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REVIEW

THE EFFECTS OF THE PANDEMIC AND FACTORS ASSOCIATED WITH THE MENTAL HEALTH OF HEALTHCARE PROFESSIONALS: INTEGRATIVE REVIEW

EFEITOS DA PANDEMIA E FATORES ASSOCIADOS À SAÚDE MENTAL DE PROFISSIONAIS DE SAÚDE: REVISÃO INTEGRATIVA

EFECTOS DE LA PANDEMIA Y FACTORES ASOCIADOS EN LA SALUD MENTAL DE LOS PROFESIONALES DE LA SALUD: REVISIÓN INTEGRADORA

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ABSTRACT

Objective: to identify, in the scientific literature, the effects of the pandemic and factors associated with the mental health of healthcare professionals who work in the fight against COVID-19. Method: integrative literature review, through the Web of Science, LILACS, Medline and CINAHL databases, carried out in November 2020. The search was carried out in a broad, thorough, and independent way by two researchers; in cases of divergence, there was the participation of a third researcher. Results: 12 articles made up the sample. Anxiety, depression, and sleep disorders were the most prevalent mental health effects in healthcare workers during the COVID-19 pandemic. The work sector, the lack of Personal Protective Equipment (PPE) and the increase in working hours were the main triggering factors for these effects. Final Considerations: it is necessary to implement effective strategies and interventions that guarantee short, medium, and long-term psychological support for healthcare professionals.

Keywords: Health Personnel; Mental Health; Coronavirus Infections.

RESUMO

Objetivo: identificar, na literatura científica, os efeitos da pandemia e fatores associados àsaúde mental de profissionais de saúde que atuam no enfrentamento da COVID-19. Método: revisão integrativa da literatura, através das bases de dados Web of Science, LILACS, Medline e CINAHL, realizada em novembro de 2020.A busca se deu de forma ampla, criteriosa e independente por dois pesquisadores; em casos de divergência, houve a participação de um terceiro pesquisador. Resultados: 12 artigos compuseram a amostra. Ansiedade, depressão e distúrbios do sono foram os efeitos na saúde mental mais prevalentes em profissionais de saúde durante a pandemia de COVID-19. O setor de trabalho, a falta de Equipamentos de Proteção Individual (EPIs) e o aumento da carga horária de trabalho foram os principais fatores desencadeantes desses efeitos. Considerações Finais: faz-se necessária a implantação de estratégias e intervenções eficazes que garantam um suporte psicológico a curto, médio e longo prazo para os profissionais de saúde.

Palavras-chave: Pessoal de Saúde; Saúde Mental; Infecções por Coronavírus.

RESUMEN

Objetivo: identificar en la literatura científica los efectos de la pandemia y los factores asociados a la salud mental de los profesionales de la salud que trabajan frente al COVID-19. Método: revisión bibliográfica integradora, a través de las bases de datos Web of Science, LILACS, Medline y CINAHL, realizada en noviembre de 2020. La búsqueda fue llevada a cabo de forma amplia, cuidadosa e independiente por dos investigadores y, en caso de desacuerdo, se contó con la participación de un tercer investigador. Resultados: 12 artículos componían la muestra. La ansiedad, la depresión y los trastornos del sueño fueron los efectos de salud mental más prevalentes en los profesionales de la salud durante la pandemia de COVID-19. El sector laboral, la falta de Equipos de Protección Individual y el aumento de la carga de trabajo fueron los principales factores desencadenantes de estos efectos. Consideraciones finales: es necesario poner en marcha estrategias e intervenciones eficaces que garanticen el apoyo psicológico a corto, medio y largo plazos de los profesionales de la salud.

Palabras clave: Personal de Salud; Salud Mental; Infecciones por Coronavirus.

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INTRODUCTION

The new coronavirus, called SARS-CoV-2, is the virus responsible for causing Coronavirus Disease 2019 (COVID-19), which was first detected in late 2019 in Wuhan, China, spreading rapidly. by other countries and becoming a global health emergency.[1] On January 30, 2020, the World Health Organization (WHO) declared a public health emergency of international importance, and on March 11, 2020, it was characterized as a pandemic. In November 2020, Brazil was already in third place in the world ranking of the country with the highest number of COVID cases.[1,2]

Currently, studies have pointed to the emergence of new variants of SARS-CoV-2 with predominance around the world, affecting countries such as the United Kingdom, South Africa, and Brazil.[3] The concern is that these new variants have the potential to cause epidemics in places already affected by severe epidemics, causing an increase in transmissibility and the possibility of antigenic escape, leading to new cases of reinfection, with greater severity of the condition.[4]

However, even with the decrease in the number of cases and deaths from COVID-19, mainly due to the expansion of vaccine coverage against the infection, which started in Brazil on January 17, 2021, the pandemic still affects the health system, especially, healthcare professionals.

Healthcare professionals who have been dedicated to fighting the disease on the front lines for more than two years, in the fight for the cure of those who are infected by the virus, having been subjected to exhausting shifts, with an increased workload and continuous exposure to the virus. This made them more susceptible to physical and psychological illness, due to factors such as feelings of impotence, failure, stress due to the conditions and work overload, uncertainties about the disease and treatment, difficulty in dealing with losses of their patients, illness of their family members, among others.[5,6]

With regard to the mental health of professionals and healthcare workers, there have been recurrent complaints and symptoms of anxiety, depression, loss of sleep quality, insomnia, denial, anger, and fear as some of the psychological effects experienced by this population.[7] such as fear of becoming infected, proximity to the patient's suffering and death, loneliness, among others, were also reported aspects that lead, in some cases, to reluctance to work.[8]

The ethical and moral commitment that doctors, nurses, and other workers have in order to care for and recover their health is accompanied by consequences that imply abdicating their self-care and well-being, which may, in this way, compromise individual well-being. This starts to influence the articulation of the team and the care offered to the patient.[9]

In this sense, this study is relevant for its reflective content on the problems related to the mental health of healthcare professionals in the face of the COVID-19 pandemic and associated factors, in order to expand strategies for caring for individual well-being and psychological health of healthcare professionals during the pandemic. In this way, the study aims to identify, in the scientific literature, the effects of the pandemic and the factors associated with the mental health of healthcare professionals who work in the fight against COVID-19.

METHOD

This is an integrative literature review study. For its construction, the following methodological steps were followed: 1) identify the theme and select the research question; 2) establish eligibility criteria; 3) identify studies in scientific databases; 4) evaluate and analyze the selected studies; 5) categorize the studies; 6) evaluate and interpret the results; and 7) present the data in the framework of the integrative review.[10]

1) Identify the topic and select the research question. After selecting the theme, the next step for the construction of the study consisted of elaborating the research question according to the PICO strategy.[11]

For this, the following structure was considered: P - healthcare professionals; I - Mental health; C - COVID-19 Pandemic; O - Effects and associated factors. Thus, the following question was elaborated: "What are the effects of the pandemic and factors associated with the mental health of healthcare professionals who work in the fight against COVID-19?

2) Establish eligibility criteria. In order to answer the research question and achieve the proposed objective, the inclusion criteria were established: be an article, be available in full, published from December 2019 to November 2020, in Portuguese, English and Spanish, indexed in the Web of Science, LILACS (Latin American and Caribbean Literature on Health Sciences), Medline and CINAHL databases that portray the theme. It is noteworthy that studies involving healthcare professionals and COVID-19 were dated from the last 11 months, the eligible period for this review.

The exclusion criteria were being a review article, protocols or editorials, not presenting the keywords in the title or abstract, presenting duplicity between the bases and not meeting the objective of this review.

3) Identify the studies in the scientific databases. The search for articles was carried out in November 2020. And to reduce errors in the interpretation and design of the analyzed studies, the search was carried out broadly, carefully, and independently, by two researchers and in cases of divergence, there was the participation of a third researcher.

Keywords and descriptors were delimited in Medical Subject Headings (Mesh) and in Health Sciences Descriptors (DeCS). For that, the Boolean operators AND and OR were used in the search strategies in each database listed, as shown in Figure 1.

After searching the databases, all articles were exported to EndNote Web Basic (Clarivate Analytics®) and duplicate articles were removed.

4) Evaluate and analyze the selected studies. At this stage, two independent reviewers extracted the information from the selected articles established by the PICO strategy through a validated form.[12] The information extracted from the selected studies were: name of authors/year, place of publication, objective, type of study, level of evidence, mental health effects and associated factors. The information was grouped in a summary table.

Regarding the level of evidence, the selected studies were classified as follows: Level I - systematic reviews with randomization; Level II - clinical study with randomization; Level III - clinical study without randomization; Level IV - cohort and case control; Level V - systematic review of qualitative studies; Level VI - descriptive or qualitative studies; and Level VII - expert opinion, description of cases.[11,13]

5) Categorize the studies. The studies were grouped into two thematic axes: psychological effects experienced by healthcare professionals during the pandemic and the factors associated with such effects.

6) Evaluate and interpret the results. At this stage, the results found in the searches are discussed and interpreted, aiming at understanding the topic to be investigated.

7) Present the data in the integrative review structure. To this end, tables were prepared with the main relevant information extracted from the articles.

RESULTS

Of the 166 articles identified in the databases, 139 were excluded due to duplicity, because they did not present the descriptors in the title or abstract or because they were review articles, protocols, or editorials. After reading 27 articles in full, 15 were excluded because they did not respond to the objective of this review. After this refinement, the sample of this review consisted of 12 articles. Figure 1 represents the search process according to the recommendations of PRISMA.[11]

After conducting the research in the databases and subsequent selection of studies, the synthesis of the results was carried out by two researchers, in a consensual way, and presented through summary tables Figure 3 and 4, with the purpose of highlighting the data collected from the selected studies considered relevant to analysis, including: authors' names, year, country of publication, objective, study type, level of evidence, mental health effects and associated factors.

As for the year of publication of the 12 studies included, it was found that all corresponded to the year 2020. Regarding the place of research development, China was the scene of 6 studies (50%), while Poland, Libya, USA, Pakistan, Iran and Brazil presented 1 study each. Regarding language, 11 documents were available in English[14-24] and one in Portuguese.[25]

As for the approach, 10 were cross-sectional studies[14-17,20-25] and 2 were case-control studies[18,19] and the quantitative approach prevailed in the 12 analyzed studies.

As for the professional categories investigated in the studies, doctors and nurses who provide direct care to patients suspected and/or diagnosed with COVID-19 stood out in Emergency services,[14,17-19,22,24]

Figure 1 - Search and selection strategy for articles in databases, 2020, Brazil

Database	Search Strategy	Identified Publications
Web of Science	"Healthcare Workers" OR "Health Personnel" AND "Mental Health" AND Coronavirus Infections AND COVID-19 OR coronavirus [Mesh and keyword]	37
Medline	Mental health AND health personnel AND coronavirus infections [keyword]	88
LILACS	Mental health AND health personnel AND coronavirus infections	27
CINAHL	"Health Personnel" OR "Healthcare Workers" AND Mental Health AND Coronavirus Infections [Mesh and keyword]	14

Source: Prepared by the Authors, 2020.

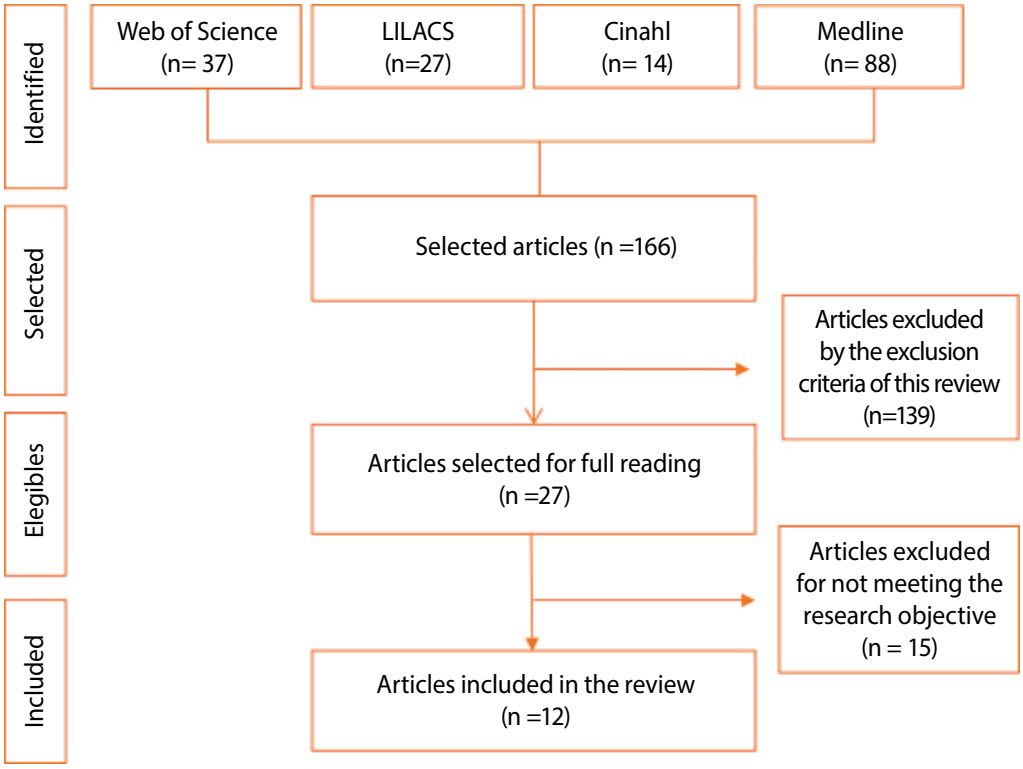

Figure 2 - PRISMA flowchart (adapted) of the study selection and inclusion process. João Pessoa, PB, Brazil, 2020 (em arquivo anexo)
Source: Prepared by the authors.

Figure 3 - Synthesis with the results of the selected studies. João Pessoa, PB, Brazil, 2020

Author	Country	Objective	Type of Study	LE	Effects on mental health	Associated factors
Que et al.[14]	China	Investigate the prevalence of psychological problems in different healthcare professionals during the COVID-19 pandemic in China	Cross-sectional study	IV	Anxiety, depression, insomnia, and general psychological problems	Receiving negative information and participating in frontline work
Ning et al.[15]	China	To identify the prevalence and factors influencing anxiety and depression in neurology healthcare professionals in Hunan Province, China during the early stage of the COVID-19 outbreak	Cross-sectional study	IV	Anxiety and depression	The lack of personal protective equipment; be young
Yang, Zhang, Li S e Chen[16]	China	Investigate risk factors for anxiety in ENT healthcare professionals in Hubei province under the COVID-19 epidemic	Cross-sectional study	IV	Anxiety	Professionals suspected of infection, family members and colleagues diagnosed with COVID-19. work sector
Wańkowicz, Szylińska e Rotter[17]	Poland	Assess mental health factors among healthcare professionals, quantifying the severity of anxiety, depression and sleep disturbances during the current SARS-CoV-2 pandemic, taking into account coexisting illnesses	Cross-sectional study	IV	Anxiety; depressive symptoms, insomnia symptoms, and sleep disturbances	Working on the front lines in emergency departments, infectious wards and intensive care units
Cai et al.[18]	China	Comparing the psychological impact of the COVID-19 outbreak among frontline and non-frontline medical workers in China	Case-Control Study		Depressive symptoms	Increased workload, Inadequate protective equipment, patients' negative emotions, quarantine, and lack of contact with their families
Wu e Wei[19]	China	Understand changes in psychological factors and the sleep status of frontline medical staff in the fight against COVID-19 and provide evidence of exercise interventions to alleviate psychological stress and improve the sleep status of medical staff	Case-Control Study		Somatization, depression, anxiety, and terror	Working on the front line in emergency sectors, increased workload

Note: LE (Level of Evidence)
Source: Prepared by the authors, 2020.

Figure 4 - Synthesis with the results of the selected studies. João Pessoa, PB, Brazil, 2020

Author	Country	Objective	Type of Study	LE	Effects on Mental Health	Associated Factors
Elhadi[20]	Libya	Assess the psychological state of health workers during the COVID-19 outbreak, which exacerbated existing problems related to the civil war in Libya	Cross-sectional study	IV	Depressive symptoms, anxiety symptoms	Age, years of experience, hours worked per week, internal commuting, verbal abuse
Huang et al.[21]	China	Determining healthcare professionals' anxiety levels and exploring their risk factors	Cross-sectional study	IV	Anxiety	Age, availability of protective materials, signs of suspicious symptoms, and susceptibility to the emotions and behaviors of those around them
Shechter et al.[22]	USA	Report the sources and degrees of COVID-19 - related distress that healthcare providers are experiencing, their current coping behaviors, and the wellness resources they believe can help	Cross-sectional study	IV	Acute stress, depression and anxiety, insomnia symptoms and sleep disorders	The health of family/friends, maintenance of family social distancing, lack of control and/or uncertainty about status -19 status, national shortages of personal protective equipment (PPE), testing, and lack of national guidelines on treatment for COVID-19
Amin, Sharif, Saeed, Durrani e Jilani[23]	Pakistan	To determine knowledge and perception about the pandemic, prevalence and factors associated with depression/anxiety among first-line physicians in Pakistan	Cross-sectional study	IV	Depression	Setor de emergência, enfrentar a COVID-19, horas de trabalho por semana
Shoja et al.[24]	Iran	Assess the impact of the COVID-19 epidemic on the workload and mental health of Iranian medical staff using the General Health Questionnaire (GHQ-12) and the NASA-Task Load Index (NASA-TLX) questionnaire assess the impact of the COVID-19 epidemic on the workload and mental health of Iranian medical staff using the General Health Questionnaire (GHQ-12) and the NASA-Task Load Index (NASA-TLX) questionnaire	Cross-sectional study	IV	Mental pressure, physical pressure, time pressure (temporal) and frustration	Work sector, work shift, education and facing COVID-19
Dal'Bosco, Floriano, Skupien, Arcaro, Martins e Anselmo[25]	Brazil	To identify the prevalence and factors associated with anxiety and depression in Nursing professionals who work in coping with COVID-19 in a university hospital	Cross-sectional study	IV	Anxiety and depression	Being a woman, working in a critical sector, little professional experience

Note: LE (Level of Evidence)
Source: Prepared by the authors, 2020.

Primary Care,[14,23,24] Intensive Care Units,[14,18,22,23,25] Infectious disease clinics,[17,18,23,25] Radiology,[19] Neurology[15] and Otorhinolaryngology.[16]

Regarding the effects on mental health, of the 12 selected studies, 9 cited anxiety[14-17,19-22,25] and depression[14,15,17-20,22,23,25] as the most prevalent in healthcare professionals, followed by insomnia[14,17, 22] and sleep disorders.[17,22]

Regarding the factors associated with the mental health of healthcare professionals, it was observed that the work sector,[16-17,19,23-25] the lack of Personal Protective Equipment (PPE)[15,18,21-22] and the increase of working hours[18-20,23-24] were the most found.

DISCUSSION

Since the beginning of the COVID-19 pandemic, the healthcare professional has gained a prominent role in fighting the disease. However, it also suffered from the impacts on their mental health in the face of multiple occupational factors, exposure and changes caused by the infection, becoming a concern for governments, institutions and for the professionals themselves.

In the present research, it was observed that anxiety, depression, insomnia, and sleep disorders were the most prevalent psychological effects in healthcare professionals during the COVID-19 pandemic.

A systematic review with meta-analysis on mental healthcare problems of healthcare professionals during the pandemic showed a prevalence between 8%-95% of depression, 3%-97% of anxiety, 3%-76% of distress and 3%- 84% post-traumatic stress.[26]

Anxiety and depression were the most prevalent psychological effects found in the results of this research. A systematic review found a prevalence of 24.94% and 24.83% of anxiety and depression, respectively, in healthcare workers during COVID-19.[27] A cross-sectional survey conducted with 939 healthcare workers in Turkey found the presence of signs and symptoms of anxiety and depression in 60.2% and 77.6% of professionals, respectively.[28]

The high risk of infection, increased workload, lack of PPE, and lifestyle changes (such as isolation from the family, restriction of social interactions, and decreased physical contact and leisure activities) are contributing factors to the incidence of mental healthcare problems, such as anxiety and depression, which affect the quality of work, in addition to the individual biopsychosocial well-being of the healthcare professional.[29,30]

The high prevalence of depression was also found in a study carried out with 606 frontline healthcare professionals who showed a percentage of 57.6% for depression and in another with 1,257 professionals who presented a rate of 50.4%, both carried out in China.[30,31]

In view of the presence of factors that contribute to psychological illness within the work environment, the concern with relatives who were isolated at home and with the physical and mental conditions of co-workers are also considered at this time.[32] In addition, the presence of comorbidities among some professionals can worsen their mental health, since pre-existing diseases can lead to serious complications from COVID-19.[33] Therefore, this joint exposure to stressors can trigger disorders such as depression, with risks even for the suicide.

Insomnia and other sleep disorders were also psychological effects found in the present study. A study carried out in Milan with 964 healthcare professionals found a rate of 80.3% of sleep disorders, mainly insomnia, 30.5%.[34] Research with meta-analysis also found an approximate prevalence (38.0%) of insomnia self-reported by healthcare professionals during the COVID-19 pandemic.

This shows that healthcare professionals are prone to have disturbances and/or poor sleep quality, due to the stressors to which they are exposed, especially in pandemic periods. The perception of lack of psychological support, changes in work schedules, uncertainty about a new disease and concern about the consequences caused by COVID-19 are some of the reasons for the appearance of sleep disorders in professionals.[35,36]

Regarding the factors associated with the effects on the mental health of professionals, it was observed that the work sector[16-17,19,23-25], the lack of Personal Protective Equipment (PPE)[15,18,21,22] and the increase of working hours[18-20,23,24] were the most found.

Work sectors such as the Intensive Care Unit (ICU), emergency and infectious diseases sector are considered to be at high risk of exposure to SARS-CoV-2. Thus, as shown by a survey carried out in Asia, health teams working in these places were twice as likely to suffer from anxiety and depression when compared to teams working in other sectors, such as administrative areas.[37]

The use of PPE has become an essential form of protection against COVID-19, especially for healthcare professionals working in hospital environments. The N95 mask, the use of disposable aprons, gloves, face shield and cap have become indispensable work equipment during the pandemic.[38] However, due to high demand and the need for frequent use, these PPE have become scarce worldwide.

In the meantime, the unavailability of PPE can affect the mental health of healthcare workers since frequent exposure to the virus and the fear of contagion can cause psychological disorders. Therefore, improvements in hospital policies, the guarantee of adequate and sufficient PPE and education on the correct form of its use are necessary to guarantee the individual well-being of the healthcare professional.[39]

Healthcare professionals working on the front line, such as doctors and nurses, were the professions most exposed to the new coronavirus and the development of mental health problems, as seen in studies.[14,17-19,22-24] Studies also showed that women and Nursing staff exhibit higher rates of psychological effects when compared to men and medical staff.[14,15,24]

It is noteworthy that Nursing, predominantly composed of females, plays a fundamental role in the fight against COVID-19, in addition to the increased risk for infection due to greater contact with the patient. The fact of being a woman and a nurse comes from other activities in addition to formal work, such as family demands and the fear of the risk of infection, which can favor the emergence of psychic problems.[25,40]

In the meantime, special attention to the Nursing team is necessary, either because of the greater risk of exposure due to direct care, or because of the longer time with patients or the gender issues that involve the category. These are situations that greatly favor the emergence of psychological problems.[40]

Based on this scenario, it is observed that COVID-19 has brought and is leaving a high trail of confirmed cases, deaths, socioeconomic and affective consequences, situations that can foster mental health problems, especially for those working in direct care. In this sense, the subject who suffers cannot act properly, because, if they are not treated effectively, the problems that arose during the pandemic may have future complications, considering that problems that affect mental health can persist for a long time, as well as the anxieties and fears of professionals are capable of causing psychic suffering.

As for the limitations of the study, it was found that, of the articles that made up the sample, 6 studies were carried out in only one country (China), which may limit the generalization of the results, given that the results may not be the same. same in many countries that have a shortage of healthcare professionals and/or different working conditions. Another limitation refers to the level of evidence of the articles, given that most are cross-sectional studies, which does not allow for causal relationships to be established. It was also found that most studies did not investigate potential confounding factors, such as personality traits and a history of mental disorders in the participants, which made it impossible to identify whether the effects on mental health were due to the pandemic or exacerbated by it.

However, there is a need for worldwide research that presents results with a higher level of scientific evidence, in order to subsidize effective care through assertive public policies aimed at promoting the mental health of healthcare professionals who work in coping with COVID-19, as well as in other pandemic moments.

FINAL CONSIDERATIONS

In short, the studies showed that the main effects on mental health experienced by healthcare professionals during the COVID-19 pandemic were depression, anxiety and insomnia. The exhaustive workload, the lack of Personal Protective Equipment (PPE) and the work sector were the main triggering factors for these effects.

It is concluded that the protection of healthcare professionals should be a priority measure of health systems to face pandemics, since, in a post-pandemic period, it is necessary to know how to deal with the readaptation of losses, emotional and socioeconomic transformations. The contributions of the study for the possibility of reflecting on what it is to be a healthcare professional in this pandemic moment, discussing the main effects experienced in the face of COVID-19, in addition to exposing its associated factors, which can collaborate for the creation of new strategies and interventions capable of helping these professionals to mitigate the effects of the pandemic in the short, medium and long term.

REFERENCES

1. World Health Organization (WHO). Novel coronavirus (COVID-19). Geneva: WHO; 2020[cited 2020 Nov 02]. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019

2. Ministério da Saúde (BR). O que é coronavírus? Brasília: Ministério da Saúde; 2020[cited 2020 Nov 20]. Available from: https://www.saude.gov.br/o-ministro/746-saude-de-a-a-z/46490-novocoronavirus-o-que-e-causas-sintomas-tratamento-e-prevencao-3

3. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A Novel Coronavirus from Patients with Pneumonia in China, 2019. N Engl J Med. 2020[cited 2020 Nov 20];382(8):727-33. Available from: https://www.nejm.org/doi/full/10.1056/nejmoa2001017

4. Resende PC, Bezerra JF, Vasconcelos RHT, Arantes I, Appolinario L, Mendonça AC, et al. Spike E484K mutation in the first SARS-CoV-2 reinfection case confirmed in Brazil, 2020. Genomic Epidemiol. 2021[cited 2021 Mar 12]. Available from: https://virological.org/t/spike-e484k-mutation-in-the-first-sars-cov-2-reinfection-caseconfirmed-in-brazil-2020/584

5. Paiano M, Jaques AE, Nacamura PA, Salci MA, Radovanovic CAT, Carreira L. Mental health of healthcare professionals in China during the new coronavirus pandemic: an integrative review. RevBrasEnferm. 2020[cited 2021 Mar 12];73(Suppl 2):e20200338. Available from: https://www.scielo.br/pdf/reben/v73s2/0034-7167-reben-73-s2-e20200338.pdf

6. Xiang YT, Jin Y, Wang Y, Zhang Q, Zhang L, Cheung T. Tribute to health workers in China: a group of respectable population during the outbreak of the COVID-19.Int J BiolChemSci. 2020[cited 2020 Dec 06];16(10):1739-40. Available from: https://www.ijbs.com/v16p1739.htm. doi:http://dx.doi.org/10.7150/ijbs.45135

7. Teixeira CFS, Soares CM, Souza EA, Lisboa ES, Pinto ICM, Andrade LR, et al. The health of healthcare professionals coping with the COVID-19 pandemic. Ciênc Saúde Colet. 2020[cited 2021Jan 06];25(9). Available from: https://www.scielo.br/pdf/csc/v25n9/en_1413-8123-csc-25-09-3465.pdf

8. Miranda FMA, Santana LL, Pizzolato AC, Saquis LMM. Working conditions and the impact on the health of the Nursing professionals in the context of COVID-19. Cogitare Enferm. 2020[cited 2021 Jan 08];25:e72702. Available from: http://dx.doi.org/10.5380/ce.v25i0.72702

9. ToescherAMR, Barlem JGT, Barlem ELD, Castanheira JS, Toescher RL. Saúde mental de profissionais de Enfermagem durante a pandemia de COVID-19: recursos de apoio. Esc Anna Nery Rev Enferm. 2020[cited 2021 Jan 10];24(spe):e20200276. Available from: https://www.scielo.br/pdf/ean/v24nspe/en_1414-8145-ean-24-spe-e20200276.pdf

10. Whittemore R, Knafl K. The integrative review: updated methodology. J Adv Nurs. 2005[cited 2020 Nov 20];52(5):546-53. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2648.2005.03621.x

11. Melnyk BM, Fineout-Overholt E. Making the case for evidence-based practice. In: Melnyk BM, Fineout-Overholt E, editors. Evidence-Based Practice in Nursing & Healthcare. A Guide to Best Practice. Philadelphia: Lippincott Williams & Wilkins; 2011. p.3-24.

12. Ursi ES, Galvão CM. Prevenção de lesões de pele no perioperatório: revisão integrativa da literatura. Rev Latino-Am Enferm. 2006[cited 2021 Jan 10];14(1):124-31. Available from: http://www. scielo.br/pdf/rlae/v14n1/v14n1a17.pdf

13. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021[cited 2021 Jan 08];372(71). Available from: http://www.prisma-statement.org/doi: 10.1136/bmj.n71

14. Que J, Shi L, Deng J, Liu J, Zhang L, Wu S, et al. Psychological impact of the COVID-19 pandemic on healthcare workers: a cross-sectional study in China. GenPsychiatr. 2020[cited 2021 Jan 10];14(3):e100259. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7299004/

15. Ning X, Yu F, Huang Q, Li X, Luo Y, Huang Q, et al. The mental health of neurological doctors and nurses in Hunan Province, China during the initial stages of the COVID-19 outbreak. BMC Psychiatry. 2020[cited 2020 Dez 20];5(1):436. Available from: https://bmcpsychiatry.biomedcentral.com/articles/10.1186/s12888-020-02838-z

16. Yang X, Zhang Y, Li S, Chen X. Risk factors for anxiety of otolaryngology healthcare workers in Hubei province fighting coronavirus disease 2019 (COVID-19). Soc Psychiatry Psychiatr Epidemiol. 2020[cited 2020 Dez 08];56(1):39-45. Available from: https://pubmed.ncbi.nlm.nih.gov/32785756/ doi: https://doi.org/10.1007/s00127-020-01928-3

17. Wańkowicz P, Szylińska A, Rotter I. Assessment of Mental Health Factors among Health Professionals Depending on Their Contact with COVID-19 Patients. Int J Environ Res Public Health. 2020[cited 2020 Dez 20];12(16):5849. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7459704/

18. Cai Q, Feng H, Huang J, Wang M, Wang Q, Lu X, et al. The mental health of frontline and non-frontline medical workers during the coronavirus disease 2019 (COVID-19) outbreak in China: a case-control study. J Affect Disord. 2020[cited 2020 Dez08];(275):210-5. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7329671/

19. Wu K, Wei X. Analysis of Psychological and Sleep Status and Exercise Rehabilitation of Front-Line Clinical Staff in the Fight Against COVID-19 in China. Med SciMonit Basic Res. 2020[cited 2020 Dez 09];26:e924085. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7241216/

20. Elhadi M, Msherghi A, Elgzairi M, Alhashimi A, Bouhuwaish A, BialaM, et al. Psychological status of healthcare workers during the civil war and COVID-19 pandemic: a cross-sectional study. J Psychosom Res. 2020[cited 2020 Dez 20];16(137):110221. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7428743/

21. Huang L, Wang Y, Liu J, Ye P, Chen X, Xu H, et al. Factors Influencing Anxiety of Health Care Workers in the Radiology Department with High Exposure Risk to COVID-19. Med Sci-Monit. 2020[cited 2020 Dez 19];26:e926008. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7401832/

22. Shechter A, Diaz F, Moise N, Anstey DE, Ye S, Agarwal S, et al. Psychological distress, coping behaviors, and preferences for support among New York healthcare workers during the COVID-19 pandemic. Gen Hosp Psychiatry. 2020[cited 2020 Dez 23];(66):1-8. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7297159/

23. Amin F, Sharif S, Saeed R, Durrani N, Jilani D. COVID-19 pandemic- knowledge, perception, anxiety and depression among frontline doctors of Pakistan.BMC Psychiatry. 2020[cited 2020 Dez 18];20(459). Available from: https://bmcpsychiatry.biomedcentral.com/articles/10.1186/s12888-020-02864-x

24. Shoja E, Aghamohammadi V, Bazyar H, Moghaddam HR, Nasiri K, Dashti M, et al. COVID-19 effects on the workload of Iranian healthcare workers. BMC Public Health. 2020[cited 2020 Dez 20];20:1636. Available from: https://pubmed.ncbi.nlm.nih.gov/33138798/ doi: https://doi.org/10.1186/s12889-020-09743-w

25. Dal'Bosco EB, Floriano LSM, Skupien SV, Arcaro G, Martins AR, Anselmo ACC. A saúde mental da Enfermagem no enfrentamento da COVID-19 em um hospital universitário regional. Rev Bras Enferm. 2020[cited 2020 Dez 20];73(Suppl2):e20200434. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0034-71672020001400153&lng=en

26. Saragih ID, Tonapa SI, Saragih IS, Advani S, Batubara SO, Suarilah I, et al. Global prevalence of mental health problems among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. Int J Nurs Stud. 2021[cited 2022 Mar 29];121:104002. Available from: https://www.nature.com/articles/s41598-021-89700-8

27. Sahebi A, Nejati-Zarnaqi B, Moayedi S, Yousefi K, Torres M, Golitaleb M. The prevalence of anxiety and depression among healthcare workers during the COVID-19 pandemic: an umbrella review of meta-analyses. Prog Neuro-Psychopharmacol Biol Psychiatry. 2021[cited 2022 Mar 29];107:110247. Available from: https://www.sciencedirect.com/science/article/pii/S0278584621000063

28. Şahin MK, Aker S, Şahin G, Karabekiroğlu A. Prevalence of depression, anxiety, distress and insomnia and related factors in healthcare workers during COVID-19 pandemic in Turkey. J Community Health.2020[cited 2022 Mar 29];45(6):1168-77. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7485427/

29. Ornell F, Halpern SC, Kessler FHP, Narvaez JCM. The impact of the COVID-19 pandemic on the mental health of healthcare professionals. Cad Saúde Pública. 2020[cited 2020 Dez 23];36(4):e00063520. Available from: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-311X2020000400504

30. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. JAMA Netw Open. 2020[cited 2020 Dez 23];3(3):e203976. Disponívelem:https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7090843/

31. Zhang W, Wang K, Yin L, Zhao W, Xue Q, Peng M, et al. Mental health and psychosocial problems of medical health workers during the COVID-19 epidemic in China. Psychother Psychosom Med Psychol.2020[cited 2020 Dez 28];(89):242-5. Available from: https://www.karger.com/Article/FullText/507639

32. Fava G, McEwen B, Guidi J, Gostoli S, Offidani E, Sonino N. Clinical characterization of allostatic overload. Psychoneuroendocrinology. 2019[cited 2021 Jan10];(108):94-101. Available from: https://pubmed.ncbi.nlm.nih.gov/31252304/

33. Chen Q, Liang M, Li Y, Guo J, Fei D, Wang L, et al. Mental health care for medical staff in China during the COVID-19 outbreak. Lancet Psychiatry. 2020[cited 2021 Jan 10];7:e15-6. Available from: https://www.thelancet.com/journals/lanpsy/article/PIIS2215-0366(20)30078-X/fulltext

34. Proserpio P, Zambrelli E, Lanza A, Dominese A, Di Giacomo R, Quintas R, et al. Sleep disorders and mental health in hospital workers during the COVID-19 pandemic: a cross-sectional multicenter study in Northern Italy. Neurol Sci. 2022[cited 2022 Mar 30];43(4):2241-51. Available from: https://link.springer.com/article/10.1007/s10072-021-05813-y

35. DongH,GaoJ, DongY, HanC, SunL. Prevalence of insomnia and anxiety among healthcare workers during the COVID-19 pandemic in Jilin Province. Braz J Med Biol Res. 2021[cited 2022 Mar 31];54(9):e10602. Available from: https://www.bjournal.org/article/prevalence-of-insomnia-and-anxiety-among-healthcare-workers-during-the-covid-19-pandemic-in-jilin-province/

36. Qi J, Xu J, Li B-Z, Huang J, Yang Y, Zhang Z, et al. The evaluation of sleep disturbances for Chinese frontline medical workers under the outbreak of COVID-19. Med Rxiv. 2020[cited 2022 Mar 31];1(1). Available from: https://www.medrxiv.org/content/10.1101/2020.03.06.20031278v2

37. Thatrimontrichai A, Weber DJ, Apisarnthanarak A. Mental health among health care personnel during COVID-19 in Asia: a systematic review. J Formos Med Assoc. 2021[cited 2022 Mar 31];120(6):1296-304. Available from: https://www.sciencedirect.com/science/article/pii/S0929664621000450

38. Neuwirth MM, Mattner F, Otchwemah R. Adherence to personal protective equipment use among healthcare workers caring for confirmed COVID-19 and alleged non-COVID-19 patients. Antimicrobial Resist Infect Control. 2020[cited 2022 Mar 31];9(1):99.Available from: https://aricjournal.biomedcentral.com/articles/10.1186/s13756-020-00864-w

39. Suleiman A, Bsisu I, Guzu H, Santarisi A,Alsatari M, Abbad A, et al. Preparedness of frontline doctors in Jordan healthcare facilities to COVID-19 outbreak. Int J Environ Res Publ Health. 2020[cited 2022 Mar 31];17:3181. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7246420/

40. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsi E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. Brain Behav Immun. 2020[cited 2021 Jan12];(88):901-7. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7206431/