including articles published on this theme, excluding comments, editorials, and literature review articles. Twenty-eight articles were investigated concerning their country of origin, participants, methods used, mental health indicators (symptoms described), and main conclusions. There was great variation in the methodological strategies used in the studies (number of participants and instruments). However, the findings consistently appointed relevant alterations in recurring symptoms of anxiety, depression, and sleep changes in health professionals at the frontline in the fight against the pandemic. Interventions through online conversation groups conducted by mental health professionals could help combat the pandemic's effects concerning the development of emotional problems.

Keywords: health professionals; Covid-19; mental health; anxiety disorders; depression.

SAÚDE MENTAL EM PROFISSIONAIS DE SAÚDE NO ENFRENTAMENTO AO COVID-19: REVISÃO SISTEMÁTICA

Resumo

Este estudo objetivou revisar, de forma sistemática, achados da literatura científica relativos a indicadores de saúde mental em profissionais de saúde no enfrentamento à pandemia de Covid-19. A revisão seguiu as recomendações do PRISMA, incluindo artigos publicados nesta temática, excluindo-se comentários, editoriais e artigos de revisão da literatura. Foram examinados 28 artigos científicos considerando seu país de origem, participantes, métodos utilizados, indicadores relativos à saúde mental (sintomas descritos) e principais conclusões. Houve grande variabilidade nas estratégias metodológicas utilizadas nos estudos (número de participantes e instrumentos), porém os achados foram consistentes em apontar alterações relevantes em termos de sintomas de ansiedade, depressão e alterações no sono como recorrentes em profissionais de saúde atuantes no combate à pandemia. Intervenções por meio de grupos de conversação, realizados *on-line*, conduzidos por profissionais da área da saúde mental, poderiam auxiliar a combater os efeitos da pandemia referentes ao desenvolvimento de problemas emocionais.

Palavras-chave: profissionais de saúde; Covid-19; saúde mental; distúrbio da ansiedade; depressão.

SALUD MENTAL EN PROFESIONALES DE LA SALUD FRENTE A COVID-19: REVISIÓN SISTEMÁTICA

Resumen

Este estudio de revisión sistemática de la literatura científica se centró en los indicadores de salud mental en los profesionales de la salud para hacer frente a la pandemia de Covid-19. Siguió una guía PRISMA, incluyendo artículos publicados sobre este tema, excluidos comentarios, editoriales y artículos de revisión de literatura. Se examinaron 28 artículos según: país de origen, participantes, métodos, indicadores de salud mental (síntomas descritos) y principales conclusiones. Hubo gran variabilidad en las estrategias metodológicas utilizadas en los estudios (número de participantes, instrumentos), pero los hallazgos apuntaron cambios relevantes en términos de síntomas de ansiedad, depresión y cambios en el sueño como recurrentes en los profesionales de la salud que trabajan en la lucha contra la pandemia. Las intervenciones a través de grupos de conversación online, realizadas por profesionales de la salud mental, podrían ayudar a combatir los efectos de la pandemia respecto al desarrollo de problemas emocionales.

Palabras-clave: profesionales de la salud; Covid-19; salud mental; trastornos de la ansiedad; depresión.

1. Introduction

On March 31, 2020, the World Health Organization (WHO) defined the coronavirus outbreak as a pandemic. The associated disease was called Covid-19 (Coronavirus disease 2019) and is spreading rapidly, while scientists are still trying to understand its mechanisms of action (Organização Mundial da Saúde, 2020).

As a way of coping with Covid-19, one of the most accepted strategies is social distancing to avoid contact with infected people. People are encouraged to stay at home, use masks, tighten hygiene habits, and keep physical distance from other people. Nevertheless, the health professionals working to combat the new virus need to be in daily contact with infected people as part of the treatment offered to patients (Lai et al., 2020; Liu et al., 2020; Zhang et al., 2020), constituting a vulnerable group to Covid-19, due to the high risk of infection they are exposed to. Acting against highly transmissible diseases can increase feelings of fear, anxiety, despair, and stress. Health professionals in contact with mucous membranes or aerosols produced by infected patients, as happens in procedures such as tracheal intubation, tracheostomy, noninvasive ventilation, and manual ventilation, present

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an even greater risk of contamination (Civantos et al., 2020; Fawaz & Samaha, 2020; D. Sun et al., 2020; Zerbini, Ebigbo, Reicherts, Kunz, & Messman, 2020).

To protect their families and friends, it is common for these professionals to physically distance themselves from these people (Fawaz & Samaha, 2020; Lai et al., 2020), decreasing their affective-social support network. This distancing, combined with the stress and exhaustion they are subject to due to the increased daily workload (Civantos et al., 2020; Sethi, Sethi, Ali, & Aamir, 2020; Sun et al., 2020) and redoubled care for equipment and procedures (Lai et al., 2020; Xing, Sun, Xu, Geng, & Li, 2020), can weaken their psychic balance and mental health.

Signs of destabilization in mental health can emerge from behavioral changes and impairments in physical health conditions (Chong et al., 2004; Kröger, 2020; Xing et al., 2020). The effects of a high-stress burden can continue acting beyond one year after the critical period of a pandemic, as shown by McAlonan et al. (2007). Therefore, the effects of post-traumatic stress for health professionals at a greater risk of infection with Covid-19 can be persistent.

Collaborative, multidisciplinary, and large-scale actions need to be taken in order to understand the psychological effects of the Covid-19 pandemic. Assessing health professionals makes it possible to prevent symptoms of anxiety and depression (common in extraordinary circumstances, such as a pandemic) from persisting and generating harmful behaviors such as self-mutilation or suicide (Holmes et al., 2020).

This perspective requires a systematic study of the theme and compilation of the knowledge produced thus far to develop care strategies for health professionals so they can perform their work under appropriate conditions. To be able to offer more appropriate actions and interventions, knowledge is needed on the weaknesses related to the mental health of this professional group. Based on these premises, this study aimed to conduct a systematic review of the scientific literature to identify indicators related to health professionals' mental health conditions in coping with the current pandemic of Covid-19.

2. Method

This systematic review of the scientific literature was conducted according to the PRISMA guideline recommendations – Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Moher, Liberati, Tetzlaff, & Altman,

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2009). As eligibility criteria for this literature review, we included published articles that conducted mental health assessments of health professionals coping with Covid-19. Comments, editorials, and scientific literature review articles were excluded. The outcome evaluated was indicators related to mental health conditions in health professionals in coping with Covid-19.

A bibliometric study was carried out, between May and June, to analyze the scientific production on mental health in health professionals after the onset of the pandemic, in which articles were included whose abstracts were available in English. This choice aimed to grant visibility to the studies representative of this pandemic period and which addressed the theme of mental health in health professionals, disseminated in English, given its international reach.
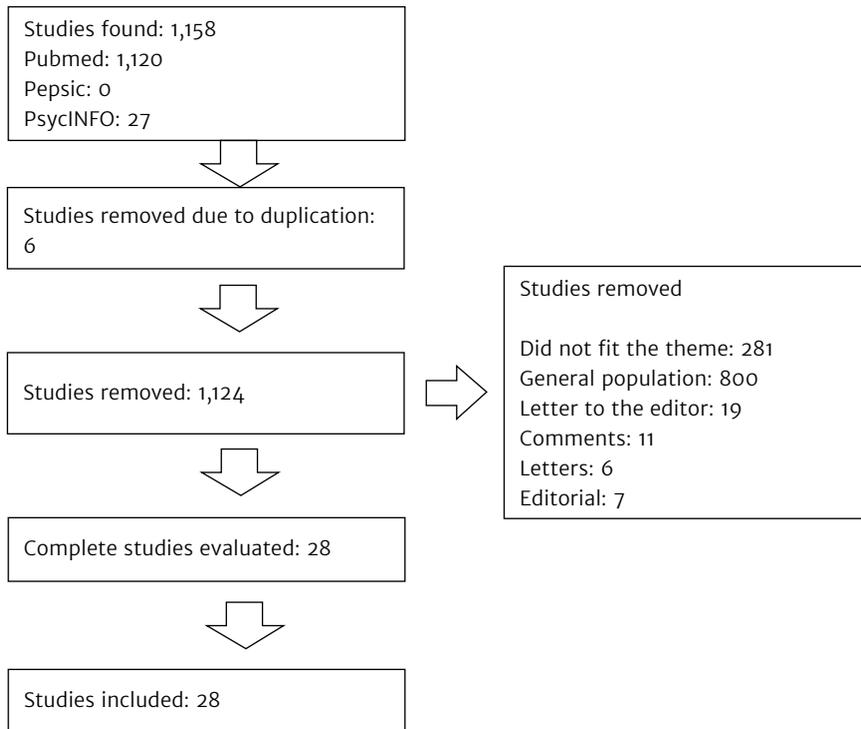
Considering that the pandemic officially began in early 2020 (World Health Organization, 2020), all articles located were published in the same year. The search for the studies was carried out in the Pubmed, PsycINFO, PePSIC, and Scielo databases. The choice of these databases was due to their relevance and scope concerning the proposed research theme. The keywords used were "*saúde mental e Covid-19*," "*saúde mental e Covid19*," "*saúde mental e Covid 19*," and their correlates in English "mental health and Covid-19," "mental health and Covid19," and "mental health and Covid19", respectively. The keywords choice was intended to cover as many articles as possible involving indicators related to mental health. We opted for the specific use of the terminology "mental health" to focus on these indicators.

The authors of this study independently evaluated the titles and abstracts of the studies identified through the search strategy. Initially, the duplicated titles were excluded. Then, comments, editorials, letters to the editor, and scientific literature review articles were excluded. The final stage excluded articles that addressed other participants' mental health and that did not include health professionals. All studies that did not provide sufficient information in their respective abstracts to ground their compliance with the inclusion and exclusion criteria used were evaluated in full and selected according to the eligibility criteria adopted here. The authors individually extracted the data regarding the methodological characteristics of the studies, their data regarding mental health indicators, and their conclusions, reaching a systematic compilation of these analyses by consensus among independent examiners.

3. Results

The results of the scientific literature search in the Brazilian and international databases totaled 1,158 publications. Figure 3.1 displays the flowchart of the search strategy used in this work.

Figure 3.1. Flowchart of the search strategy in the scientific literature.

Studies found: 1,158
Pubmed: 1,120
Pepsic: 0
PsycINFO: 27

Studies removed due to duplication: 6

Studies removed: 1,124

Studies removed

Did not fit the theme: 281
General population: 800
Letter to the editor: 19
Comments: 11
Letters: 6
Editorial: 7

Complete studies evaluated: 28

Studies included: 28

Six duplicated studies were identified and they were removed. In total, 1,124 articles did not comply with the criteria for inclusion in this review because they involved another type of participants and variables not related to health professionals' mental health. Thus, 28 scientific articles remained for a detailed examination.

The reading and analysis of the 28 selected articles enabled the verification and systematization of their various technical characteristics, involving methodological and content aspects. The variables related to the country of origin of the studies, their participants, methods used in scientific research, indicators

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related to mental health (symptoms described), and the main conclusions of each of these studies were highlighted. Figure 3.2 presents the studies analyzed that evaluated the mental health of health professionals coping with Covid-19.

Figure 3.2. Description of scientific studies that evaluated mental health of health professionals during the Covid-19 pandemic.

	Publication Country	Participants	Evaluation method	Symptoms described	Conclusion
1	(Song et al., 2020) China.	14,825 physicians and 31 nurses.	Online application, Perceived social support Scale, Center for Epidemiologic Studies Depression Scale and PTSD Checklist for DSM-5.	Prevalence of depressive and post-traumatic stress symptoms.	Some groups were more likely to develop psychological problems, indicating the need for rapid mental health promotion actions.
2	(Tu et al., 2020). China.	100 nurses in the frontline of the Covid-19 care.	Online application, Pittsburgh Sleep Quality Index, Generalized Anxiety Disorder 7-item Scale, and Patient Health Questionnaire-9.	Difficulty falling asleep, difficulty keeping a continuous sleep, and difficulty getting up in the morning. Low quality of sleep, and anxiety and depression symptoms.	Sleep problems, anxiety and depression are common in nurses treating Covid-19 patients in Wuhan.
3	(Xing et al., 2020). China.	548 physicians and nurses.	Online application, self-reported inventory, and Symptom Checklist-90.	Higher averages were found for somatization, obsessive-compulsive behaviors, anxiety, and psychoticism in physicians than in the control group.	Physicians who are at the frontline present greater impairments in mental health indicators than the control group.
4	(Zerbini et al., 2020). Germany.	75 nurses and 35 physicians.	Patient Health Questionnaire and the German version of Maslach Burnout Inventory.	Nurses at the frontline of Covid-19 present greater symptoms of stress, exhaustion, and depression. Physicians obtained similar results, but without differences between those fighting Covid-19 and working in other areas.	Nurses at the frontline of Covid-19 are more affected in psychological terms. This fact may be associated with longer exposure time and contact with infected patients.
5	(Cai et al., 2020). China.	1,374 health professionals.	Symptom Check-list-90, Chinese version of the Connor-Davidson Resilience Scale, and Social Support Rating Scale.	The professionals without experience in emergency care showed worse performance in mental health, resilience, and social support and tended to suffer greater interpersonal sensitivity and anxiety.	The professionals who will work in emergency care need to receive greater training and experience.

Figure 3.2. Description of scientific studies that evaluated mental health of health professionals during the Covid-19 pandemic.

	Publication Country	Participants	Evaluation method	Symptoms described	Conclusion
6	(W. Zhang et al., 2020). China.	2,182 people, including health and other professionals.	Online application, Insomnia Severity Index, Symptom Check List, and Patient Health Questionnaire.	The health professionals presented high levels of insomnia, anxiety, depression, somatization, and obsessive-compulsive symptoms.	During the pandemic, the health professionals presented a greater risk of developing psychological problems and needed mental health care and promotion actions.
7	(Zhuo et al., 2020). China.	30 physicians and nurses.	Participants used a pulse oximeter overnight. Also, they answered the Insomnia Severity Index questionnaires and the Chinese version of the Self-Reporting Questionnaire.	Ten cases demonstrated moderate to severe sleep apnea-hypopnea syndrome (SAHS). Insomnia was also associated with SAHS.	The medical and nursing staff with insomnia showed clear signs of sleep apnea, a comorbidity attributable to stress.
8	(Naser et al., 2020). Jordan.	4,126 people, including 1,163 health professionals.	Online application, Patient Health Questionnaire-9, and Generalized Anxiety Disorder-7.	Anxiety was more prevalent in college students, followed by health professionals. Female and/or divorced health professionals presented a greater risk of developing depression.	During the pandemic, all people are under pressure, especially health professionals. Mental health prevention actions are recommended.
9	(Que et al., 2020). China.	2,285 health professionals.	Online application, Generalized Anxiety Disorder Scale, Patient Health Questionnaire, and the Insomnia Severity Index.	Compared to health professionals who do not act in the fight against Covid-19, the professionals who do so presented a higher risk of developing anxiety, insomnia, and other psychological problems.	Receiving negative information and participating in the frontline-work act as important risk factors for psychological problems. There is a need for timely and appropriate interventions for these professionals.
10	(Lai et al., 2020). China.	1.257 health professionals.	Online application, Generalized Anxiety Disorder 7-item Scale, Patient Health Questionnaire-9, Insomnia Severity Index, and 22 items from the impact of Event Scale – Revised.	The reports of symptoms of depression, anxiety, insomnia, and distress were the most prevalent.	Health professionals at the frontline in the fight against Covid-19 reported suffering a psychological burden, especially nurses and women.

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Figure 3.2. Description of scientific studies that evaluated mental health of health professionals during the Covid-19 pandemic.

	Publication Country	Participants	Evaluation method	Symptoms described	Conclusion
11	(Kang et al., 2020). China.	994 health professionals.	Online application, Generalized Anxiety Disorder 7-item Scale, Patient Health Questionnaire-9, Insomnia Severity Index, and 22 items from the impact of Event Scale – Revised.	36.9% of the participants presented mental health disorder rates below the threshold (PHQ-9: mean 2.4), 34.4% had mild disorders (PHQ-9: mean 5.4), 22.4% moderate disorders (PHQ-9: mean 9.0), and 6.2% severe disorders (PHQ-9: mean 15.1) shortly after the viral epidemic.	Mental suffering is linked to exposure to infected people. Mental health interventions are recommended in times of crisis.
12	(Rossi et al., 2020). Italy.	1,379 subjects, including health and laboratory professionals, technicians, among others not described.	Online application, Italian versions of the Global Psychotrauma Screen, Patient Health Questionnaire-9, Generalized Anxiety Disorder scale, Insomnia Severity Index, and Perceived Stress Scale.	The most reported problems were symptoms of post-traumatic stress, depression, anxiety, insomnia, and high stress.	The results point to mental health problems, especially among women and health professionals.
13	(Mo et al., 2020). China.	180 nurses (90% women).	Online application, Chinese versions of the Stress Overload Scale and Self-rating Anxiety Scale.	The coefficients found for stress and anxiety were higher than the national averages for the general population but were not considered as high as in other studies, suggesting that this sample was better prepared to work against Covid-19.	Aspects such as being the only daughter in the family, the patient's severity, and work hours can affect the female professionals' pressure and anxiety and need to be observed.
14	(N. Sun et al., 2020). China.	20 nurses.	Face-to-face or phone interview.	Four themes predominated: first negative emotions, fatigue, discomfort, helplessness, fear, and anxiety. Second, altruistic acts, team support, and rational cognition. Third, personal growth under pressure. Fourth, positive emotions coincided with negative emotions.	The negative and positive emotions of the nurses working at the frontline of Covid-19 coexist and are intertwined, starting with the negative ones and gradually opening spaces for positive emotions.
15	(Khanna et al., 2020). India.	2,355 ophthalmologists graduated or in training.	Online application, Patient Health Questionnaire-9.	768 (32.6%) presented some degree of depression; mild in 504 (21.4%), moderate in 163 (6.9%), and severe in 101 (4.3%) cases.	A high proportion of ophthalmologists are being affected psychologically and may require customized mental health care.

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Figure 3.2. Description of scientific studies that evaluated mental health of health professionals during the Covid-19 pandemic.

	Publication Country	Participants	Evaluation method	Symptoms described	Conclusion
16	(Lu et al., 2020). China.	2,299 participants, including medical and administrative staff.	Online application, Numeric Rating Scale for fear, Hamilton Anxiety Scale, and Hamilton Depression Scale.	Compared to the non-clinical team, the medical team showed a significant increase in fear, anxiety, and depression.	Medical staff are more susceptible to psychological problems and need effective mental health promotion strategies.
17	(C.-Y. Liu et al., 2020). China.	512 medical team participants.	Online application of the Zung Self-rating Anxiety Scale.	The prevalence of anxiety was 12.5%, with 53 workers suffering from mild (10.35%), 7 workers suffering from moderate (1.36%) and 4 workers suffering from severe anxiety (0.78%).	The study participants had symptoms of anxiety, especially those in direct clinical contact with infected patients.
18	(D. Sun et al., 2020). China.	442 participants, including medical and administrative staff.	Online application, 2019-nCoV Impact Questionnaire, and Impact of Event Scale.	381 (86.2%) believe they face greater pressure at work, and 395 (89.4%) believe that medical work is riskier.	The authors consider that Chinese health workers have good psychological coping skills in the face of public health emergences.
19	(C. Zhang et al., 2020). China.	1,563 health professionals.	Online application, Insomnia Severity Index, Patient Health Questionnaire-9, Generalized Anxiety Disorder, and Impact of Events Scale-Revised.	Insomnia is associated with the level of education. Working in an isolation unit, being afraid of being infected, feeling hopelessness and uncertainty interfere with the disease control effectiveness.	More than a third of the medical staff suffers from insomnia. Specific interventions are needed.
20	(Wang et al., 2020). China.	123 health professionals.	Online application, Pittsburgh Sleep Quality Index, Zung's Self-rating Anxiety Scale, and the Self-rating Depression Scale.	47 (38%) participants with sleep problems were identified. This problem is associated with being the only child, being exposed to patients with Covid-19, and depression.	Sleep-related disorders are highly prevalent in pediatricians, requiring greater support in terms of mental health.
21	(Anmella et al., 2020). Spain.	1 general practitioner (case study).	Presential assessment; case study.	Woman, 42 years old, without a history of mental illness, presented a psychotic outbreak after stressful circumstances deriving from Covid-19.	This case presents a potential consequence for health professionals' mental health at the front line in the fight against Covid-19.

Figure 3.2. Description of scientific studies that evaluated mental health of health professionals during the Covid-19 pandemic.

	Publication Country	Participants	Evaluation method	Symptoms described	Conclusion
22	(Yin et al., 2020). China.	377 health professionals.	Online application, Stress Disorder Checklist, and Pittsburgh Sleep Quality Index.	After one month of the pandemic, the prevalence of post-traumatic stress was 3.8%, and the more exposed to patients with Covid-19, the more symptoms the professionals presented.	Interventions focused on sleep quality are necessary.
23	(Wu et al., 2020). China.	4,268 participants, including health professionals and college students.	Online application, Psychological Stress Questionnaire, and a questionnaire developed by the authors.	The health professionals showed a significant increase in the psychological stress items.	The health professionals presented impaired emotional, cognitive, physical, and mental responses, revealing the need for psychological interventions.
24	(Sethi et al., 2020). Pakistan.	290 health professionals.	Online application, a questionnaire developed by the authors.	Impacts on physical, mental, and social well-being were reported, associated with an unprecedented work burden.	Health professionals are anxious, overwhelmed, and financially unstable.
25	(Fawaz & Samaha, 2020). Lebanon.	13 nurses.	11 phone interviews and two face-to-face interviews.	The qualitative analysis revealed four themes: Fear of contracting and spreading the virus. The conflict between professional duty and family obligation. The stigma of being infected. Inadequate or inaccurate information.	Quarantine has posed several challenges for health professionals. Health policy actions are suggested to alleviate the professionals' concerns.
26	(Podder, Agarwal, & Datta, 2020). India.	384 physicians, divided between dermatologists and non-dermatologists.	Online application, a questionnaire developed by the authors.	No significant difference between dermatologists and non-dermatologists regarding stress. The risk of self-infection or infecting colleagues and family was identified as a cause of stress.	Despite being considered an outpatient specialty with minimal stress, even dermatologists are presenting stress due to Covid-19.
27	(Dong et al., 2020). China.	4,618 health professionals.	Online application, questionnaire created by the authors, and the Huaxi Emotional-Distress Index.	24.2% of the participants reported high rates of anxiety and/or depression related to fear of becoming infected or infecting close people.	About a quarter of the medical staff experienced psychological problems during the Covid-19 pandemic.

Figure 3.2. Description of scientific studies that evaluated mental health of health professionals during the Covid-19 pandemic.

	Publication Country	Participants	Evaluation method	Symptoms described	Conclusion
28	(Civantos et al., 2020). United States.	349 otolaryngology residents and assistant physicians.	Online application, Mini Z Burnout Assessment, Generalized Anxiety Disorder Scale, Impact of Event Scale, and Patient Health Questionnaire-9.	Anxiety, anguish, burnout, and depression were reported.	The residents showed increased anxiety, distress, burnout, and depression rates during the Covid-19 pandemic.

Of the 28 articles selected, most of them originated in China (n = 19; 67.85%), followed by India (n = 2; 7.14%) and Germany, Italy, Jordan, Spain, Pakistan, Lebanon, and the United States (n = 1; 3.57%). No Brazilian study was found. In 22 articles (78.57%), the data collection process through the application of instruments was carried out entirely by digital means (computer or smartphone) and, in two of them (7.14%), the data collection was mixed, including a face-to-face interview with the participants. In one of the studies (3.57%), the assessment happened face-to-face, being a case study, and, in two articles (7.14%), no description was found on how the data were collected in the study.

The samples evaluated in the selected studies (Anmella et al., 2020) ranged from one person to 14,866 participants (Song et al., 2020). Four studies evaluated only physicians (Anmella et al., 2020; Civantos et al., 2020; Khanna et al., 2020; Podder et al., 2020); three studies evaluated only nurses (Mo et al., 2020; N. Sun et al., 2020; Tu et al., 2020); 10 studies evaluated physicians and nurses (Fawaz & Samaha, 2020; Kang et al., 2020; Lai et al., 2020; Que et al., 2020; Song et al., 2020; S. Wang et al., 2020; Xing et al., 2020; Zerbini et al., 2020; W. Zhang et al., 2020; Zhuo et al., 2020); one study evaluated physicians and dentists (Sethi et al., 2020); six studies evaluated physicians, nurses and administrative staff (Dong et al., 2020; Liu et al., 2020; Lu et al., 2020; Rossi et al., 2020; D. Sun et al., 2020; Yin et al., 2020); one study evaluated physicians, nurses, technicians, pharmacists, logistics, and social media staff (Cai et al., 2020); one study evaluated physicians, nurses, pharmacists, residents, and other unspecified professionals (Naser et al., 2020); and two studies did not specify the health professionals evaluated (W. Wu et al., 2020; C. Zhang et al., 2020).

Among the professionals surveyed, physicians participated in more studies (n = 23, 82.14%), followed by nurses (n = 16, 69.56%). However, in the samples, the population of nurses could be found in numbers up to 7 times greater than that of physicians (physicians n = 183, nurses n = 811, Kang et al., 2020).

The most frequently used instruments in the studies were the Generalized Anxiety Disorder 7-Item Scale (n = 8; 28.57%) and the Patient Health Questionnaire-9 (n = 8; 28.57%), followed by the Insomnia Severity Index (n = 7; 25.00%), and an Inventory or Questionnaire developed by the researchers (n = 7; 25.00%). Thus, the researchers focused on indicators related to anxiety, depression, and insomnia, which are more frequent among psychic symptoms in different population groups.

Among the mental health indicators for the participants in this set of 28 published studies, the information could be systemized by the most frequently mentioned disorders. These data are displayed in Figure 3.3.

Figure 3.3. Prevalence of mental health symptoms described in the identified articles.
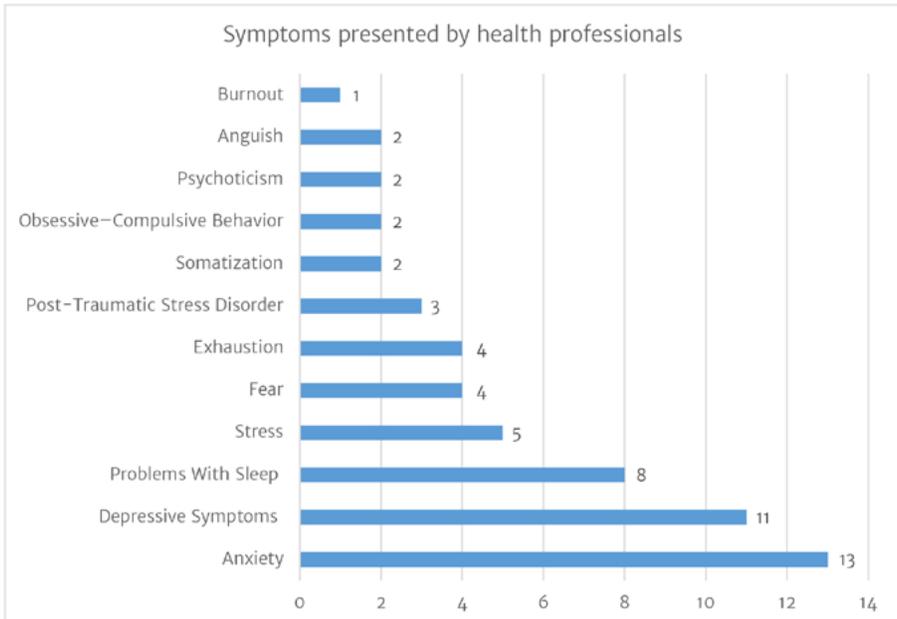
Anxiety was the most described symptom in the articles (n = 13; 46.42%), followed by depressive symptoms (n = 11; 39.28%). Subsequently, problems with sleep (N = 8; 28.57%), stress (n = 5; 17.85%), exhaustion (n = 4; 14.28%), and fear (n = 4; 14.28%) were the symptoms that most appeared among health professionals who are working to combat Covid-19. In this scientific literature survey, we aimed to picture the mental health indicators according to their technical classifications, even if they were emerging from various data collection processes, given the methodological variability among the different studies examined.

4. Discussion

When analyzing the scientific production on health professionals' mental health conditions in coping with Covid-19, we can observe a series of negative effects and symptoms of illness associated with these professionals' daily work. Their professional activity conditions, full of additional risks during the pandemic, have promoted reports of exhaustion and intense personal wear (Civantos et al., 2020; Sethi et al., 2020; Sun et al., 2020), with recurring symptoms of anxiety, depression, and sleep-related problems.

As verified, anxiety was the most frequent symptom described in the studies (Civantos et al., 2020; Dong et al., 2020; Lai et al., 2020; Liu, Zhang, Wong, Hyun, & Hahm, 2020; Lu et al., 2020; Mo et al., 2020; Naser et al., 2020; Que et al., 2020; Rossi et al., 2020; Sun et al., 2020; Tu et al., 2020; Xing et al., 2020; Zhang et al., 2020). The frequent exposure to infected patients and the high rate of transmission of the Covid-19 may be one reason associated with the health professionals' threatening psychic experiences. For example, in the quarantine environment, one cannot observe where the virus is, even knowing that it is around (Ruiz & Gibson, 2020), which ends up enhancing the need for self-care and increased anxiety.

Unlike care for other diseases, no thorough understanding of the SARS-CoV-2 virus exists yet. Thus, the exposure of professionals to infected patients is fraught with uncertainty about the technical safety of clinical procedures and whether the measures being taken are fit to avoid infection risk (Liu et al., 2020; Zhang et al., 2020).

Not rarely, anxiety symptoms can turn into obsessive-compulsive behaviors, such as attempts to control the threats experienced (Xing et al., 2020; Zhang et al., 2020). The feeling of anxiety and fear, mixed with the complex procedure of the

constant change of clothing and protective equipment, can induce professionals to adopt obsessive-compulsive behaviors to reduce the risk of infection.

In this sense, the lack of specific interventions aimed at supporting the mental health of professionals active in coping with Covid-19 and the increase in the reported anxiety levels can lead to the somatization of the anxieties faced (Xing et al., 2020; Zhang et al., 2020). The studies repeatedly argue about the professionals' complaints regarding the difficulty to cope with their burden of feelings and the overload imposed by the working hours. These experiences, associated with the lack of mental health promotion interventions, can favor that their bodies end up being the escape route for their anguish.

The second most cited change in the articles identified in this scientific literature review was depression symptoms (Civantos et al., 2020; Dong et al., 2020; Khanna et al., 2020; Lai et al., 2020; Lu et al., 2020; Naser et al., 2020; Rossi et al., 2020; Song et al., 2020; Tu et al., 2020; Zerbini et al., 2020; Zhang et al., 2020). The social distancing imposed by the quarantine, combined with the high risk of contagion of professionals at the frontline against Covid-19, induces a decrease in contacts with their own families and friends, variables that would naturally function as social support for stressful moments in life. This reality can weaken these professionals' mental health in the sense of emerging depression symptoms related to the various losses experienced in this process (Dong et al., 2020; Lai et al., 2020). The fear of infecting people from one's own family has been mentioned in different studies, functioning as a variable that strongly mobilizes one's emotions.

Also, daily, these professionals need to cope with ethical and professional dilemmas in choosing who will receive the care and treatment equipment available in the care centers, given the frequent lack of respirators and other inputs (Borges, Barnes, Farnsworth, Bahraini, & Brenner, 2020; Khanna et al., 2020). The number of daily deaths, the increase in the number of infected people, and the uncertainties about the treatment and cure of Covid-19 can further weaken these professionals, who need to cope with life and death issues every day.

The results found in this current scientific literature review are similar to those found in Pappa et al. (2020) when evaluating 13 articles on professionals' mental health. Their findings indicated the prevalence of anxiety and depression as the main symptoms found in health professionals, highlighting the magnitude of the traumatic effect of working in coping with Covid-19.

The combination of anxiety and depression can lead to a fairly common third outcome: sleep problems (C. Zhang et al., 2020; Lai et al., 2020; Que et al., 2020; Rossi et al., 2020; Tu et al., 2020; Wang et al., 2020; W. R. Zhang et al., 2020; Zhuo et al., 2020). In addition, the increase in alcohol consumption, the lack or decrease in healthy habits, and constant access to negative information about the advancement of the disease also contribute to increased insomnia (Que et al., 2020).

Indirectly, the lack of properly qualified professionals and in physical and age conditions compatible with the health agencies' recommendations to act in the fight against Covid-19 also favors sleep-related disorders (Tu et al., 2020). Without enough professionals, health professionals (especially nurses) need to increase their working hours and undergo more time in contact with infected patients. Thus, they tend towards a greater concern with their health, leading to greater anxiety. Furthermore, Tu et al. (2020) also mentioned the stress of the work environment as a reason for nurses to sleep less and worse. Conversely, poor sleep quality also triggers increased anxiety and depression, which ends up generating a symptomatic cycle.

Finally, it is important to mention the most extreme symptom described in health professionals, which is psychoticism. Stress, anxiety, and sleep problems, when in excess, can lead to increased symptoms of psychoticism, even in people without a history of psychiatric problems (Anmella et al., 2020; Xing et al., 2020). These empirical findings serve as an alert for professional practice, and special attention is required due to the personal characteristics and limits within health work.

Physicians and nurses were the most researched health professionals. This fact is justified by these professionals' role in the front line of care for patients with Covid-19. Although many studies have included both in their samples, the results do not allow a clear comparison of mental health conditions. Even though they divide the workspace, the activities performed by physicians and nurses, as well as the way they encountered patients, are different and may lead to distinct emotional responses. Thus, personalized psychological approaches can be an important component in dealing with mental health in complex conditions, coping mechanisms, and prevention (Holmes et al., 2020). This data could guide interventions focused on groups of professionals that present greater vulnerability and psychic suffering.

Fear of contamination, death, lack of vaccines, and proper protective materials draw attention and show how unprepared the world is to face a pandemic.

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Health professionals have no help in dealing with their psychological issues, or the means are still insufficient. Current public policy models to address pandemics are still flawed, overburden professionals, and cause psychological suffering, as observed in the reactions presented in the articles.

In this sense, Arbix (2020) recommends that public policies increasingly focus on science and technology investment, as has been done in more developed countries, such as the United States, Germany, and the United Kingdom. Making up for the lack of basic materials so that they are available to health professionals in appropriate quantity and quality, as well as equipment of high complexity, can be a first step towards reducing the symptoms of anxiety and depression in these professionals. Also, international cooperation efforts in spreading knowledge about the new virus, vaccine development, and other treatments can contribute positively to maintaining mental health.

Research aimed at the mental health of health professionals may offer subsidies so that the knowledge acquired be applied at similar times in the future. Offering better working conditions and more effective psychological support, with the use of new technologies and personalized to the demands, can be an important mechanism to intervene in and prevent the psychological effects that are being observed (Holmes et al., 2020).

Therefore, the findings of this systematic scientific literature review show the urgency of creating and implementing strategies aimed at promoting and strengthening mental health for this group of health professionals who showed to be vulnerable to the traumatic effects of the pandemic. Specific interventions to address the weaknesses found could help these professionals maintain better mental health conditions and prevent the aggravation of possible socio-emotional instabilities. Specifically, interventions for the benefit of mental health through online conversation groups, conducted by properly trained professionals in the psychic field (psychologists and psychiatrists) and related areas, in a transdisciplinary perspective, could contain part of the effects of the pandemic concerning the emergence of emotional disorders. They would function as social and institutional support resources for professionals working in the health area during this pandemic, given the clear existing evidence of the psychic trauma they all experience, which can generate great individual and collective psychic vulnerability.

Another no less important point to consider, taking into account the results of this study and the need to assess health professionals' mental health, is the development of psychological tests that can be applied through remote (online) resources. Studies on the development of these psychological assessment tools (creation) and their applicability (indicators of validity, potentialities, and limits) in these conditions, through digital means, are scarce, with still incipient results.

This systematic review of the scientific literature identified indicators related to mental health conditions in health professionals working in the current pandemic, but also brought inquiries that can contribute to the development of science regarding the care of these professionals, as well as conditions for their proper performance in health. It should be kept in mind, however, that this study comes with limitations. When the research was conducted, time was an important variable, as many articles evaluated the professionals in periods of higher incidence of Covid-19. Searches covering other periods may find different results. The evolution curve of the cases and their respective recovery or death outcomes certainly affect these professionals' socio-emotional experiences and may change with the course of the pandemic, its aggravation, or resurgence in the different studied scenarios. Given this universal instability because of the current pandemic, new scientific investigations focused on health professionals' mental health conditions become relevant and necessary, especially over time, in order to verify the effects of Covid-19 longitudinally.

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