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Impacts of COVID-19 on the mental health of health professionals: An integrative review

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ABSTRACT
Objective: To analyze the scientific evidence regarding the impacts of COVID-19 on the mental health of frontline healthcare workers. Methodology: integrative review study, which had as eligibility criteria: primary research, published between December / 2019 to October / 2020, without language restriction and that presented information on the subject. The research question was formulated following the assumptions of the acronym PICo, generating the question: What is the scientific evidence about the impacts on the mental health of health professionals who are on the front lines of the fight against COVID-19? The bibliographic survey took place in the following databases: MEDLINE via PubMed, CINAHL, EMBASE, SCOPUS, WOS, IBECS, LILACS, and BDENF via VHL. Results: 10 studies were analyzed, identifying the prevalence of studies published in the MEDLINE database, with the country of origin in China, cross-sectional studies, and having as participants doctors and nurses. The main impacts observed on the mental health of the professionals were: insomnia, depression, anxiety, fear, and stress, and these changes were more prevalent in females. Conclusion: the mental illness of health professionals during the pandemic reveals the need to strengthen strategies and actions that promote the mental health of these workers in the workplace, especially in periods such as these.

Keywords: Mental health, Health professionals, COVID-19.

1 INTRODUCTION

In December 2019, with the emergence of the new coronavirus, *Severe Acute Respiratory Syndrome Coronavirus (*SARS-CoV-2), the etiologic agent of Coronavirus Disease *2019 (COVID-19), health* systems around the world saw an increase in the number of infected people seeking health services, resulting in increased rates of hospitalizations and individuals needing intensive care in

hospital services (MIRANDA et al., 2020), consequently, enhancing the need for inputs, equipment, materials and the performance of health professionals in the fight against this disease.

These professionals, in addition to already living with an exhausting routine, with disturbances inherent to the profession and working conditions, often inadequate to act, now face the fear of becoming infected or transmitting the virus to the people closest to them, working with feelings of anguish and powerlessness (FERNANDES; RIBEIRO, 2020) given the scarce knowledge we still have about the potential impacts of COVID-19 on the health of the population.

Among all the professional categories active in the fight against the COVID-19 pandemic, health workers constitute the most vulnerable group, especially those who are on the front lines of care, as they are more exposed to high work demands and more specific demands. Factors that lead to intensification and multiplicity of tasks, in addition to continuous exposure to environments with high levels of stressors, compromise mental health and cause physical and emotional exhaustion (FERNANDES; RIBEIRO, 2020).

Studies conducted in Toronto, Hong Kong, and Singapore where health professionals experienced outbreaks caused by other types of coronavirus (MERS-CoV-Middle East respiratory syndrome), identified significant levels of distress, which was higher for nurses, since they had the feeling of loss of control of the situation, fear for their health and the spread of the virus (WANG et al., 2017).

The increasing number of confirmed and suspected cases, work overload, stress due to the lack of personal protective equipment, extensive media coverage, as well as the absence of specific protocols and medications can interfere with the mental health of health professionals (PAIANO et al., 2020).

These facts added to the experience as a health professional, in the process of training to deal with the emergence of disorders and mental illness in the population, through the execution of the work as a psychiatrist, emerges the interest in deepening the knowledge of the subject, which although it is about mental processes already common in mental health care, brings as a new variable the presence of a pathogenic being hitherto unknown, with a high capacity to cause disturbances throughout the health system, which permeate the physical illness and affects the mental health of individuals, especially those who are daily in the line of combat. Thus, surveying the scientific literature is appropriate to obtain the main evidence on the subject.

In addition, the present study may contribute, not only to elucidate evidence about the influence of COVID-19 in the scope of health work and mental health of health professionals, but also to help understand the needs that exist for the development of actions and strategies aimed at promoting the mental health of health workers in situations such as the current pandemic scenario, since the presence

of the new coronavirus has been potentiating the triggering factors of mental illness in the occupational environment of these professionals.

To this end, this research aimed to analyze the scientific evidence about the impacts of COVID-19 on the mental health of health professionals who are on the front lines of care for patients with COVID-19.

2 METHODOLOGY

It is an integrative review, developed through six stages of investigation: definition of the theme and elaboration of the research question; sampling, literature search, and delimitation for the inclusion of studies; data extraction; critical evaluation of the included studies; analysis and synthesis of results; and presentation of the review or synthesis of knowledge (MENDES; SCOTT; GALVÃO, 2008).

The research question was formulated from the acronym PICO (LOCKWOOD; PORRIT; MUNN et al., 2017), in which P (study population) refers to health professionals; I (the phenomenon of interest) for mental health; and CO (context) COVID-19 pandemic, resulting in the following question: What is the scientific evidence about the mental health impacts of health care workers on the front lines of fighting COVID-19?

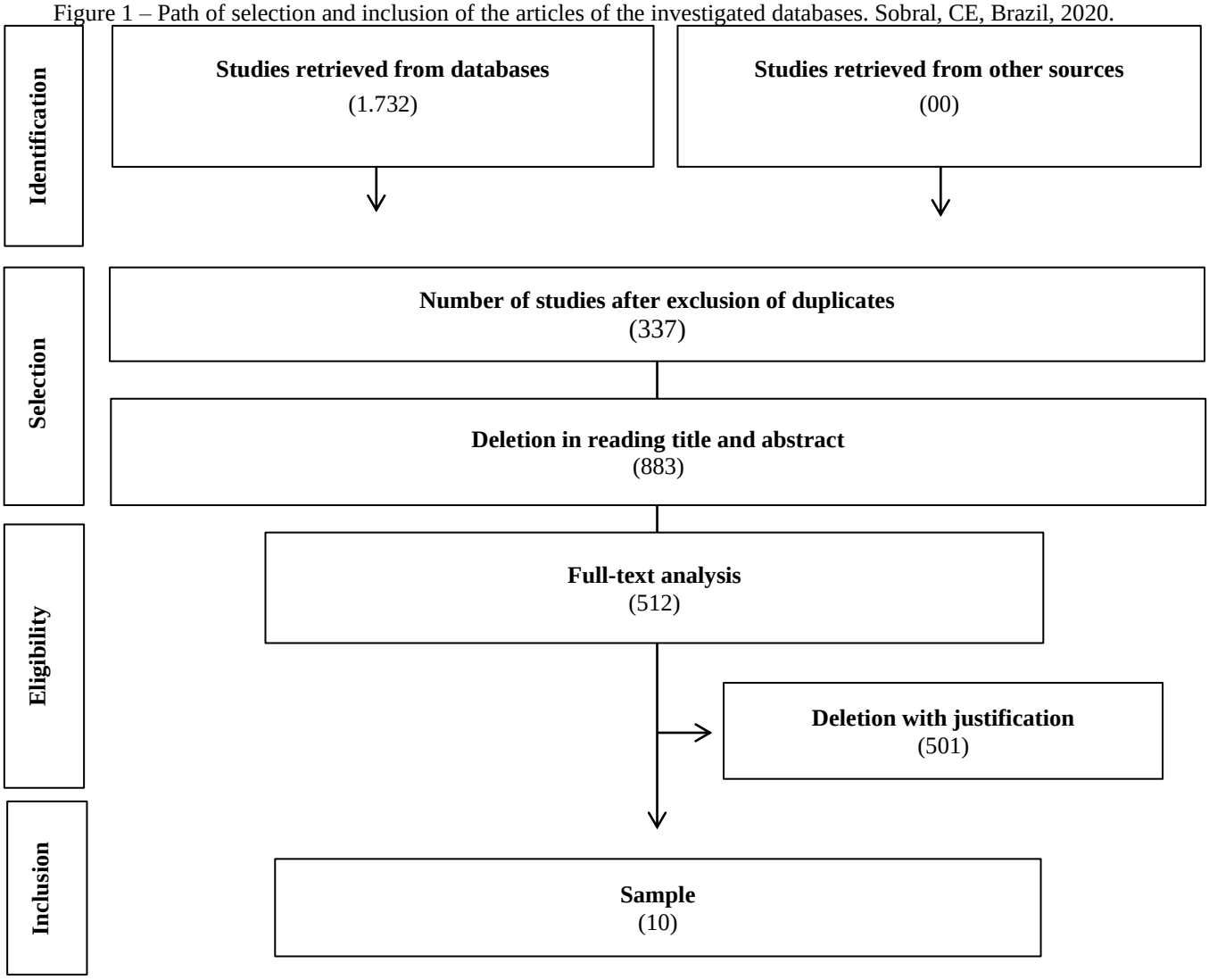
Data collection occurred from September to October 2020, in the electronic databases: *Medical Literature Analysis and Retrieval System Online* (MEDLINE via PubMed®), *Cumulative Index to Nursing and Allied Health Literature* (CINAHL), SCOPUS, *Biomedical Answers* (EMBASE), *Web of Science*™ and Latin American Health Sciences Literature (LILACS), Nursing Database (BDENF) and Spanish Bibliographic Index in Health Sciences (IBECS) via Virtual Health Library.

To survey the literature, after investigating the main terms in the Health Sciences Descriptors (DeCS), *Medical Subject Headings* (MeSH), and *Entry terms and list of headings of* CINAHL, the controlled descriptors were used: "Health personnel", "Mental health", "Coronavirus infection", "Doctors", "Physiotherapists", "Nurses and Nurses" and "Nursing Team"; and the uncontrolled (keywords): "Health Workers," "Health Professionals," "Health Workers," "Mental Health," "COVID-19," "Coronavirus Infection 2019-nCov." The combination of terms was performed with the help of the Boolean operators *AND* and *OR*.

Among the eligibility criteria, primary research was selected, published between December/2019 and October/2020 (a period that comprises the beginning and current pandemic scenario), without language restriction and that presented information on the subject. Duplicate articles, reviews, letters to the editor, expert opinions, and editorials were excluded. The selection of studies occurred after reading and rereading them.

The search in the databases totaled 1,732 productions, being selected only 11 articles answered directly the research question. The path for inclusion of these studies was represented through the flowchart *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA), as can be seen in Figure 1.

Figure 1 – Path of selection and inclusion of the articles of the investigated databases. Sobral, CE, Brazil, 2020.



To extract the main information, we used our instrument that helped in the identification of data such as author/year/database, objective/methodology, and results. The analysis was based on descriptive principles, and the results were presented in a demonstrative table, according to the variables of interest.

3 RESULTS AND DISCUSSION

Among the articles included in this review, it was observed that most of the publications prevailed in the MEDLINE database, with the country of origin of research in China, type of cross-

sectional study, and participants, doctors, and nurses. Regarding the impacts, it was identified that the main symptoms and signs of the alteration in the mental health of the professionals were: insomnia, depression, anxiety, fear, and stress and that these alterations are more prevalent in females, as described in Table 1.

Table 1 – Characteristics of the articles according to the author, year, database, methodology, sample, place of study, and main impacts on mental health. Sobral, Ceará, Brazil, 2020. (n=11).

Author/year/base	Methodology/sample/study site	Main impacts on mental health
Huang, Zhao, 2020 MEDLINE	• Transverse • 2,250 Health workers • China	Anxiety, depression, and poor sleep quality have been identified and are associated with a high level of time (≥3 hours/day) to provide care to people with COVID-19.
Mo et al., 2020 MEDLINE	• Transverse • 180 Nurses • China	The multiple regression analysis showed that an only child, working hours per week, and anxiety are the main factors that affect nurses' stress.
Jianbo, et al. 2020 MEDLINE	• Transverse • 1,257 Health workers • China	First-line healthcare workers involved in diagnosing, treating, and caring for patients with COVID-19 were at increased risk for depression, anxiety, insomnia, and distress.
Zhenyu Li et al., 2020 MEDLINE	• Descriptive • 526 nurses • China	The indirect traumatization 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 *Chin Ind Hyg Occup Dis* MEDLINE	• Transverse • 230 medical teams • China	The incidence of anxiety in the medical team 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 the medical team was 27.39% and the PTSD-SS score in the female medical team was higher than in the male team. The use of PPE, breathing difficulties, rest time in isolation, physical and mental fatigue, nervousness, and anxiety were factors related to stress.
Du J et al., 2020 *Gen Hosp Psychiatry* MEDLINE	• Transverse • 134 Health workers • China	Among the survey participants: 12.7% and 20.1% of health professionals had at least 81 mild depressive and anxiety symptoms, respectively. More than half had moderate to severe stress. Depressive and anxiety symptoms were more common among women, who were less psychologically prepared. Poor sleep quality, lack of psychological preparation, and family support were also perceived.
Wang et al., 2020 *Occupational Medicine* MEDLINE	• Transverse • 123 (midfielders and nurses) • China	38% of participants with PSQI> 7 scores were identified as having sleep disorders. A logistic regression analysis showed that sleep disorders were independently associated with being an only child,

		exposure to COVID-19 patients, and depression.
Zhang et al., 2020 *Brain Behav Immun*. EMBASE	• Transverse • 304 health workers • Iran	A considerable portion of the health team has reached the cutoff levels of anxiety disorders, depression, and distress, requiring mental health attention.
Cai et al., 2020 *Asian Journal of Psychiatry* EMBASE	• Transverse • 1521 Health Workers • China	People without experience in emergency treatment performed worse in mental health, resilience, and support, and tended to suffer from psychological abnormalities in interpersonal sensitivity and photic anxiety.
Mohindra, 2020 *Asian Journal of Psychiatry* SCOPUS	• Qualitative • Health Workers • India	When interviewed, health professionals reported exposure to factors associated with care delivery: isolation of the patient, demand for greater care (biological and psychological) and stigma about the disease, fears and fears of professionals regarding the risk of contamination.

Source: prepared by the authors.

COVID-19 has been the cause of profound transformations in the healthcare landscape, especially in the mental health of health workers on the front lines. A study conducted in China, which sought to assess the mental health burden in the population during the pandemic with 7,236 participants, of whom 2,250 (31.1%) health professionals, identified a general prevalence of anxiety in 35.1%, depressive symptoms in 20.1% and sleep quality in 18.2% of the participants. Compared to other occupational groups, health professionals (23.6%) had the highest rate of poor sleep quality (p <0.001) (HUANG; ZHAON, 2020).

The incidence of anxiety among the medical team was 23.04% (53/230) and the anxiety score was (42.91 ± 10.89) points, which was also identified in research conducted by Huang *et al.* (2020). Among the professionals investigated, the incidence of severe anxiety, moderate anxiety, and mild anxiety was 2.17% (5/230), 4.78% (11/230), and 16.09% (37/230), respectively.

Wang's research *et al*. (2020), which sought to assess the effect of the COVID-19 outbreak on the sleep quality of health workers at a children's health center in Wuhan, showed that in total, 47 out of 123 (38%) participants with a score in the *Pittsburgh Sleep Quality Index* - PSQI> 7 were identified as having sleep disorders, being independently associated with being an only child (adjusted odds ratio (OR) and 95% confidence interval (CI) 3.40 (1.21-9.57), P <0.05), exposure to COVID-19 patients (adjusted OR and 95% CI 2.97 (1.08-8.18), P <0.05) and depression (adjusted OR and 95% CI 2.83 (1.10-7.27), P <0.05),

Doctors and nurses are identified as the most vulnerable professionals to suffering and mental illness in this pandemic period. These professionals deal all the time with death and difficult decisions that can affect their physical and mental well-being. In addition, physical and mental exhaustion, the pain of the loss of patients and colleagues, the difficulty of decision making, the fear of contamination

and transmission of the disease to close ones, are also factors that harm the mental health of professionals working in this current scenario (PRADO et al., 2020).

As it was possible to observe in the research of Hung *et al. (2020), the incidence of anxiety among nurses is higher than that of physicians [26.88% (43/160) to 14.29% (10/70),* Z = *-2.066*, P = 0.039)], and the anxiety score of nurses is higher than that of physicians [(44.84 ± 10.42) Ratio (38.50 ± 10.72) points, *t* = -4.207, P <0.001]. The incidence of stress disorder in the medical team was 27.39% (63/230), and the stress disorder score was (42.92 ± 17.88) points.

In this perspective, in a study by Jianbo *et al*. (2020), where among the participants 764 (60.8%) were nurses and 493 (39.2%) were doctors; 760 (60.5%) worked in hospitals in Wuhan, and 522 (41.5%) were first-line health workers. A considerable proportion of participants reported symptoms of depression (634 [50.4%]), anxiety (560 [44.6%]), insomnia (427 [34.0%]), and distress (899 [71.5%]). Frontline healthcare workers involved in the direct diagnosis, treatment, and care of COVID-19 patients were associated with a higher risk of depression symptoms (OR,1,52; CI of 95%, 1.11-2.09; P = 0.01), anxiety (OR, 1.57; CI 95%, 1.22-2.02; P <0.001), insomnia (OR, 2.97;95% CI, 1.92-4.60; P <0.001) and anguish (OR, 1.60; CI 95%, 1.25-2.04; P <0.001).

The fact that COVID-19 is transmissible from person to person, coupled with its high morbidity and potential fatality can intensify the perception of danger among people. The psychological response of health professionals to an epidemic of infectious diseases may include feelings of vulnerability, loss of control, concerns about the patient's health, the spread of the virus, and anxiety about changes in the work routine (PAIANO et al., 2020). Research in Canada has identified symptoms that characterize the damage to the mental health of health workers, such as the feeling of high risk of contamination, the effect of the disease on professional life, and depressed mood (PEREIRA et al., 2020).

The accentuation of occupational stress in the current period of the pandemic among health workers can also be associated with the nature of work, which requires direct care for patients affected by Covid-19, with a high risk of contamination. Also noteworthy in stressful situations is the fact that there is no set deadline for the end of the pandemic, the scarcity of PPE, and the pressure, on the part of institutions, to rationalize their use (LUZ et al., 2020).

This perspective, research revealed that factors such as children, hours of work per week, and anxiety were the main aspects that contributed to the stress of nurses (p = 0.000, 0.048, 0.000, respectively), also presenting scores of stress (39.91 ± 12.92) and anxiety (32.19 ± 7.56) of these nurses positively correlated with these factors (r = 0.676, p <0.05) (MO et al., 2020).

In this same context, aspects such as the distance from family members, feelings of fear, psychological stress, loneliness, sleep-related disorders, scarcity of PPE in the sectors, and the insufficiency of rapid tests for diagnosis and analysis of the health status of the team, fear of direct

contact with isolated patients and risks related to contamination by the virus along with uncertainty about the effectiveness of controlling the spread of the disease and the continuous monitoring of news about the progress of the disease are also factors that contribute significantly to increased stress and mental illness among frontline professionals (ZHANG et al., 2020; Mohindrab et al., 2020).

The COVID-19 pandemic has generated unprecedented psychological stress on people around the world, especially in the medical workforce. In the study by Lu *et al.* (2020), the occurrence of fear, anxiety, and depression was measured by the numerical rating scale (NRS), Hamilton Anxiety Scale (HAMA), and Hamilton Depression Scale (HAMD), respectively. A total of 2,299 participants, including 2,042 medical teams and 257 administrative staff. Compared to non-clinical staff, frontline medical staff with close contact with infected patients, including work in the breathing, emergency, infectious diseases, and ICU departments, had higher scores on the fear scale, HAMA, and HAMD, with 1.4 times higher odds of feeling fear and 2 times more likely to suffer from anxiety and depression. Medical professionals who worked, especially in the aforementioned departments, were more susceptible to psychological disorders.

When one looks at the COVID-19 scenario, one realizes that workers are doomed to increase emotional exhaustion and depersonalization, as well as low professional fulfillment as a result of physical and mental exhaustion. Situations experienced by shifts, often doubled, to meet the demands of the institution due to the pandemic, for fear of contamination, lack of materials and fear, insecurity about work and performance, as well as for experiencing the loss of lives en masse, constitute factors that can lead workers to professional dissatisfaction, exposing them to Burnout Syndrome (LUZ et al., 2020).

In the research of Cai *et al*. (2020), with 1521 health professionals in China, with a prevalence of psychological alterations of 14.1%, another factor discovered that was directly related to the psychological illness of health professionals was the absence of experience in emergency treatment in public health, revealing worse performance in mental health, resilience, and social support, tending to suffer from psychological changes in interpersonal sensitivity and anxiety. In contrast, even more, significant impacts were pointed out in the research of Zhenyu *et al*. (2020), where results showed that vicarious (secondary) trauma scores for frontline nurses, including scores for physiological and psychological responses, were significantly lower than those for non-frontline nurses ($P < 0.001$)).

When these impacts on mental health are observed taking into account the issue of gender, it is identified that the female sex is more prone to the development of these diseases. Du *et al.* (2020), in their study, counted 12.7% and 20.1% of health professionals who had at least 81 mild depressive and anxiety symptoms, respectively. More than half had moderate to severe stress. Being the depressive

and anxiety symptoms more frequent among women, less psychologically prepared. Poor sleep quality, lack of psychological preparation, and family support were also perceived.

This was confirmed in another study in China, in which the incidence of anxiety in women was higher than that of men [25.67% (48/187) vs. 11.63% (5/ 43), Z = -2.008, P = 0.045], and women's anxiety scores were higher than those of men [(43.78 ± 11.12) scores (39.14) ± 9.01) minutes, t = -2.548, P = 0.012]. The stress disorder score of the female medical team was higher than the male [(44.30 ± 18.42) points a (36.91 ± 13.95) points, t = -2.472, P = 0.014] (HUANG et al., 2020).

4 CONCLUSION

The present study showed that signs and symptoms such as stress, anxiety, depression, fear, anguish, and insomnia are the main impacts on the mental health of health professionals related to the period of the COVID-19 pandemic, with doctors and nursing staff being the most affected. Thus, further studies must be carried out, to unveil not only this relationship between mental illness with the presence of COVID-19 in the health work environment but the actions and strategies of prevention, detection, and direction for the treatment of these workers developed by health institutions, as well as to awaken the attention of public policies to the need for the elaboration of care plans for the mental health of workers in possible and future new pandemic scenarios.

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