








Occupational stress and mental health of healthcare workers in the COVID-19 setting: an integrative review

Estresse ocupacional e saúde mental de trabalhadores da saúde no cenário da COVID-19: revisão integrativa

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ABSTRACT

Purpose: identify the scientific evidence related to occupational stress and healthcare workers' mental health in the COVID-19 setting. **Method:** an integrative literature review was conducted in the databases: MEDLINE via PubMed, Embase, Scopus, Web of ScienceTM, CINAHL, LILACS, IBECs, and BDENF in September 2021. **Results:** fifteen articles comprised the final sample of this review. In the synthesis of knowledge, three axes were identified: Worker's Mental illness: stress and other psychic disorders; stressful context: structural and intrinsic factors; coping strategies, protective factors and mental health preservation. **Conclusion:** the evidence points to the need for further research to strategize, develop, and implement programs aimed at the prevention, promotion, and relief of occupational stress and mental distress among healthcare workers in pandemic times.

Descriptors: Health Personnel; Occupational Stress; Mental Health; Coronavirus Infections; Nursing.

RESUMO

Objetivo: identificar as evidências científicas relacionadas ao estresse ocupacional e a saúde mental de trabalhadores da saúde no cenário da COVID-19. **Método:** revisão integrativa da literatura realizada nas bases de dados: MEDLINE via *PubMed*, *Embase*, *Scopus*, *Web of ScienceTM*, CINAHL, LILACS, IBECs e BDENF em setembro de 2021. **Resultados:** quinze artigos compuseram a amostra desta revisão. Na síntese do conhecimento identificaram-se três eixos: Adoecimento mental do trabalhador: estresse e outras alterações psíquicas; Contexto estressor: fatores estruturais e intrínsecos; Estratégias de enfrentamento, fatores protetores e de preservação da saúde mental. **Conclusão:** as evidências apontam a necessidade de maiores pesquisas, com vista à elaboração de estratégias, desenvolvimento e implementação de programas que visem à prevenção, promoção e alívio do estresse ocupacional e sofrimento mental entre os trabalhadores da saúde em tempos de pandemias.

Descritores: Pessoal de Saúde; Estresse Ocupacional; Saúde Mental; Infecções por Coronavirus; Enfermagem.

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INTRODUCTION

The 21st century marks the rise of a pandemic that has been disrupting social, economic, and health contexts around the world. In late 2019 a new strain of coronavirus was identified in Wuhan (China)⁽¹⁾. It quickly took on a large dimension from the high potential for dissemination and the aspects of globalization that involve the constant movement of people.

The Severe Acute Respiratory Syndrome virus (SARS-CoV-2) causing New Coronavirus Disease (COVID-19) has been responsible for over 100,455,529 diagnosed cases and 2,166,440 deaths worldwide as of January 28, 2021. The disease is transmitted by interpersonal contact, through aerosols and droplets of nasal or oropharyngeal secretions of asymptomatic people or not. This is the reason for the quick dissemination and the direction of quarantine conducts and social distancing foreseen by the World Health Organization (WHO) as the main means of pandemic control⁽²⁾. However, despite these restrictions, some professional categories need to be active to offer essential services to maintain life.

Among these workers, healthcare workers have high exposure to COVID-19 because they are on the front line of detecting, treating, and combating the disease. Facing the accelerated and abrupt demand for care, especially intensive care, these professionals have been facing the challenges of balancing their physical and mental health needs with those of the patients. Another condition is working under extreme pressure with limited and inadequate resources⁽³⁾. This can cause some to experience moral and mental suffering.

It is noteworthy that there is exposure to SARS-CoV-2 contamination, with an alarming number of professionals off work due to illness and who progressed to death from COVID-19, in addition to those off work due to illness. In Brazil, 564 deaths of nursing professionals were registered in hospitals in the country as a result of the pandemic until 2021, and in the city of São Paulo, the epicenter of the pandemic, there were 2,688 health professionals out of work due to COVID-19 until 2022⁽⁴⁻⁵⁾.

Exposure to occupational risks has physical and mental repercussions. The stressful situation, in this context, begins with the fear of contracting the disease or transmitting it to their loved ones, the tension and frustration caused by the early assistance to patients with COVID-19, as well as the workload that results in occupational stress and intense suffering⁽⁶⁾.

Stress, an organic and mental response to threatening situations, has been evidenced in occupational contexts when elements present in the work environment, occupational stressors, or risk factors, are responsible for triggering illness. Experts on the subject highlight occupational stress as a precursor of mental suffering. It is emphasized that mental suffering may be a temporary experience, however,

continuous exposure to stressors is responsible for the mental disorder itself^(3,7).

It is known that mental health processes globally affect the mood to work and to face daily challenges, which minimizes the effectiveness of care at the team level and affects the quality of the service.

However, COVID-19 is a recent theme and most of the scientific literature refers to the first regions affected by the virus. Therefore, it is necessary to know the dynamics of mental illness and the stress of health professionals in this context. Therefore, the purpose of this study is to identify the scientific evidence related to occupational stress and the mental health of healthcare workers in the setting of COVID-19.

METHOD

This is an integrative review based on six stages of investigation: identification of the research question; literature search and sampling; definition of the information to be extracted from the chosen studies; critical appraisal of the included studies; interpretation of results; and, synthesis of knowledge and the review presentation⁽⁸⁾.

The research question was structured using the domains of the PICo strategy⁽⁹⁾, this acronym being named P - population/patients, I - interest, Co - Context. For the formulation of the research hypothesis, we classified as P, healthcare workers, as a phenomenon of interest in mental health and occupational stress, and the Context: the different scenarios of care performance during the pandemic of COVID-19. Thus, the guiding question of this review was: "What is the scientific evidence on occupational stress and mental health of healthcare workers in the setting of COVID-19?"

The bibliographical survey was conducted in September 2021, by consulting the following electronic databases: Medical Literature Analysis and Retrieval System online (MEDLINE via PubMed[®]), Excerpta Medica Database (Embase), Scopus, Web of Science[™], Cumulative Index to Nursing and Allied Health Literature (CINAHL), Latin American and Caribbean Health Sciences Literature (LILACS), Índice Bibliográfico Español em Ciências de la Salud (IBECS) and Base de dados em Enfermagem the Nursing Database (BDENF) via the Virtual Health Library (VHL).

To perform the search, it used controlled and non-controlled descriptors (keywords) extracted from the Health Sciences Descriptors (DeCS), Medical Subject Headings (MeSH), Entry terms, and List of Headings of the CINAHL Information Systems were used. The combination of terms was performed with the help of the Boolean operators OR and AND. Chart 1 shows the search descriptors, as well as the expression generated in MEDLINE, which was adapted to the specificities of the other databases consulted.

Chart 1. Terms used to make the search strategy operational, September/2021

DeCS/MeSH/List of Headings do CINAHL	Boolean operator	Database
HealthCare Personnel; Physicians; Nursing Personnel; Nurses and Nurse Practitioners; Nursing Technicians; Physical Therapists.	AND	LILACS
Mental Health; Occupational Stress		BDENF
Coronavirus Infections		IBECS
Health Personnel; Physicians; Nurse Practitioners; Nurse; Nursing Personnel; Physical Therapists	AND	PubMed
Mental Health; Occupational Stress		Embase
Coronavirus Infections		CINAHL
		Scopus
		Web of Science

The inclusion criteria were primary source studies, without time or language restrictions and that presented aspects related to occupational stress experienced by healthcare workers during the COVID-19 pandemic and mental health in this context. Editorials, undergraduate thesis, course completion work, dissertations, theses, papers review, retracted articles and those that did not answer the research question were excluded.

The references were independently selected by two reviewers who, after reading the titles, abstracts, and inclusion, obtained a concordance index greater than 80%. Disagreements were managed by the third reviewer, who issued an opinion as to the possibility of inclusion.

For the management of references, the resources provided by the software Endnote Web, available on the Web of Science database were used, which is characterized as a favorable tool for sorting, identification, exclusion of duplicate records, and data sharing.

The search in the databases totaled 241 productions and, of these, 15 presented content of interest to the study. The process of identification, selection, eligibility, inclusion, and sampling unfolded the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)⁽¹⁰⁾, as shown in Figure 1.

Data extraction was performed with the help of a specific instrument, considering variables related to study identification (main author, purpose, and year of publication), methodological aspects (design and level of evidence), main results, and conclusions.

The Level of Evidence (LE) was determined based on the recommendations proposed by the Oxford Centre for Evidence-based Medicine⁽¹¹⁾ which classifies the evidence according to the methodological design: 1A - a systematic review of randomized controlled trials; 1B - randomized controlled trial with narrow confidence interval; 1C - all-or-nothing therapeutic outcomes; 2A - a systematic review of cohort studies; 2B - cohort study; 2C - observation of therapeutic outcomes or ecological studies; 3A - a systematic review of case-control studies; 3B - case-control study; 4 - case reports; 5 - expert opinion. Thus, considering the study object, it was expected the identification of evidence levels A, B, and C, considering the exploitable possibilities in different methodological designs.

For the analysis and synthesis of the results, it was used categorization, ordering, and semantic classification, being presented the evidence using a table and figure structured according to the interest variables.

RESULTS

The included studies (f=15) were indexed in MEDLINE (f=10; 66.7%), Embase (f=04; 26.7%) and Scopus (f=01; 6.7%); published mainly in Asian Journal of Psychiatry (f=03; 20.0%), Brain Behav Immun (f=02; 13.3%) and others (f=10; 66.7%); in the English (f=14; 93.3%) and Mandarin (f=01; 6.7%) languages, developed during 2020 (f=12; 80.0%) and 2021 (f=03; 20.0%).

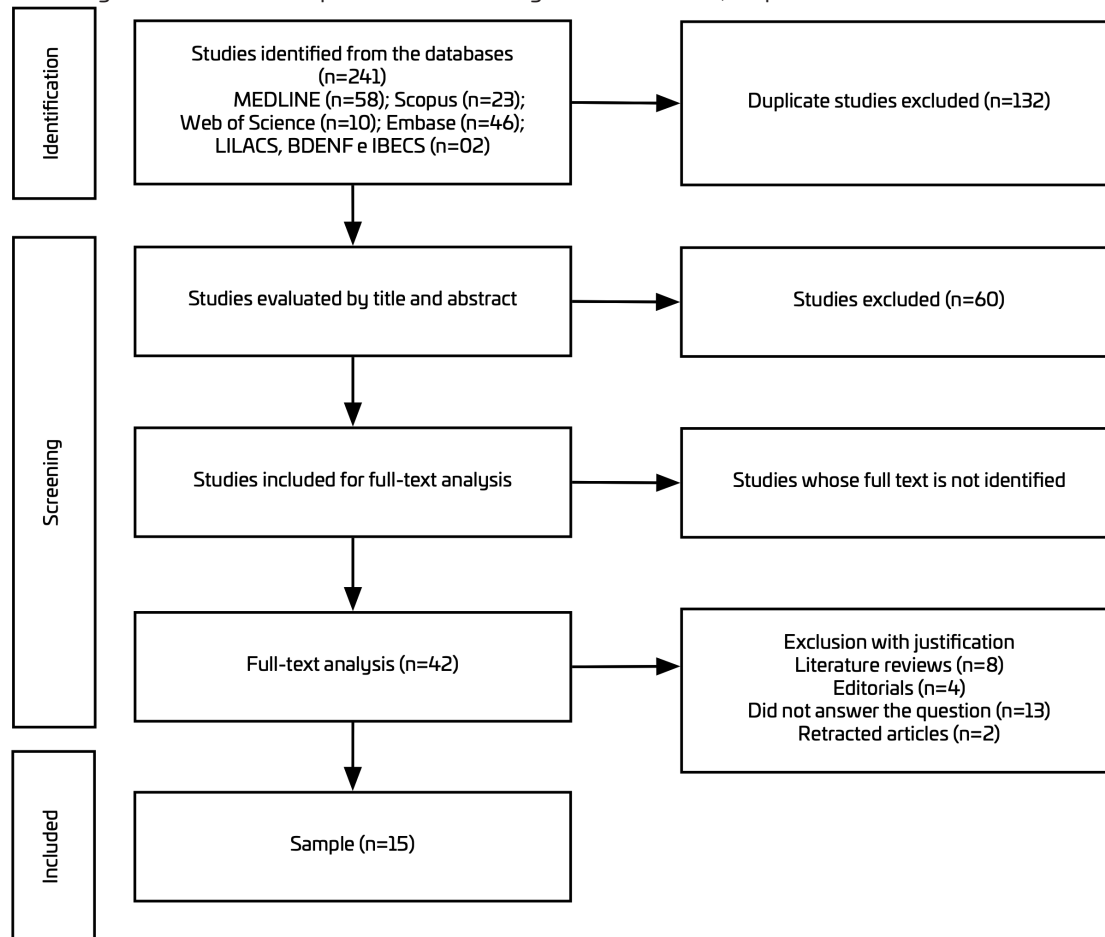
Regarding the methodological aspects, the transversal design predominated (f=09; 60.0%), followed by qualitative research (f=02; 13.3%), observational (f=02; 13.3%) and others (f=02; 13.3%), with the level of evidence 2C (f=15; 100%).

The sample composition was representative in most productions, ranging from 20 to 2,299 workers and the research settings were different hospital institutions located in different international contexts such as China (f=10; 66.7%), United States of America (USA) (f=02; 13.3%) and others (f=03; 20.0%).

Chart 2 presents the summary of the results included according to the main author, database, journal, year and language of publication, the country in which the study was developed, purpose, design, sample and LE, main results, and conclusions.

It was evidenced that occupational stress and changes in mental health are frequent conditions among healthcare workers, especially among physicians and nursing staff, being configured as a condition that generates morbidity.

Note the prevalence of studies in the year 2020 when compared to the year 2021, which suggests the vehement concern about the mental illness of healthcare workers in the initial impact of the COVID-19 phenomenon. Certainly, the

Figure 1. Primary studies selection path in the investigated databases, September/2021

Source: Created by the authors

experience of the second wave of COVID-19 and its resulting storms seem to have provoked less concern from the scientific community, overlapping with the continuity of occupational risk of healthcare workers, also experienced in 2021.

In this direction, the International Labor Organization (ILO) considered the second wave of contagion of the disease as worrisome and recognized the need for specific controls and broad prevention and surveillance measures to reduce the risk of contagion among workers in the occupational environment, family or community context⁽²⁷⁾.

Among the psychological changes identified were sleep disorders^(22,24-25), depression^(19,21,24-26) and anxiety^(19,21,24-26), which had multiple associated factors, such as fear of isolation^(15,23), of becoming infected or contaminating a loved one^(16-17,19-21,25), uncertainty about the future⁽²⁰⁾, the low educational level⁽²⁰⁾, lack of experience^(18,20), lack of PPE^(16,19-21), direct contact with the patient^(16,19-20), increased workload^(16,19-20) and inefficient management⁽²¹⁾.

Regarding the development of psychological stress, it was observed that feelings and emotions of helplessness before the situation of COVID-19, helplessness⁽¹⁷⁾, fear^(17,21), frustration⁽²³⁾ and anguish⁽¹⁹⁾ were mentioned as potential

aspects for the emergence and increase of stress in the work environment. On the other hand, protection factors related to family and social support^(16,18,21,23) and the good relationship with the patients^(16,21) were identified and presented the potential to contribute to the combat of psychic alterations and mental suffering experienced by the workers.

Such conditions made it possible to recognize these aspects to characterize them in three axes: mental illness of the worker: stress and other psychic alterations; stressor context: structural and intrinsic; and counterpart: suggestions, protective factors, and preservation of mental health.

DISCUSSION

Worker's mental illness: stress and other psychic disorders

The pandemic due to COVID-19 brought a new profile on mental health and stress to healthcare workers. Psychic demands in occupational health prevail, in a context full of stressful factors, as noticed by the researchers and mentioned by the research participants themselves.

Chart 2. Summary of included studies, September/2021

(continue)

Author, Year Country Journal Database Language	Aim Design Sample Level of Evidence	Main results and conclusion
Mo et al., 2020 ⁽¹²⁾ China Journal of Nursign Management MEDLINE English	- To investigate job stress among Chinese nurses who are supporting Wuhan in fighting Coronavirus Disease 2019 (COVID-19) infection and explore relevant influencing factors - Transversal - 180 Nurses - 2C	Multiple regression analysis showed that only child, working hours per week and anxiety are the main factors affecting nurses' stress.
Jianbo, et al., 2020 ⁽¹³⁾ China Journal of American Medicine Association - JAMA Network™ Open MEDLINE English	- To evaluate the psychological impact among healthcare workers in the Fangcang shelter hospitals and analyze potential risk factors associated with these symptoms - Transversal - 1,257 healthcare workers - 2C	Workers from outside Hubei province were associated with a lower risk of experiencing symptoms of distress compared to those in Wuhan. Frontline healthcare workers involved in the diagnosis, treatment, and care of the COVID-19 patient had a higher risk of depression, anxiety, insomnia, and distress
Zhenyu Li et al., 2020 ⁽¹⁴⁾ China Brain Behav Immun MEDLINE English	- To evaluate vicarious traumatization scores via a mobile app-based questionnaire - Descriptive - 526 nurses - 2C	Indirect trauma scores, including those for physiological and psychological responses (loss of appetite, fatigue, physical decline, sleep disturbance, irritability, inattention, numbness, fear, and despair) for frontline nurses were significantly lower compared to the general population. The indirect trauma scores of the general public were higher than those of frontline nurses. Behavioral, physiological, psychological, emotional, and cognitive changes were perceived.
Huang et al., 2020 ⁽¹⁵⁾ China Chin Ind Hyg Occup Dis MEDLINE Mandarin	- To investigate the mental health of clinical first-line medical staff in the COVID-19 epidemic and provide theoretical basis for psychological intervention - Transversal - 230 medical staff - 2C	The incidence of anxiety in medical staff was 23.04% and the SAS and PTSD-SS scores were 42.91 ± 10.89 . The incidence of anxiety in nurses was higher than in physicians, as well as the SAS score. The incidence of stress disorder in medical staff was 27.39% and the PTSD-SS score in female medical staff was higher than in male staff. The use of PPE, difficulty breathing, time resting in isolation, physical and mental fatigue, nervousness and anxiety were factors related to stress.
Du J et al., 2020 ⁽¹⁶⁾ China Gen Hosp Psychiatry MEDLINE English	- To examine the psychosocial impact of COVID-19 on frontline healthcare workers in Wuhan - Transversal - 134 Healthcare workers - 2C	Among the survey participants: 12.7% and 20.1% of the healthcare workers had at least mild depressive and anxiety symptoms, respectively. More than half had moderate to severe levels of stress. Depressive and anxiety symptoms were more common among women, healthcare workers in Wuhan, those who were less psychologically well prepared, patients with perceived self-efficacy and family support, as well as in those with poor sleep quality.

Chart 2. Summary of included studies, September/2021

(continuation)

Author, Year Country Journal Database Language	Aim Design Sample Level of Evidence	Main results and conclusion
Du J et al., 2020 ⁽¹⁶⁾ China Gen Hosp Psychiatry MEDLINE English	<ul style="list-style-type: none"> - To examine the psychosocial impact of COVID-19 on frontline healthcare workers in Wuhan - Transversal - 134 Healthcare workers - 2C 	Among the survey participants: 12.7% and 20.1% of the healthcare workers had at least mild depressive and anxiety symptoms, respectively. More than half had moderate to severe levels of stress. Depressive and anxiety symptoms were more common among women, healthcare workers in Wuhan, those who were less psychologically well prepared, patients with perceived self-efficacy and family support, as well as in those with poor sleep quality.
Sun et al., 2020 ⁽¹⁷⁾ China Am J Infect Control MEDLINE English	<ul style="list-style-type: none"> - To understand the subjective experience of nurses participating in nursing COVID-19 patients - Qualitative - 20 nurses - 2C 	Fatigue, discomfort, helplessness, fear, anxiety, concern for family and patients, and high workload were evidenced. Self-control styles and psychological growth played an important role in mental health.
Wang et al., 2020 ⁽¹⁸⁾ China Occupational Medicine MEDLINE English	<ul style="list-style-type: none"> - To assess the effect of the COVID-19 outbreak on the sleep quality of healthcare workers in a children's healthcare centre in Wuhan - Transversal - 123 doctors and nurses - 2C 	38% of participants with PSQI scores > 7 were identified as having sleep disturbances. A logistic regression analysis showed that sleep disturbances were independently associated with being an only child, exposure to COVID-19 patients, and depression.
Zhang et al., 2020 ⁽¹⁹⁾ Irã Brain Behav Immun. Embase English	<ul style="list-style-type: none"> - To report the health conditions and job satisfaction of healthcare staff during the height of the COVID-19 pandemic in Iran in Early April, and to identify risk factors to screen for healthcare staff in greater need for mental health services - Transversal - 304 healthcare staff - 2C 	A considerable portion of the health team reached the cut-off levels for anxiety, depression, and distress disorders, requiring mental health attention. Healthcare staff access to PPE predicted less distress, better physical health conditions, and more job satisfaction. Employees who were unsure of their COVID-19 diagnosis were more distressed, anxious, and less satisfied with their work.
Cai et al., 2020 ⁽²⁰⁾ China Asian Journal of Psychiatry Embase English	<ul style="list-style-type: none"> - To investigate the psychological abnormality in healthcare workers battling the COVID-19 epidemic and to explore the associations among social support, resilience, and mental health - Transversal - 1,521 Healthcare workers - 2C 	Those without emergency treatment experience performed worse in mental health, resilience, and support, and tended to suffer from psychological abnormalities in interpersonal sensitivity and phobic anxiety. High levels of professional training and experience, resilience, and social support were necessary for professionals who first participate in public health emergence.

Chart 2. Summary of included studies, September/2021

(continuation)

Author, Year Country Journal Database Language	Aim Design Sample Level of Evidence	Main results and conclusion
Lu et al., 2020 ⁽²¹⁾ China Psychiatry Research Embase English	- To assess the psychological status of the medical workforce - Transversal - 2,042 Healthcare Workers and 257 administrative staff - 2C	The severity of fear, anxiety and depression was different between the two groups. Frontline medical staff with close contact with infected patients, including those working in respiratory, emergency, infectious disease, and ICU departments had higher scores on the fear scale, HAMA, and HAMD, and were 1.4 times more likely to feel fear and twice as likely to experience anxiety and depression and more susceptible to psychological disorders.
Zhang, 2020 ⁽²²⁾ China Frontiers in Psychiatry Embase English	- To investigate the prevalence rate of insomnia and to confirm the related social factors among medical staff in hospitals during the COVID-19 outbreak - Transversal - 1,533 HealthCare Workers and 30 administrative staff - 2C	The prevalence of insomnia was 36.1%. The associated factors were: working in an isolation facility, worry about infection, lack of perceived usefulness in terms of psychological support from the news or social media about COVID-19, and very strong uncertainty regarding the effective control of the disease.
Mohindra, 2020 ⁽²³⁾ India Asian Journal of Psychiatry Scopus English	- To find out the perceived motivations influencing morale amongst healthcare providers in a multi-specialty tertiary hospital - Qualitative - Healthcare providers - 2C	When interviewed, healthcare workers reported exposure to factors associated with health care. Negatively: patient isolation, demand for greater care (biological and psychological) and stigma in relation to the disease, fears, and apprehensions of professionals in relation to the risk of contamination; Positively: family support, social recognition for the work done, feeling of belonging/importance of the work role when facing an extreme situation.
Shah ⁽²⁴⁾ 2021 EUA Clin J Oncol Nurs MEDLINE English	- To explore the potential psychological sequelae of nursing during a pandemic and to provide recommendations to support a psychologically healthy work environment - Observational - Nurses - 2C	The risk of psychological effects of the pandemic COVID-19 is significant and manifests itself as stress, anxiety, depression, insomnia, and in some cases suicide
Sampaio ⁽²⁵⁾ 2021 Portugal Environ Res MEDLINE English	- To evaluate variations in nurses' sleep quality and symptoms of depression, anxiety and stress during the COVID-19 outbreak, and to evaluate whether the presence of potential risk factors influenced these symptoms over time - Prospective - Nurses - 2C	Sleep quality and symptoms of depression, anxiety, and stress were highly prevalent and were associated with fear of infecting others or being infected

Chart 2. Summary of included studies, September/2021

(conclusion)

Author, Year Country Journal Database Language	Aim Design Sample Level of Evidence	Main results and conclusion
Riedel ⁽²⁶⁾ 2021 EUA Front Public Health MEDLINE English	- To evaluate the mental health disorders encountered by nurses in the COVID-19 era based on the current medical literature, and to provide practical coping strategies - Observational - Nurse - 2C	Anxiety, depression, post-traumatic stress syndrome, and post-traumatic stress disorder were verified in the participants

Legend: SAS - Self-Assessment Anxiety Scale; PTSD-SS - Posttraumatic Stress Disorder Self-Assessment Scale; PPE - Personal Protective Equipment; PSQI - Pittsburgh Sleep Quality Index; ICU - Intensive Care Unit; HAMA - Hamilton Anxiety Scale; HAMD - Hamilton Depression Scale.

In this sense, other scholars on the subject have been pointing to the previous existence of these cognitive, physical, social, and emotional demands experienced by health professionals, which were sharpened by the COVID-19 phenomenon. They also highlight the hospital setting as a major scenario for occupational psychological illness⁽²⁸⁾. In a study carried out with nurses assisting patients infected by COVID-19, it was observed the permanence of negative feelings from the training before the work until the beginning of direct contact activities with patients in the wards, whose practice was associated with the rise of the fear sensation⁽¹⁷⁾.

The workers' routine was permeated by fear in different contexts: fear of being contaminated and contaminating the family^(17,19,21-23), fear of having to isolate themselves^(2,3), and fear of uncertainty about the future⁽²²⁾. Professionals who accessed knowledge somehow acquired less psychic suffering⁽²²⁾.

In a similar context of behavioral analysis, healthcare workers with less experience in the emergency room have a higher sensitivity to obsessive-compulsive symptoms, related to hand hygiene among others. Moreover, the expansion in the number of confirmed cases and deaths also contributed to increased rates of anxiety and fear in the less experienced group⁽²⁰⁾.

In summary, the behavioral changes perceived by scholars address the fear of professionals related to the uncertainties of COVID-19. It is noteworthy that due to the period of publication of most studies, these were data collections performed at the beginning of the disease, still in the period of the vaccine's inexistence and other resources for the recovery of the patient with COVID-19⁽²⁹⁾.

In the same perspective, an analysis of the physical and mental health of hospital healthcare staff identified problems

of psychological disorders related to situations of anguish (20.1%), depression (20.6%), and anxiety (28.0%)⁽¹⁹⁾.

In this proposal, a large part of the studies brought anxiety^(12-13,15-22). Depression also prevailed as an illness, being identified through validated instruments or even qualitative interviews that provided content analysis^(18-19,21-22,24-26).

Another aspect manifested by the healthcare workers studied was the low quality of sleep and related disorders such as insomnia^(18,22). There were associations between sleep disturbances and other psychological variations and higher levels of psychological stress were identified in workers with altered sleep patterns⁽¹⁸⁾.

Stressful context: structural and intrinsic factors

The adverse contexts resulting from the outbreak of COVID-19 expose and potentiate critical and exhausting routines for healthcare workers. With the constant risk of contamination, strictness of protection, and care measures, the professionals in direct contact with patients infected with SARS-CoV-2 present higher levels of psychological suffering⁽¹⁸⁾. For this reason, occupational disease in healthcare workers has been the focus of studies, and one of the strands is research on workplace incentives, stress intensifiers, and poor quality of life.

Among the predictors are: short time of experience⁽²⁰⁾, lack of PPE^(17,21-22), direct contact with the patient^(17,21-22), increased workload^(17,21-22), and inefficient management⁽²³⁾. Moreover, in times of pandemic, the stimuli are exacerbated, especially the psychic burdens brought on by social media, the uncertainties about the future, and the lack of control over the alarming situation⁽²²⁾. Responsibilities and care are

also potentially correlated to the psychological balance of healthcare workers⁽²¹⁾.

Previous experience in public health emergencies stands out as a predictive factor for the mental health of healthcare workers, with evidence of greater vulnerability for less experienced professionals. In a recent study, the latter demonstrated less resistance and adaptation to adversities and obstacles⁽²⁰⁾.

Healthcare workers are also submitted to exhaustive routines of deprivation of basic needs (physiological and rest) during long working hours to minimize the changes of protective items with the intention of reducing the consumption of PPE and avoiding their shortage⁽¹⁸⁾. As a result, the physical and psychological exhaustion of such circumstances constitutes a determining factor for psychological stress.

Within the daily routine of these professionals, the workload and work demand increased from 1.5 to two times during the pandemic, requiring more time with PPE, reverberating in discomfort, exhaustion/fatigue, and feeling of helplessness resulting from not meeting their own physical and psychological needs⁽¹⁷⁾.

Although medical care aimed at the physical recovery of patients is the core priority of care, the demands that involve the process of hospitalization and rehabilitation go far beyond the physical and epidemiological axes. The complexity of assistance to patients isolated by COVID-19 covers psychological, social, and financial needs. This is a cause of concern and psychic suffering for physicians in the frontline management of COVID-19, leading them to exhausting routines⁽²³⁾.

Other aspects related to team management were also highlighted by the workers, such as the imbalance between the number of caregivers and the high demand for patients, which had repercussions on occupational disease in hospitals⁽¹⁷⁾.

The fear of direct contact with isolated patients and the risks related to virus contamination are aspects of high prevalence among the stimuli for occupational disease. Healthcare workers also fear being a vector of contamination for the work team and their families. The fear of exposure to the virus, especially in cases with asymptomatic infection, and the uncertainty about the situation of the spread of the disease in the workplace are potentiated, respectively, by the scarcity of PPE in sectors and the insufficiency of rapid tests for diagnosis and analysis of the team's health status^(19,21,23).

For this reason, many of the professionals on the frontline of facing COVID-19 were away from their families, amplifying feelings of fear, psychological stress, loneliness, and sleep disorders. The uncertainty about the effectiveness of controlling the spread of the disease and the continuous monitoring of news about the progress of the disease is also

configured as fragility factors that contribute to the stressful situation^(19,,21,23).

Coping strategies, protective factors and mental health preservation

When dealing with the challenge of facing a pandemic and maintaining health support for frontline workers, it is worth emphasizing the need for individual and collective protection factors, and for such, it is observed the response that healthcare workers have been presenting to the stressful stimulus, which varied between positive experiences, altruistic acts, support for the team, and negative, fatigue, discomfort and helplessness⁽¹⁷⁾.

Individual psychological defense mechanisms, not always healthy, were listed as part of the adaptation process, with reports of isolation and mood swings, among others. On the other hand, there are statements of workers who used virtual means and new knowledge for psychological relief and stress reduction; others made use of activities such as breathing relaxation techniques, meditation, and music therapy, among other actions⁽¹⁷⁾.

The professional qualification and the time of service were also perceived as protection to the mental health of the workers, considering that those who had experienced other outbreaks, such as SARS-CoV-2 and H1N1, showed a greater sense of self-protection and confidence in facing COVID-19; consequently, increased resilience power⁽¹⁹⁻²⁰⁾.

Access to PPE was also highlighted as a predictor of better physical and mental health conditions; in addition, the proper use of these materials was also positively correlated with higher job satisfaction⁽¹⁹⁾.

Support from society, family, and coworkers in coping with pandemic adversities was found to strengthen positive emotions among healthcare workers^(17,20,23). Therefore, the sense of approval/validation by peers was positive⁽²³⁾.

The philosophical ideals of the profession and the sense of social cooperation also motivate the care process in the context of COVID-19. The sense of validation of existence about what the professional has been trained to do: his or her mission, identity with the profession, and social responsibility^(17,23), involve the work in a context of appreciation and gratitude⁽¹⁷⁾.

Healthcare workers also consider it positive to be in close contact with the patient, having a positive experience in care: managing fears, anxiety, and day-to-day issues⁽²³⁾. Patients, in general, react with gratitude and recognition, and also cooperation.

Finally, among the gaps identified in this study is the lack of studies that evaluate the late psychic impacts of COVID-19 on healthcare workers. It is also noticeable the absence of studies conducted in underdeveloped and developing countries, which would be an important object of

study given the likely impact experienced in these countries that had the fragility of their health services exacerbated by the pandemic⁽³⁰⁾.

The restricted access to the literature may be considered a study limitation since those with open access or free of charge were included. However, the number of papers included evidenced relevant aspects of the theme.

The study brings evidence about the daily life of healthcare workers and provides elements, especially, concerning the source of occupational stress in the studied context, as well as mediators of protection in mental health, which can favor the direction of strategic plans, technologies, and programs capable of preventing, promoting and preserving the mental health of these professionals in future pandemic scenarios.

CONCLUSION

There is important evidence that shows not only the strong presence of occupational stress and changes in the mental health of healthcare workers and predisposing factors but also conditions that can be seen as protective elements in mental health, making it a theme that needs to be better studied in future research, to contribute for the promotion of mental health.

The identification of these aspects is of extreme importance for the elaboration of actions and strategies directed to the promotion of the mental health of these workers because the current scenario is covered with uncertainties about the pathological characteristics of COVID-19. The damage, which can go beyond physical illness, brings implications that have a direct impact on health care and can weaken the quality of care and, consequently, generate losses for healthcare systems.

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