

Pregledni znanstveni članek/Review article

## The impact of the covid–19 pandemic on nurses' and physicians' mental health: A literature review

Pomen pandemije covid-19 za duševno zdravje medicinskih sester in zdravnikov: pregled literature

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**Ključne besede:** samopodoba; strah, preventiva; medicinske sestre, zdravniki

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### ABSTRACT

**Introduction:** The covid-19 pandemic is characterised by an increased risk of post-traumatic stress disorder in healthcare professionals. The purpose of this systematic review was to identify the impact of the covid-19 pandemic on the mental health of healthcare professionals.

**Methods:** A systematic review of the literature was conducted. The literature search took place from November 2020 to January 2021. The search was conducted in the Pubmed, Ebsco, Ovid and Google Scholar databases, using the following combinations of keywords: self-image, fear, pandemic, prevention, nurses, physicians. The relevant records were selected on the basis of inclusion and exclusion criteria. The course of the literature review is shown using the PRISMA diagram. A thematic analysis was conducted with open coding of the results.

**Results:** From the total search set, 14 articles were selected for final analysis. The prevalence of anxiety among nurses and physicians ranged from 12.3 to 35.6%. The prevalence of anxiety was higher in nurses, with the symptoms of anxiety being significantly lower in male nurses than in their female colleagues.

**Discussion and conclusion:** The pandemic has left a significant psychological burden on nurses and physicians. There is therefore an urgent need to include preventive psychoeducational measures such as "briefing" and "teambuilding" in supervising mental health of nurses and physicians.

### IZVLEČEK

**Uvod:** Pandemijo covid-19 povezujemo s povečanim tveganjem za posttraumatsko stresno motnjo pri zdravstvenih delavcih. Namen sistematičnega pregleda literature je prepoznati vpliv pandemije covid-19 na duševno zdravje v tej populaciji.

**Metode:** Uporabljen je bil sistematičen pregled literature. Iskanje je potekalo od novembra 2020 do januarja 2021. Vključene so bile naslednje iskalne zbirke podatkov: Pubmed, Ebsco, Ovid in Google Scholar. Pri iskanju so bile uporabljene kombinacije ključnih besed: samopodoba, strah, preventiva, medicinske sestre, zdravniki. Uporabili smo diagram PRISMA za prikaz poteka pregleda literature. Tematska analiza je potekala na način kodiranja rezultatov.

**Rezultati:** Iz celotnega iskalnega niza več tisoč člankov smo v končno analizo prenesli štirinajst člankov. Prevalenca anksioznosti med zdravstvenimi delavci je 12,3–35,6 %. Zdravstveni delavci moškega spola so imeli bistveno blažje simptome tesnobe kot ženske. Stopnja tesnobe je bila višja v zdravstveni negi, vendar so bili pri moških manj izraziti simptomi tesnobe kot pri ženskah.

**Diskusija in zaključek:** Pandemija covid-19 je povzročila duševne obremenitve zdravstvenih delavcev. Za obvladovanje duševnega zdravja pri medicinskih sestrah in zdravnikih je treba vključiti preventivne psihoedukativne ukrepe, kot sta briefing in teambuilding.



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## Introduction

The fight against the pandemic has had an indirect impact on the mental health of the general population (Krishnamoorthy, Nagarajan, Kumar, Saya, & Menon, 2020). Exposure to acute stress can manifest behaviourally (avoidance, recklessness, detachment, withdrawal, irritability), emotionally (numbness, anxiety, anger, fear, mood swings, low self-esteem), and cognitively (concentration disorders, memory disorders, wakefulness, intrusive thoughts) (Galehdar, Kamran, & Toulabi, 2020; Paiano et al., 2020). A correlation has been detected between the covid-19 pandemic and the prevalence of mental health disorders in healthcare institutions (Carmassi, Foghi, & Dell'Oste, 2020; Muller, Hafstad, & Himmels, 2020; Tsamakidis, Rizos, & Manolis, 2020). The constant rise in the number of people infected, the increase in deaths, the lack of targeted medicines, the extensive media coverage, the heavy workload, the lack of personal protective equipment and the feeling of insufficient support in the wider social environment can all contribute to the psychological distress of physicians and nurses in particular (Daugherty & Arble, 2020; Li, Li, & Xiang, 2020; Paiano, Jaques, & Bezzera, 2020). It is therefore important to identify and address the mental health needs of nurses and physicians who express such concerns or show signs of distress in a timely manner (Krishnamoorthy et al., 2020).

### Aims and objectives

The aim of this systematic review was to determine the impact of the covid-19 pandemic on the mental health of nurses and physicians. A specific objective of the study was to determine the prevalence of psychological symptoms and risk factors for the development of mental health disorders in nurses and physicians during the pandemic. The main preventative measures for reducing mental distress must be based on the recognition mental distress symptoms so that effective interventions can be developed to reduce the mental health burden of the covid-19 pandemic. The following research questions were investigated:

– What were nurses and physicians' experiences of

psychological symptoms of mental health distress during the covid-19 pandemic?

– Do individual nurses and physicians with pronounced mental health problems need support and guidance to cope with the consequences of the pandemic?

## Methods

A literature review was prepared following PRISMA recommendations (Shamseer et al., 2015).

### Review methods

The literature search was conducted in the Pubmed, Ebsco, Ovid, and Google Scholar international databases. The following inclusion criteria were applied: the topic of the covid-19 pandemic and its impact on the mental health of nurses and physicians, exclusively systematic literature reviews, articles accessible in full text published in 2020 or later in English or Slovenian. Using a combination of keywords and the Boolean operator AND, we designed the following search strategy: ("sars-cov-2" AND "covid-19") AND ("nurses" AND "physician") AND (AND "mental health" AND "mental disorders"). The literature search took place between November 2020 and January 2021. The literature review was based on the inclusion and exclusion criteria shown in Table 1.

### Results of the review

Our database search identified 558.532 records: PubMed ( $n = 7.835$ ), EBSCO ( $n = 22.569$ ), Ovid ( $n = 70.728$ ) and Google Scholar ( $n = 487.400$ ). After removing the hits ( $n = 120$ ) that did not meet the pre-defined inclusion criteria, a total of 558.532 hits remained included. A total of 588.418 records were excluded after the removal of duplicates and on account of title and summary inconsistencies. In the next step, we reviewed the context of the first thousand hits ordered by relevance in each database and selected articles based on content inadequacy assessment. As shown in Figure 1, a total of 14 articles were included in the final analysis. The process of obtaining articles suitable for our research can be seen in Figure 1, where we used the PRISMA (Preferred

**Tabela 1: Inclusion and exclusion criteria**

**Tabela 1: Vključitveni in izključitveni kriteriji**

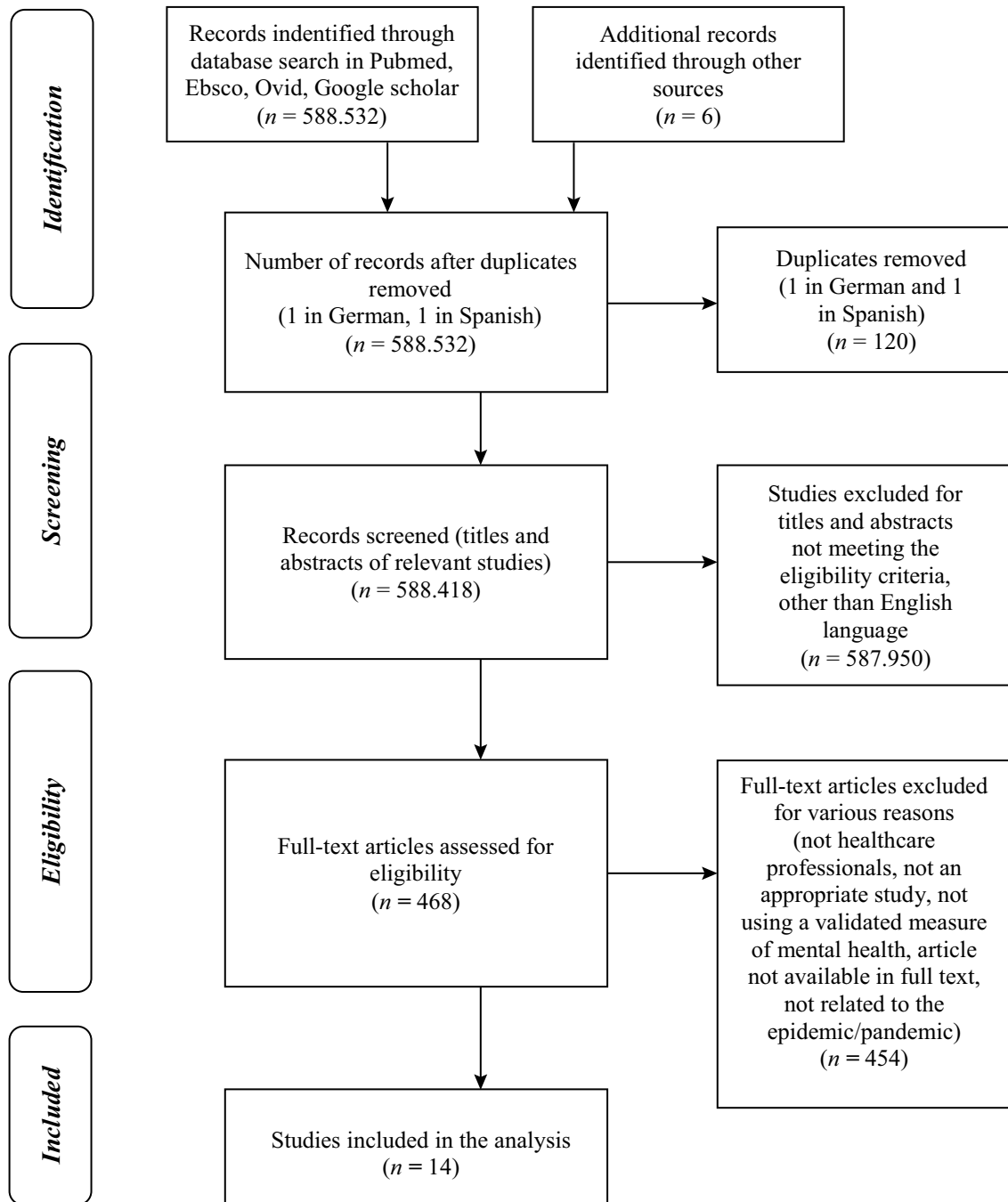
Criteria/Kriteriji	Inclusion criteria/Vključitveni kriteriji	Exclusion criteria/Izključitveni kriteriji
Topic	Covid-19 pandemic and nurses'/physicians' mental health.	Exclusively physical health, other healthcare professionals.
Type of research	Systematic literature review using quantitative and qualitative research.	Reports, comments, protocols, editorials, no relevant content.
Access	Full-text articles.	Incompletely accessible articles.
Time frame	Articles published since 2020.	Articles published before the covid-19 pandemic.
Language	English and Slovenian.	Other languages.

Reporting Item for Systematic review and Meta-Analysis) method to search the databases and check the usability of the sources included in the review.

### Quality assessment of the review and the description of data processing

The fourteen articles included in our systematic literature review met all the specified inclusion criteria.

All records were peer-reviewed research papers from international scientific journals and were available in electronic form. The articles included in the analysis included a total of 329 research articles. Systematic literature reviews were assessed for adequacy for inclusion in the literature review, based on the guidelines proposed by Streubert & Carpenter (2011). The results were reviewed in several rounds. In the first round, we carefully reviewed the titles. If we were not



**Figure 1:** The PRISMA flow diagram of literature inclusion in the systematic review  
**Slika 1:** PRISMA diagram vključene literature v sistematični pregled

able to decide whether to include or exclude a record according to its title, we also reviewed the abstract. In the second round, we read the abstract carefully, and in the third round, we read the articles and assessed their suitability for inclusion in the literature review. The assessed quality of articles varied: most of them were evaluated as good and suitable, two of them were evaluated as satisfactory. All the articles included in the final analysis were considered suitable based on similar experiences of healthcare professionals. We examined the quality of articles in terms of research limitations, source reliability, contribution structure and compliance with the purpose of our research. Data analysis was performed with the help of integrative thematic analysis (Aveyard & Bradbury-Jones, 2019). Coding units included key findings that were categorised into codes presented in Table 2. A thematic text analysis was conducted for this section of each source to be included in the final analysis. Codes with similar content were merged to form broader categories.

## Results

Table 2 shows the scientific articles analysed. It presents the key factors identified for each source, i.e., the author, the research design and the sample used. Based on the key factors, the results are presented in three thematic categories: incidence of mental health disorders; covid-19 pandemic and impact on mental health; and nurses' and physicians' ways of coping with mental disorders.

Of the fourteen studies included in this review, six studies (Krishnamoorthy et al., 2020; Muller et al., 2020; Hooper, Saulsman, Hall, & Waters, 2020; Luo, Guo, Yu, Jiang, & Wang, 2020; Carmassi et al., 2020; Allan et al., 2020) assessed the impact on the mental health of nurses and physicians during the covid-19 pandemic; three studies (Shaukat, Mansoor, & Razzak, 2020; Sanghera et al., 2020; Vizheh et al., 2020) and five of them assessed the risk factors for developing PTSD and examined the impact of covid-19 on the mental health of nurses and physicians (Billings, Chi Fung Ching, Gkofa, Greene, & Bloomfield, 2021; Cabarkapa, Nadjidai, Murgier, & Chee, 2020; Fernandez et al., 2020; Monteiro da Silva, Benjamim, de Medeiros Carvalho, & Rolim Neto, 2021; Sahebi, Nejati-Zarnaqi, & Moayedi 2021). All of the studies were systematic reviews, and seven of them also included a meta-analysis. The studies compared frontline nurses and physicians. Seven articles (Al Thobaity & Alshammari, 2020; Benfante, Di Tella, Romeo, & Castelli, 2020; Bilings et al., 2020; Daugherty & Arble, 2020) discussed the incidence of mental health disorders among nurses and physicians working on the frontline during the covid-19 pandemic.

Most articles included the prevalence of the most common mental disorders such as anxiety (12.3–5.6%), poor sleep quality or insomnia (33.8–36.1%), burnout

(3.1–43.0%), acute stress reaction (5.2–32.9%), and post-traumatic stress disorder (7.4–37.4%). It has been reported (Vizheh et al., 2020) that in Spain, 63% of nurses and physicians experienced mental health disorders. Muller et al. (2020) reported that about 30% of nurses and physicians experienced fear and worry when caring for covid-19 patients.

Krishnamoorthy et al. (2020) note that during the pandemic, the burden of mental health disorders was about 25% higher among nurses and physicians compared to the general population. Sleep deprivation was 40% higher among frontline nurses. Four articles (Bhui, Dinos, Galant-Miecznikowska, de Jongh, & Stansfeld, 2020; Gorini et al., 2020; Greenberg, Docherthy, Gnanapragasm, & Wessley, 2020; Huffman et al., 2020) reported the unpredictability of daily workloads, frequent management of patients, unexpected critical cases, and high levels of risk factors for stress. Only the well-being of nurses and physicians can ensure a sustainable response in the fight against the pandemic. Male nurses' anxiety symptoms were significantly less severe ( $\beta = -0.25$ ;  $p < 0.001$ ) than those of their female colleagues ( $\beta = -0.45$ ;  $p < 0.001$ ). The prevalence of anxiety and depression was higher among nurses (26.88%) than physicians (14.29%) (Krishnamoorthy et al., 2020). Data from a study on the psychological state of nurses and physicians show a higher burden of psychological symptoms among Italian nurses, with a 13% risk of suicide (Zhou et al., 2020). Muller et al. (2020) report that less than 1% of all nurses or physicians had initiated any kind of psychological or psychiatric treatment.

Some of the articles analysed (Morgantini et al., 2020; Paiano et al., 2020; Prescott et al., 2020; Raudenska et al., 2020; Walton, Murray, & Christian, 2020) also report healthcare professionals' feelings of fear due to lack of effective personal protective equipment and extended quarantine duration. A higher prevalence of anxiety and depression was identified among younger nurses ( $\leq 30$  years old), women, single people and those with existing comorbidities (Krishnamoorthy et al., 2020). Perceptions of inadequate protective measures were found to be a risk factor for the development of more severe mental health disorders (Monteiro da Silva, Benjamin, de Medeiros Carvalho, & Rolim Neto, 2021).

Some systematic reviews (Cabarkapa et al., 2020; Carmassi et al., 2020; De Kock, et al., 2020; Pouralizadeh, et al., 2020; Tsamakis et al., 2020; Sahebi, Nejati-Zarnaqi, & Moayedi, 2020) report a progressive deterioration of mental health among nurses and physicians at all levels of health care. Nurses predominate, probably due to prolonged and direct exposure to infection when working with covid-19 infected patients, especially in intensive care units, where the needs of infected patients are greatest (Fernandez et al., 2020). Gorini et al. (2020) report that 34.5% of nurses and physicians were not satisfied with

**Table 2:** *Analysed sources***Tabela 2:** *Analizirani viri*

<i>Author, year, country/ Avtor, leto, država</i>	<i>Research method/ Raziskovalna metoda</i>	<i>Research purpose/ Namen raziskave</i>	<i>Key findings/ Ključne ugotovitve</i>
Allan et al., 2020  United Kingdom	Systematic literature review and meta-analysis	The prevalence of stress-related mental health disorders in healthcare professionals	Prevalence of anxiety (12.3%; $n = 1257$ ); Post-traumatic symptoms of distress were severe and may determine the risk factors for developing mental disorders. The estimated prevalence of mental disorders in nurses is around 21%.
Billings et al., 2021  United Kingdom	Systematic literature review	Healthcare professionals' experiences of working on the frontline during covid-19	Reporting on elevated workloads that impact on psychosocial well-being of healthcare professionals; Healthcare professionals stated that clear, direct and compassionate communication is an important factor influencing the phenomenon of mental disorders.
Cabarkapa et al., 2020  Australia	Systematic literature review	The psychological impact of covid-19 on frontline healthcare professionals	Suicidal ideation in 6.5% of healthcare professionals, 34% with mild and 6.2% with severe mental health disturbances; being a nurse and female represents a higher risk for mental challenges (higher levels of fear and psychological morbidity).
Carmassi et al., 2020  Italy	Systematic literature review and meta-analysis	Post-traumatic stress disorder symptoms in healthcare workers facing the coronavirus outbreaks	One in six healthcare professionals has developed a significant mental health response; stress symptoms related to physical symptoms; maladaptive coping strategies result in worse outcomes of mental health in healthcare professionals.
Fernandez et al., 2020  Australia	Systematic literature review	Implications for covid-19 and nurses' experiences in acute care hospital settings	Social interactions can reduce stress and anxiety; rapidly changing advice and knowledge about the contagion increased the stress levels; inadequate training in caring for covid-19 patients elevates burnout.
Hooper et al., 2021  Ireland	Systematic literature review	Preventing psychological impact and positive mental health domains	Anxiety (30%), burnout (28%) and post-traumatic stress disorder (13%); increased working hours were directly related to anxiety levels; pre-existing psychiatric disorders before the pandemic are associated with high levels of depressive symptoms; lower support and job stress are directly related to emotional exhaustion.
Krishnamoorthy et al., 2020  India	Systematic literature review and meta-analysis	Prevalence of psychological morbidities among healthcare professionals	Poor sleep quality (40%), stress (34%), mental distress (34%), insomnia (30%); severe shortage of personal protective equipment has been detected.
Luo et al., 2020  China	Systematic review and meta-analysis	Impact of coronavirus disease on healthcare professionals	Risk factors for higher psychological impact were substantially similar among all healthcare professionals; pre-existing psychological conditions were found to have a greater impact on healthcare professionals, fear and frustration being the most common.
Monteiro da Silva et al., 2020  Brazil	Systematic literature review and meta-analysis	Psychological effects caused by the covid-19 pandemic	Higher prevalence of mental health disorders, mainly due to stress, insomnia, fear of the disease and infectiousness; warning about not neglecting the mental health of healthcare professionals by age because of work experience.
Muller et al., 2020  Norway	Systematic literature review	Impact of covid-19 pandemic on healthcare professionals	A 46% prevalence of anxiety, 41% of distress, and 30% of insomnia; widespread symptoms show a direct link between mental health and decreased appetite, digestive problems and fatigue, as well as sleep quality and other cognitive functions.
Sahebi et al., 2021  Iran	Systematic literature review and meta-analysis	The prevalence of anxiety and depression among healthcare workers during the covid-19 pandemic:	Anxiety among healthcare professionals during the covid-19 pandemic was 24.94%; an evaluation of risk factors for psychological disorders such as anxiety and depression among healthcare professionals in order to equip them with practical coping strategies.

<i>Author, year, country/ Avtor, leto, država</i>	<i>Research method/ Raziskovalna metoda</i>	<i>Research purpose/ Namern raziskave</i>	<i>Key findings/ Ključne ugotovitve</i>
Sanghera et al., 2020  United Kingdom	Systematic literature review and meta-analysis	Mental health of healthcare professionals during the pandemic	Prevalence of mental health outcomes: anxiety 12.3–35.6%; acute stress reaction 5.2–32.9%, insomnia 33.8–36.1%, and occupational burnout 3.1–43.0%; high prevalence of insomnia and sleep deprivation in nurses.
Shaukat et al., 2020  Pakistan	Systematic literature review	Impact of covid-19 on healthcare professionals	Findings suggest high levels of stress, anger, fear, insomnia in healthcare professionals; female nurses were more affected by mental health consequences; the consequences show increased emotional disturbance, uncertainty and stigmatisation of the pandemic.
Vizheh et al., 2020  Iran	Systematic literature review	The mental health of healthcare professionals	Prevalence of anxiety 24.1–44.6%, stress 30–38%; 63% of healthcare professionals reported experiencing mental disturbance (burnout, fear, frustration, sleep deprivation or low quality of sleep); mental disturbances were more common in nurses compared to the physicians.

*Legend/Legenda: % – percentage/odstotek; n – number/število*

the provision and inadequacy of personal protective equipment. On the other hand, Krishnamoorthy et al. (2020) report social support of almost 50% for those on the frontline of managing the pandemic. Yet, only 19.6% reported receiving psychological counselling.

## Discussion

Due to the widespread occurrence of the disease and the increased number of deaths, nurses and physicians are usually found to experience a higher psychological burden during pandemics. Frontline healthcare professionals show a significantly higher prevalence of psychological problems compared non-frontline workers. Familiarity with the virus, lack of training in dealing with outbreaks, and constantly changing infection control measures have been associated with low self-efficacy and higher stress levels (Sahebi et al., 2020; Simms, Fear, & Greenberg, 2020). Nurses and physicians consistently report several risk factors that increase in such highly lethal outbreaks, such as the frequent unpredictability of daily caseloads, frequently caring for multiple patients and dealing with unexpected critical cases, high-demand and low-control situations related to working conditions (Gorini et al., 2020; Pouralizadeh et al., 2020).

The fact that we have attempted to provide the first comprehensive review of the burden of mental disorders during the covid-19 pandemic among nurses and physicians represents a significant advantage of this literature review. There has been a lack of such studies in countries other than China and Italy. People under lockdown should be counselled on stress management methods and coping strategies. Employment organisations should be able to provide effective and protective mental health support. Poor communication with management and feeling underappreciated were most commonly represented among healthcare professionals. Many participants highlighted unfavourable working

conditions, such as working hours, environment and under-staffing, as the causes of work stress, which had a negative impact on their professional engagement (Krishnamoorthy et al., 2020). Muller et al. (2020) report on work disengagement of nurses and physicians, some even considering leaving their profession. Stable mental health of nurses also depends on the availability and provision of adequate personal protective equipment, which would prevent them from becoming physically infected or transmitting infections to others.

Coping with the pandemic without adequate protective equipment can severely affect the mental health status of nurses and physicians in terms of safety (Simms et al., 2020; Zhou et al., 2020). The results of our examination of mental health predictors show that separation distress and emotional symptoms were associated with poorer mental health and coping skills. Symptoms of mental distress were more severe in healthcare professionals than in the general population. The main findings of our review show that nurses and physicians have a high prevalence of mental health disorders, most commonly anxiety and sleep deprivation (Allan et al., 2020). It is important to promote the psychological well-being of nurses and physicians to improve their mental health status (Daugherty et al., 2020; Vindrola-Padros et al., 2020). These results also support previous studies suggesting that in health crisis situations men may suffer longer-term psychological harm. One possible explanation would be that men tend to recognise or experience distress later than women (Gorini et al., 2020). It seems that mental health disorders can affect patient care and consequently increase treatment costs. There is a lack of evidence-based interventions and prevention strategies to prevent mental health disorders in nurses and physicians during pandemics (Luo et al., 2020).

A strong collegial relationship was significantly associated with better coping skills among frontline nurses and physicians. As collaboration can be defined

as an act of cooperation in order to be effective, it needs to take place in an atmosphere of mutual trust and respect (Karlsson & Fraenkl, 2020; Li et al., 2020). It is important to provide sufficient resources in the form of mental health counselling, as well as personal protective equipment to effectively alleviate anxiety, stress and depression among nurses and physicians (Li et al. 2020). This literature review found a satisfactory number of studies that met the inclusion criteria. In future searches, it would be advisable to focus on older literature related to other health crises. It is important to conduct more cohort studies to track the pattern of mental health symptoms at different time points of pandemics and to understand long-term impacts of pandemics or epidemics among nurses and physicians. The analysis is limited to three aspects, namely the occurrence of mental health disorders among nurses and physicians, their ways of coping with mental health disorders, and the impact of the pandemic on their mental health. However, questions remain regarding the differences in the ways of coping with mental health disorders, the duration and adaptation to mental disorders, as well as absenteeism and rehabilitation in the post-pandemic period. Further cross-sectional studies would help address the problem of mental disorders and conceptualise solutions to the problem of maintaining optimal mental health among nurses and physicians in clinical setting.

## Conclusion

This literature review highlights the urgent need for further research, including more extensive follow-up investigation of mental disorders. The review shows a relatively high prevalence of anxiety among nurses and physicians. Preventive measures should include shorter shifts, recruitment of new staff and mental health support mechanisms. Risk factors could be reduced through social support and protective interventions. To continue providing high quality patient care, nurses and physicians need to receive psychosocial support in order to protect their mental well-being. Age and pre-existing chronic conditions make a person more vulnerable to the effects of a pandemic. Future studies should address the link between these factors and mental health outcomes. The covid-19 pandemic has taken a severe psychological toll on nurses, physicians, as well as the general public. Psychological interventions are therefore urgently needed. Future studies should aim to increase the effectiveness of psychological interventions among healthcare professionals with mental health problems.

## Conflicts of interest/Nasprotje interesov

The authors declare that no conflict of interest exists./Avtorja izjavljata, da ni nasprotja interesov.

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The study received no funding./Raziskava ni bila finančno podprta.

## Ethical approval/Etika raziskovanja

The study required no special authorisation from the ethics committee. The study was conducted in accordance with the principles of the Helsinki-Tokyo Declaration (World Medical Association, 2013) and the Code of Ethics for Nurses and Nurse Assistants of Slovenia (2014)./Raziskava ni potrebovala posebne dovoljenja komisije za etiko. Raziskava je pripravljena v skladu z načeli Helsinško-tokijske deklaracije (World Medical Association, 2013) in s Kodeksom etike v zdravstveni negi in oskrbi v Sloveniji (2014).

## Author contributions/Prispevek avtorjev

The first author, under the mentorship of the second author, prepared the conceptual design, a selective overview of the literature, data processing and the evaluation and justification of the results. The second author participated in directing the contents of theoretical work and directed the contents of the theoretical part, confirmed the methodology and evaluated the displayed results./Prvi avtor je pod mentorstvom drugega avtorja pripravil idejno zasnovo, selektivni pregled literature, obdelavo podatkov ter evalvacijo in utemeljitev rezultatov. Soavtorica je sodelovala pri usmerjanju vsebine teoretičnega dela, usmerjala je vsebine teoretičnega dela, potrdila metodologijo ter evalvirala prikazane rezultate.

## Literature

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