Revista Românească pentru Educație Multidimensională
ISSN: 2066-7329 | e-ISSN: 2067-9270
Abstracting & Indexing | Clarivate Analytics - Web of Science (WoS); EBSCO; Google Scholar; ICI Journals Master List - Index Copernicus; Ideas RePeC; Econpapers; Socionet; CEEOL; Philpapers; KVK; WorldCat; CrossRef; J-GATE

2025, Volume 17, Issue 1, pages: 547-587 | https://doi.org/10.18662/rrem/17.1/965
Submitted: November 17, 2024 | *Accepted for publication:* February 14, 2025

Nursing Mental Health Issues: Prospective Pathways Forward from a Comprehensive Review of Impacts Before and Throughout COVID-19

Rudina ÇERÇIZAJ[1,*]
Fatjona KAMBERI[2]
Emirjona KIÇAJ[3]
Vasilika PRIFTI[4]
Sonila QIRKO[5]
Liliana ROGOZEA[6]

[1] Faculty of Medicine, Transylvania University of Brasov, Romania; Faculty of Health, University of Vlore "Ismail Qemali", Albania, https://orcid.org/0009-0005-0748-2692
[2] Faculty of Health, University of Vlore "Ismail Qemali", Albania, https://orcid.org/0000-0003-4793-9384
[3] Faculty of Medicine, Transylvania University of Brasov, Romania; Faculty of Health, University of Vlore "Ismail Qemali", Albania
[4] Faculty of Medicine, Transylvania University of Brasov, Romania; Faculty of Health, University of Vlore "Ismail Qemali", Albania
[5] Faculty of Medicine, Transylvania University of Brasov, Romania; Faculty of Health, University of Vlore "Ismail Qemali", Albania
[6] Faculty of Medicine, Transylvania University of Brasov, Romania.
[*] corresponding: rudina.cercizaj@unitbv.ro , rudina.cercizaj@univlora.edu.al

Abstract: *Nurses face significant challenges, including long shifts and heavy workloads, which can negatively impact their mental health, contributing to depression, anxiety, burnout, and fatigue. These factors make nurses more vulnerable to mental health difficulties compared to the general population. We conducted a systematic review to assess the mental health effects of nursing work before and throughout the COVID-19 pandemic, the contributing factors, and potential solutions. Our search of Pub Med, Medline, Scopus, Elsevier, Frontiers, and Psych Info databases included studies from 2004 to 2023, resulting in 35 studies: 22 focused on COVID-19, two on SARS, one on MERS-COV, one on nurses' mental health before and throughout the pandemic, and 10 on non-epidemic periods. Common mental health symptoms found in the analysis included anxiety, stress, PTSD, depression, burnout, and sleep difficulties. Risk factors included caring for patients with COVID-19, working in high-risk departments, heavy workloads, lack of resources, long shifts, and being female. Additional factors, such as inadequate training, societal support, and marital status, also played a role. During the COVID-19 pandemic, nurses faced heightened mental health issues compared to prior periods. Proper psychological support is essential to equipping nurses for the challenges ahead. This article emphasises the need for enhanced mental health strategies targeted at nurses in emergency and everyday healthcare settings, offering recommendations for policymakers to create more supportive work environments.*

Keywords: *nurse, mental health, COVID-19, systematic review, before-after pandemic.*

How to cite: Çerçizaj, R., Kamberi, F., Kiçaj, E., Prifiti, V., Qirko, S., & Rogozea, L. (2025). Nursing mental health issues: prospective pathways forward from a comprehensive review of impacts before and throughout COVID-19. *Revista Românească pentru Educație Multidimensională, 17*(1), 547-587. https://doi.org/10.18662/rrem/17.1/965

Introduction

Nursing has become increasingly demanding in recent years as nurses face significant challenges in their professional roles and personal well-being. The World Health Organization (WHO) officially classified burnout as an "occupational phenomenon" in the updated ICD-11 codes. Even before the global pandemic, nursing was recognized as a challenging profession. The high turnover rate among nurses, many of whom leave the profession within a few years, highlights critical issues such as excessive job stress, heavy workloads, and inadequate support from institutions (WHO, 2019).

The COVID-19 pandemic exacerbated these challenges to an unprecedented degree. Before the pandemic, nursing staff had faced outbreaks of infectious diseases, including SARS in 2003, MERS-COV in 2012, and the global pandemic, which began in December 2019 (Koh & Goh, 2020). Consequently, nurses found themselves at the forefront of a rapidly escalating global health crisis, which significantly affected their mental health. Research conducted in 2020 revealed that nearly 80% of nurses reported notable changes in their mental health during the pandemic, with their well-being deteriorating more sharply than that of the general population (Melnyk et al., 2022).

The mental health of nurses has become a public health issue, as it directly influences the quality of care they provide. Studies indicate that anxiety, burnout, and emotional exhaustion are prevalent among nursing staff, leading to adverse physical and psychological outcomes (Muller et al., 2020). The emotional burden of witnessing patient deaths, managing the emotional needs of families, and dealing with workplace stressors such as discrimination and conflicts with colleagues all contribute to declining mental health (Makhaita et al., 2014).

The COVID-19 pandemic introduced unparalleled challenges across the globe. Nurses were required to manage many patients needing intensive care, often without sufficient personal protective equipment (PPE). This overwhelming demand and an already stretched healthcare workforce led to extended working hours, heavier workloads, and more stress. The situation fostered an environment marked by fear, uncertainty, and psychological strain, further affecting nurses' mental and physical well-being (Arnetz et al., 2020; Shechter et al., 2020).

A global shortage of 18 million health personnel by 2030 is projected by the WHO, with low- and middle-income settings predicted to be the hardest hit (Muller et al., 2020). This shortage, coupled with the ongoing mental health challenges faced by nurses, calls for urgent action to provide adequate mental health support within the profession. While some

psychosocial interventions have been introduced to address these concerns, their effectiveness remains uncertain (Gaskell et al., 2023).

Literature review

Nurses' mental health has long been a source of worry owing to the profession's high stress and emotional demands. Before the COVID-19 pandemic, research indicated that nurses frequently experienced elevated levels of stress, burnout, and anxiety. Demanding emotional workloads and poor support networks all contributed significantly to these mental health issues (De Hert, 2020). Burnout, in particular, was a widespread problem, contributing to physical and psychological tiredness, depersonalisation, and decreased job satisfaction (Maslach & Leiter, 2016).

The beginning of the COVID-19 outbreak worsens preexisting issues. The overwhelming volume of patients, the risk of infection, and the emotional load of caring for critically ill people produced unprecedented stress for healthcare personnel, particularly nurses (Liu et al., 2020; Pappa et al., 2020). Concerns about getting COVID-19 and threats to personal safety exacerbated nurses' panic, hopelessness, and post-traumatic indicators (Spoorthy et al., 2020). Okechukwu et al. (2020) found that nurses experienced significantly higher levels of stress, anxiety, and depression during the pandemic, which was widespread, with frontline workers being particularly vulnerable.

Wang et al. (2020) found that the emotional pressures of providing nursing care throughout the pandemic were linked to increased burnout and deteriorating mental health. The outbreak also exposed deficiencies in the mental health services accessible to nurses. While many healthcare institutions attempted to provide extra services such as counselling and peer support, the research found that these efforts were frequently insufficient or underutilised (Shaukat et al., 2020) Nurses recognized the need for increased mental health resources to help manage and cope with the intense stress they experienced throughout the pandemic. The growing body of research highlights the urgent need for proactive mental health interventions for nurses, particularly during pandemic crises. Supporting healthcare professionals' mental well-being is crucial for their health and the healthcare system's resiliency. Increased stress on nurses during the pandemic indicates the need to monitor their mental health during every period of the crisis. However, there is still a gap in comprehensive reviews that address mental health challenges throughout a nurse's career and prevention strategies. The purpose of this comprehensive research was to evaluate the psychological impact of COVID-19 on nurses, identify key contributing factors, and explore potential pathways for nurses in future crises, examining both the pre- and during-pandemic eras.

Methodology

To assess international research on the mental health status of nursing staff, we conducted a thorough systematic literature review emphasizing the years leading up to and during the COVID-19 pandemic. Our search focused on two distinct periods: 2020-2023, covering the pandemic era, and 2004-2022, representing the pre-pandemic phase. To identify pertinent studies, we conducted an electronic database search using keywords like "nursing," "mental health outcomes," "pre-COVID-19," "mental health status," and "during COVID-19". The search was performed between October 2022 and March 2023, covering databases such as PubMed, Medline, Scopus, Elsevier, Frontiers, and PsycINFO. The review followed the PRISMA guidelines, including all relevant studies after a thorough full-text review. Additionally, (Table 1), we checked the references of the selected articles to ensure we captured all pertinent research that met our inclusion criteria.

Table 1. The defined criteria for study selection

Category	Inclusion Criteria		Exclusion Criteria
Publication Date	Before COVID-19:	No limits	-
	During COVID-19:	January 2020 - March 2023	Before January 2020 & after March 2023
Study Design	Before COVID-19:	Studies: -Cross-sectional; -Qualitative; -Observational; Studies that report on the mental health status of nursing staff and various related impact indicators.	-Case-control; -Review; -Experimental; -Preprints; -Protocols; -Conference abstracts/proceedings.
	During COVID-19:		
Population	Before COVID-19:	Nurses.	Medical staff; Technical staff; Healthcare workers.
	During COVID-19:		
Language	Before COVID-19:	Publications in English.	Publications in other languages.
	During COVID-19:		
Findings/ Outcomes	Before COVID-19:	Reported psychological outcomes such as depression, stress, anxiety, distress, fear, stigma, and sleepdisorders, burnout, Post-Traumatic Stress Disorder, and resilience.	Mental health problems such as psychotic disorder.
	During COVID-19:		

To ensure the inclusion of high quality and sufficiently powered research, studies were required to have a minimum of 559 articles in both study periods. After thoroughly examining the references from both periods and taking the criteria indicated in Table 1, thirty-five studies were chosen that satisfied the established criteria. As shown in the PRISMA flow chart (Figure 1), duplicates and abstracts were removed, leaving only full-text articles for final analysis.

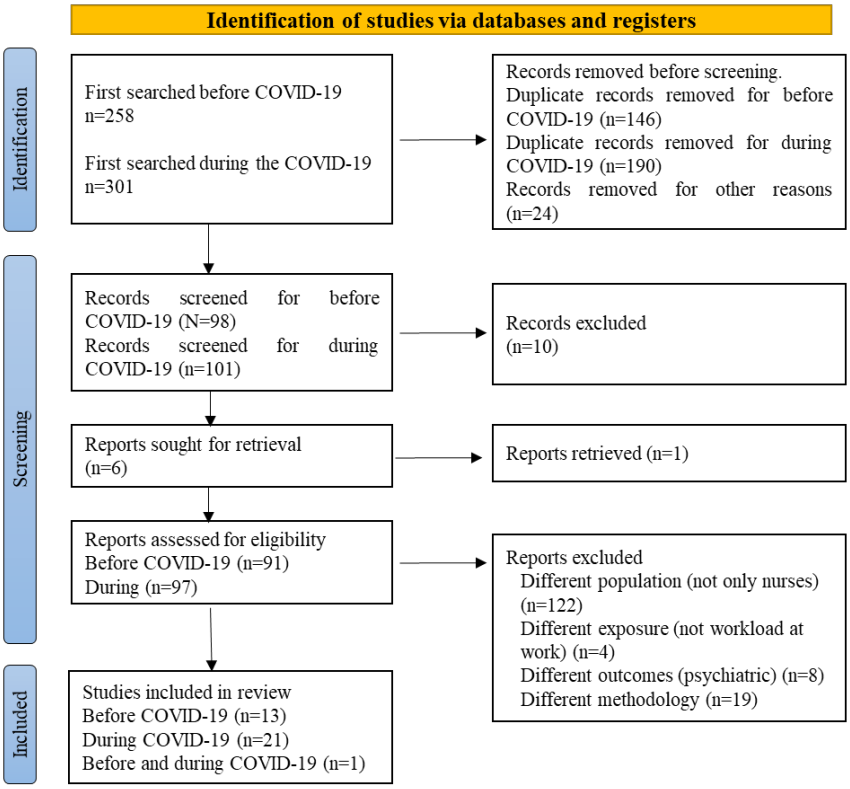

Figure 1. PRISMA flow chart showing included and excluded studies

Data Analysis

The evaluation adhered to PRISMA standards. Initially, 559 publications were reviewed from two different periods. After applying the established selection criteria, 35 studies were evaluated. The process involved assessing each study's relevance to the research issue of nurses' mental health, ensuring methodological accuracy, and evaluating study quality. It is highlighted that Nagel & Nilsson (2022) conducted a significant

study in Sweden that examined pandemic-related mental health patterns before and during the pandemic. The final process was documented using a PRISMA flowchart, ensuring transparency and reproducibility.

Results

The main findings of the 35 studies identified different mental health stressors, categorized in Table 2 based on the clinical setting and study period.

Table 2. The main mental health stressors identified in the selected studies

Mental Health Stressors		Clinical Setting	Study Period
Depression	Depression; Depressive symptoms; Back depression inventory	Hospital nurses' Frontline nurses Emergency department Intensive care units	Prior to COVID-19 & throughout the COVID-19 pandemic
Anxiety	Anxiety		
Stress	Stress: Post-traumatic stress disorders, Distress, Perceived stress scale, Hospital job stress, psychological distress		
Burnout	Job-related stress, Mental stress Burnout, Personal burnout, Exhaustion, Emotional exhaustion, Depersonalization, Personal accomplishment, Professional efficacy, Cynicism		
Insomnia	Self-reported Insomnia, Quality of sleep, Sleep disturbance		
Other	Mental health, Resilience, Prevalence, Fear, Psychological disorders, psychological symptoms, Threat of COVID-19, Somatic symptoms, Healthy lifestyle behaviors, Mental disorders, Stigma, Hardiness, State of anger		

Table 3 outlines 22 studies exploring the psychological difficulties nurses encountered throughout the COVID-19 pandemic. These studies included frontline nurses (59.1%) and those in general healthcare settings. The studies are listed alphabetically by the first author's last name, ensuring consistency and ease of reference. Thirteen thousand two nurses (40.6% of

the total sample) participated in these studies. The research emphasizes the mental strain that the pandemic has imposed on nurses, with numerous studies suggesting that essential interventions include mental health support programs, reducing workloads, and implementing resilience training.

Table 4 includes 13 studies that provide a pre-pandemic baseline for nurses' mental health. Among these, ten studies (28.4%) were conducted in non-pandemic periods, examining workplace stress, burnout, and mental well-being. Additionally, two studies (5.8%) focused on the SARS outbreak (2003), and one study (2.9%) investigated the MERS-COV pandemic (2012-2015). In one study, Nagel & Nilsson (2022) (2.9%) assessed nurses' mental health pre and post pandemic COVID-19, appearing in both tables. Nineteen thousand thirteen nurses (59.4% of the total sample) participated in these studies. The findings reveal pre-existing mental health challenges and provide essential comparisons with the COVID-19 period, offering insights into the evolving impact of pandemics on nurses' psychological well-being

Table 3. Characteristics and Key Findings of Studies Included in the Review: Studies Conducted Throughout COVID-19

Author, publication year, and country	Objective	Sample characteristics	Main Findings	Recommendations
Bhandari et al., 2022 *Nepal*	*Nurses working in COVID-19 hospitals: An evaluation of stress, anxiety, and depression.*	320 *hospital nurses* *69.1% Female*	**Depression** 85.72% *34% mild* *4.31% moderate* *4.31% severe* *0.99% extreme* **Stress** 49.84% *35.54% mild* *12.29% moderate* *1.99% severe* **Anxiety** 62.80% *8.97% mild* *43.18% moderate* *33.55% severe* *10.63% extreme*	*It would be useful for health institutions to assess the mental health status of nurses on an ongoing basis* *Reduce the workload* *Establishing psychological support programs for health personnel*

Gázquez Linares et al., 2021 *Spain*	*How nurses have coped with the pandemic and its impact on their mental health.*	351 frontline nurses *86%Female*	**Perception of threat from COVID-19** 32.95±6.27 **Somatic symptoms** 9.64±4.82 **Anxiety/insomnia** 10.61±5.00 **Social function** 8.02 ±3.20 **Depression** 2.21±3.42	*Putting policies and psychoeducational initiatives in place to help nurses' mental health.*
Hu et al., 2020 *China*	*Determining mental health issues, frontline nurses are affected by burnout, anxiety, depression, and fear.*	*2,014 frontline nurses* *87.1%Female*	**Burnout - Emotional exhaustion** 23.44±13.8 **Depersonalization**6.77±7.05 **Personal accomplishment** 34.83±9.95 **Anxiety***47.80±11.20* **Depression** *50*.50±11.31 **Fear** 30.41±7.60 **Resilience**26.14±7.33	*It is recommended to address the challenges faced by frontline nurses and strengthen social support through increased collaboration among colleagues.*

Kakemam et al., 2021 *Iran*	*To ascertain the level of burnout experienced by nurses while providing care for COVID-19 patients.*	*1,004 hospital nurses* *74.3%Female*	**Burnout** ***Emotional exhaustion*** *25.94 ±15.33* *Low 43.0%* *Moderate 21.7%* *High 48.3%* ***Depersonalization*** *8.30±7.43* *Low 52.1%%* *Moderate 22.0%* *High 25.9%* ***Personal accomplishment*** *29.39±10.41* *Low 23.2%* *Moderate 20.8%* *High 56.0%*	*Support from a psychologist in the following ways:* *Online resources and assistance lines for enhancing self-care practices and providing mental support.*
Karanikola et al., 2022 *Cyprus*	*Assessment of the relationship between stress reactions and psychosocial risks in nurses who treat COVID-19.*	*233frontline nurses* *63.1% Female*	**25.7%** of individuals exhibit clinical work-related trauma symptoms **Emotional exhaustion** 7.33± 2.29 **Distress** 6.98 ±2.69 **Mental health**	*Assisting medical staff in the workplace due to the increased workload experienced by nurses with COVID-19 during the pandemic.*

			1.012±0.930 **Resilience** 4.353±0.564	
Labrague et al., 2021 *Central Philippines*	*Assessing the relationship between absenteeism, mental health, resilience, discrimination, and nurses'perceptions of COVID-19.*	*259 frontline nurses* *74.5% Female*	**Mental health** 1.012±0.930 **Resilience** 4.353±0.564	*Hospital administrators should take action to improve frontline nurses' mental health and the detrimental effects of discrimination.*
Mao et al., 2023 *China*	*To figure out how mental wellness has been compromised and what factors are contributing to it.*	*740 hospital nurses* *100% Female*	**Anxiety** 7.9 % *Moderate 0.7%* *Severe 0.7%* *Mild 31.6%* **Depression** 17.8%, *Moderate 10%* *Severe 7.8%* *Mild 41.9%* **Insomnia** 17.35 % **PTSD** higher level	*In order to prevent burnout, hospitals should lower anxiety, increase support, and foster resilience, particularly for nurses who work 40 hours a week, hold senior positions, or work in low-risk units. Long-term research is required to validate the burnout connection.*

Marcomini et al., 2021 *Italy*	*Finding out how many nurses are experiencing PTSD and what is causing it in the COVID hospital.*	*275 hospital nurses* *76.30% Female*	**Post-Traumatic Stress Disorder**(PTSD) *39.88% provisional PTSD diagnosis* *19.65% of initial symptoms are associated with psychological distress* **Impact of Event Scale-Revised scale** *1.49 Avoidance* *1.55 Intrusion* *1.32 Hyperarousal*	*To evaluate the effect of these interventions on the mental health of healthcare workers, more research is required.*
Martínez-Ponce et al., 2023 *Mexico*	*Incidence of stress, anxiety, and depression in nurses as well as the variables linked to these conditions during the COVID-19 pandemic.*	*116 frontline nurses* *77.6% Female*	**Depression** 56.03% *Mild 9%* *Severe 10%* *Extremely 32%* **Anxiety** 78.48% *Mild 15%* *Severe 8%* *Extremely 40%* **Stressed** 84.48% *Mild 8%* *Severe 16%* *Extremely 52%*	*Address stress, anxiety, and depression symptoms among nurses with suitable strategies.*

Melnyk et al., 2022 *United States of America*	*The effects of COVID-19 on overall well-being, and healthy lifestyle during the pandemic.*	*264 frontline nurses* *89.0%Female*	**Depression:**29.5% **Anxiety:**37.5% **Stress:**78.5% **Burnout:** 65.5% **Physical well-being:** 74.6% **Mental well-being:** 80.7% **Workplace support:** 38.5%, and 52.6% for "not at all/a little"	*Better working conditions and increased psychological support help nurses' mental and physical health. establishing a constructive atmosphere at work.*
Mohamadzadeh Tabrizi et al., 2022 *Iran*	*To explore the connection between nurses' quality of life and anxiety related to COVID-19.*	*1,131* *Surgery nurses* *75.2%Female*	**Anxiety** 17.8 ±10 *Mild 53.2%* *Moderate 33.4%* *Severe 13.45* **Psychological symptoms** 12.8±5.7 *Mild 35.1%* *Moderate 47.1%* *Severe 44.2%*	*It is thought that implementing these steps will contribute to better nursing system management procedures. Discussing the situation and providing nursing support. Establishing an appropriate setting for nurses to carry out their work. Creating incentive programs that work. Modifying the management of nurses' work schedules to lessen anxiety.*
Murat et al., 2021 *Turkey*	*Assess burnout and other indicators related to*	*705frontline nurses*	**Perceived Stress Scale** 31.4 ± 8.7	*It would be crucial to plan psychological interventions for*

	COVID-19.	*79.0% Female*	**Beck Depression Inventory** 16.0 ± 9.4. **Burnout** 11.4 ± 5.0 **Depersonalization** 7.3 ± 4.5 **Emotional exhaustion** 18.9 ± 8.5	*pandemics in the future. conducting additional research with nursing staff who have long been involved in caring for patients with COVID-19.*
Nagel & Nilsson, 2022* *Sweden*	*To investigate how job-related factors influenced nurses' mental health before and during health emergency crises.*	*3107 midwives, or nurse* *90.5% Female*	**Exhaustion/Stress** 26.4% **Depression/Anxiety** 10.2%	*Future studies should analyze how COVID-19 affects nurses' lives and confirm its link to burnout.*
Ohue et al., 2021 *Japan*	*The impact of COVID-19 on nurses' mental health who performed care among infected patients, as well as contributing factors.*	*56 hospital nurses* *87.5% Female*	**Post-Traumatic Stress Disorder** *Normal 33.9%* *Mild 41.1%* *Moderate 16.1%* *Severe 8.9%* **Depression** *Normal 53.6%*	*Establishing community and psychological support networks to equip nurses to handle challenging circumstances.*

			Mild 26.8% *Moderate 12.5%* *Severe 7.1%* **Anxiety** *Normal 53.6%* *Mild 25%* *Moderate 14.3%* *Severe 7.1%* **Burnout** **Exhaustion** *Normal 26.8%* *Low 35.7%* *High 37.5%* **Cynicism** *Normal 32.1%* *Low 35.7%* *High 32.1%* ***Professional efficacy*** *Normal 25%* *Low 58.9%* *High 16.1%*	

Pouralizadeh et al., 2020 Iran	*Mental problems to nurses*	*441 hospital nurses* *95.2% Female*	**Generalized Anxiety Disorder-7 total scores** 8.64 ± 5.60 *26.5% No anxiety* *34.7% Mild* *19.7% Moderate* *19.0% Severe* **Patient Health Questionnaire-9 total scores** 8.48 ± 6.19 *29% - None to minimal* *33.6% - Mild* *20.0% - Moderate* *10.7% - Moderately severe* *6.8% - Severe*	*Hospital managers should implement ongoing monitoring and support to address the COVID-19 pandemic's effects on the mental health of healthcare workers.*
Sarboozi Hoseinabadi et al., 2020 *Iran*	*Find out how much burnout there is and what influences frontline nurses and nurses from other wards.*	*245 frontline and non-frontline nurses* *45.7% Female*	**Burnout -** 2.57 **COVID-19-related job stress -** 3.07 **Fear -** 6.08 ***Exposure to COVID-19*** ***Burnout****- 2.61±0.27* ***Job stress****- 3.22* ***Fear*** *- 6.29* ***Non-exposure to COVID-19*** ***Burnout****- 2.51±0.23*	*Preparing assistance by developing programs to help professionals manage burnout and deal with comparable circumstances.*

			Job stress- *2.85* ***Fear***- *5.75*	
Sharifi et al., 2022 *Iran*	*Evaluation of stress, anxiety, and depression in nurses who have provided COVID-19 patient care.*	*468 frontline nurses* *75.9% Female*	**Depression** 13.56±5.37 and 74.1% *43.7% of individuals experience moderate to severe depression.* **Anxiety** 13.21±4.90 and 89.7% *73% of individuals experience moderate to severe anxiety.* **Stress** 15.13±4.76 and 54.9% *24% of individuals experience moderate to severe stress.*	*Offering psychological assistance to medical personnel.* *Early identification of nurses at risk for mental health problems.* *Reduce the workload.*
Sheikhbardsiri et al., 2021 *Iran*	*To find out how stressed, anxious, and depressed nurses were both before and during the COVID-19 pandemic.*	*320 hospital nurses* *69.1% Female*	**Depression:** 9.18 with a standard deviation of 4.45 **Anxiety:** 10.32 with a standard deviation of 4.85 **Stress:** 9.62 with a standard deviation of 4.94	*Health institutions should regularly monitor nurses' psychological well-being after infectious disease outbreaks* *Nurses' mental health should be improved by implementing psychological support programs.*
Shen et al., 2021 *China*	*Analyzing how COVID-19 affects mental health and sleep issues.*	*643 frontline nurses* *97.8%Female*	**Anxiety** 33.4% *Mild 22%–38%* *Severe 1.2%–2.4%*	*Nurses' mental health awareness can be raised through organizational support and training.*

			Insomnia 41.5% **Stress** 41.4%	
Siam & Alrasheedi, 2022 *Saudi Arabia*	*Burnout among emergency nurses.*	*77 nurses in Emergency Departments* *64.9% Female*	**Burnout** *Personal-burnout* *41.4 ± 16.5* *Moderate* *39±10.* *Client-related burnout 37.8±10.5*	*Finding the variables that influence the likelihood of burnout. Creating initiatives to assist emergency nurses in enhancing their physical and mental well-being.*
Tamrakar et al., 2023 *Nepal*	*Assessing Intensive Care Unit (ICU) nurses' anxiety, depression, and other factors affecting non-COVID-19 patients.*	*99 frontline nurses* *99% Female*	**Depression** *COVID- ICU* *Normal 53.8% Borderline 25% Abnormal 21.2* *Non-COVID-ICU* *Normal 68.2% Borderline 22.7% Abnormal 9.1%* **Anxiety** *COVID ICU* *Normal 26.9% Borderline 36.5% Abnormal 36.5%* Non-COVID *ICU* *Normal 34.1% Borderline 38.6% Abnormal 27.3%*	*Before putting nursing staff in high-pressure situations, hospital administrators should give them training and counseling.*
Vieira et al., 2022 *Brazil*	*To investigate the relationship between critical care nurses' resilience and*	*153 nurses in ICU* *78.4%Female*	**Minor psychological disorders** 54.9%	*Providing a positive environment in the workplace to minimize the occurrence of Burnout in the intensive*

	burnout.		**Burnout** 11.1% ***Emotional exhaustion*** *28.8%* *Low 21.6%* *Moderate 49.7%* *High 28.8%* **Depersonalization** *39.9%* *Low 18.3%* *Moderate 41.8%* *High 39.9%* **Professional exhaustion***28.8%* *Low 24.2%* *Moderate 49.7%* *High 26.1%*	*care nursing team.*

Note: *Nagel et al., 2022 provides data for both the pre-pandemic and pandemic periods and listed in both the "Before" and "During" columns

Table 4. Characteristics and key findings studies included in the review: studies before the COVID-19 pandemic

Author, publication year, and country	Objective	Sample characteristics	Main Findings	Recommendations
Belay et al., 2021 *Ethiopia*	*Identifying the prevalence of psychological issues and contributing factors.*	*282 hospital nurses* *51.1% Female*	**Prevalence of psychological distress** *27.7%* **Social support** *intermediate social support 55.0%* *low social support 23%* *strong social support 22%* **A major problem with sleep** 18.1% *fatigue syndrome 37.9%* *problem with perfectionism 86.5%*	*Supporting the workplace from a social and psychological perspective would be beneficial. Building strategies for relief. Health institutions should be promoted:* • *social support* • *improving working conditions* • *good cooperation between the staff* • *strategies for reducing stress.*

Chen et al., 2005 *Taiwan*	*Determining whether the nursing staff displayed symptoms of despair during the SARS outbreak.* *Evaluate the impact of the workplace on the prevalence of stress in nurses.*	128 hospital nurses *100% Female*	**Stress reaction syndrome** *11%* *high-risk group 17%* *conscripted group10%* *control group2%* *Moderate psychological distress of nurses* *Distress was more prominent in nurses who were working with patients with SARS*	*To provide psychological support, it would be crucial for nurses to be ready to work in high-risk wards and to regularly undergo psychological testing.*
Davey et al., 2019 *India*	*Investigating the degree of stress in nurses; the impact of sociodemographic characteristics, work settings, and stress; and the impact on mental well-being*	*100 hospital nurses* *66% Female*	**Job-related stress** *Mild/ Severe* *89%* *Moderate/severe* *77%* **ICU/emergency stress** *42%* *Medicine 15%* *Surgery 15%* *Nurses 29%*	*To ascertain the factors that lead to stress in the workplace.* *Understanding every aspect of the working environment for nurses will help to reduce stress and boost job satisfaction.*

Havaei et al., 2021 *British Columbia*	*Assessing the frequency of mental health disorders in nurses.*	*3,978 hospital nurses* *not clear % Female*	**Depression 7.6±5.9** Mild 30.9% Moderate 16.9% Moderately severe 9.7% Severe 4.8% **Anxiety 7.1±5.5** Mild 34.4% Moderate 16.3% Severe 12.3% **Post-Traumatic Stress Disorder Syndrome**45.0±18.2. **Burnout** *Emotional exhaustion 28.4±12.9* *Depersonalization 9.2±6.9* *Personal accomplishment 34.3±7.9*	*Support for nurses who are at risk for mental health issues.*
Javadi-Pashaki & Darvishpour, 2019 *Iran*	*Assess the role of stress and determine coping techniques.*	*318 health center nurses* *94% Female*	**Healthy personal** *50%* **Hospital Job Stress** *Moderate stress* *77%*	*For medical personnel to face as few challenges as possible in the future, health facilities should take action to practically train them. Nurses who work*

			Stress 2.5% *Mild* 2.5% *Moderate* 77.0% *Severe* 20.4% **Emotion oriented** 47.09 ±7.99 **Avoidant** 47.097.99	*under pressure, especially those who have mental health concerns, should receive support.*
Kaewboonchoo et al., 2009 *Thailand*	*To evaluate nurses' mental health and the factors that affect it.*	*390 hospital nurses* *100% Female*	***Poor mental health*** *10.3%* ***High job stress*** *41.8%*	*Provide circumstances that will help nurses avoid mental health issues.*
Li et al., 2019 *China*	*To recognize and improve work-related factors that can be changed, which affect sleep quality.*	923 *hospital nurses* *non-clear Female %*	*34.1% of the variation in the participants' sleep quality*	*Enhancing the working environment for nurses would be beneficial. Proper organization of work shifts and distribution of human resources Creating conditions to relieve stress and fatigue creates a productive and psychologically encouraging workplace.*

Marjanovic et al., 2007 *Canada*	*To identify the association among psychosocial characteristics, working environment, and coping mechanisms during the SARS outbreak.*	*333 hospital nurses and primary nurses* *95% Female*	**Emotional exhaustion** *25%* **State anger** *25%* **Avoidance behavior** *26%* **Vigor** *Higher levels 27±34* **Organizational support** *Higher levels 26±0.4*	*Enhancing working conditions to facilitate similar crises as much as feasible fostering a supportive workplace to safeguard nurses' mental health*
Nagel & Nilsson, 2022* *Sweden*	*To investigate the impact of work-related factors on nurses' mental health both before and during the COVID-19.*	*4692 midwives or nurse* *90.4%Female*	**Exhaustion/Stress** *8.1%* **Depression/Anxiety** *5.3%*	*More investigation of the long-term impact of a pandemic on nurses' personal and professional lives*

Park et al., 2018 *South Korea*	*To evaluate the association between psychosocial characteristics, working environment, and coping strategies of nurses during the SARS outbreak.*	187 frontline nurses *100% Female*	**Stigma** *24.6±11.94* **Stress** *19.98± 4.25* **Hardiness** *24.59± 5.37* **Mental health***40.89±9.48* **Indirect stigma on mental health** *19.9%* **Direct stigma on mental health** *51.6%*	*Getting medical staff ready for potential future infectious disease scenarios* *Enhancing working conditions to facilitate similar crises as much as feasible.*
Sonoda et al., 2018 *Japan*	*The impact of stress on nurses' performance in the operating room, and the identification of factors that contribute to it.*	*375 operating room nurses* *96.0%Female*	**Mentally stressed** *30–40%*	*The function of each nurse in the operating room determines the type of differentiated support that is provided.*

Suzuki et al., 2004 *Japan*	*To analyze nurses' mental health and its influence on errors in practice.*	*4,279 hospital nurses* *100% Female*	**Mental health** *In good health 31.2%* *In poor health 68.8%*	*Fostering a supportive workplace to safeguard nurses' mental health.*
Tran et al., 2019 *Vietnam*	*To determine the impact of factors that have produced stress, anxiety, and depression.*	*600 surgery hospital nurses* *77.8% Female*	**Symptoms of one or more mental disorders:**45.3% **Stress, anxiety, and depression:** 7.3% **Prevalence of self-reported:** **Stress: 18.5% of individuals experience it.** **Anxiety: 39.8% of individuals experience it.** **Depression: 13.2% of individuals experience it.**	*Workplace support should be offered to nurses, who suffer from mental health issues, particularly in high-pressure settings.*

Zakaria et al., 2022 *Malaysia*	*Identify the number of cases of burnout, the real hours that are affected, and coping mechanisms.*	*2428 hospital and primary care settings nurses* *non-clear Female %*	**Burnout** **24.4**% High scores in Emotional exhaustion and, Depersonalization or both *Low Depersonalization* 41.6% *High Depersonalization* 4.5% *High Emotional exhausted* 23.9%	*Finding healthcare professionals who are especially susceptible to mental health issues* *Taking proactive steps to change factors that can be changed* *Changes to the Health Service Organization* *Health facilities should take steps to train medical staff practically so they can handle as few obstacles as possible in the future.*

Note: *Nagel et al., 2022 provides data for both the pre-pandemic and pandemic periods and listed in both the "Before" and "During" columns

Discussions

This review examined 35 studies involving 32,015 nurses. Twenty-one studies evaluated nurses' mental health during the pandemic; 13 studied their mental health before the COVID-19 pandemic; and one contrasted nurses' mental health before and throughout the pandemic (Tables 3 and 4).

Stress

Stress was the most often measured indicator of mental health, according to a comparison of many studies. Stress was identified as the most common symptom in eight investigations published before the pandemic and twelve studies conducted during the COVID-19 pandemic. One study examined stress levels before and during the pandemic (Nagel & Nilsson, 2022). Several studies examined acute stress as a symptom (Bhandari et al., 2022; Chen et al., 2005; Marcomini et al., 2021; Martínez-Ponce et al., 2023; Melnyk et al., 2022; Nagel & Nilsson 2022; Park et al., 2018; Sharifi et al., 2022; Sheikhbardsiri et al., 2021; Sonoda et al., 2018); post-traumatic stress disorder (Havaei et al., 2021; Mao et al., 2023; Marcomini et al., 2021; Ohue et al., 2021) distress, perceived stress scale, hospital or job stress (Shen et al., 2021).

A study conducted in Sweden looked at stress levels in the same population pre and throughout the COVID-19 outbreak, emphasising that nurses faced significant workloads and stress, with 26.4% experiencing stress compared to 8.1% prior (Nagel & Nilsson, 2022).

The prevalence of stress during the pandemic ranged from 26.4% to 84.48%, per multiple studies (Martínez-Ponce et al., 2023; Nagel & Nilsson, 2022). The prevalence of stress in 2020 exceeded that of pre-pandemic times (2.5%–40%) (Javadi-Pashaki & Darvishpour, 2019; Sonoda et al., 2018). It is essential to mention that before the pandemic, studies were conducted to evaluate the stress levels experienced by healthcare workers at their workplaces. One study revealed that 89% of nurses worked under stressful conditions, particularly in units with a high workload, such as ICUs and emergency departments (Davey et al., 2019). Mental health issues have been exacerbated during the pandemic, with stress being one of the most common problems reported. Research has shown that stress levels during the pandemic have been higher than during the SARS outbreak. Healthcare professionals actively involved in caring for COVID-19 patients experience a heightened level of stress (Karanikola et al., 2022; Martínez-Ponce et al., 2023; Sharifi et al., 2022; Shen et al., 2021). The growing number of infected patients (Ohue et al., 2021), working in high-risk wards (Karanikola et al.,

2022; Marcomini et al., 2021; Martínez-Ponce et al., 2023; Nagel & Nilsson, 2022), working long shifts (Melnyk et al., 2022), and working night shifts (Shen et al., 2021) are some of the factors that contribute to increased stress (Bhandari et al., 2022; Chen et al., 2005; Karanikola et al., 2022; Martínez-Ponce et al., 2023; Melnyk et al., 2022; Park et al., 2018; Sharifi et al., 2022; Shen et al., 2021).

During the pandemic, work experience (Chen et al., 2005), being single (Sheikhbardsiri et al., 2021), a lack of protective gear, a high workload, and fatalities are additional factors that contributed to increased stress among nursing staff. Family isolation also increases stress (Bhandari et al., 2022) and the use of procedures like intubation and ventilation (Marcomini et al., 2021). Nursing staff members who have high levels of PTSD also experience more anxiety and depression (Mao et al., 2023).

High workloads (Davey et al., 2019), low pay, working in high-risk teams (Gázquez Linares et al., 2021), and workplace conflicts (Tran et al., 2019) were among the stressors that nurses had to deal with before the pandemic. According to Sonoda et al. (2018) and Kaewboonchoo et al. (2009), lack of work experience and advanced age were also contributing factors (Tran et al., 2019). Stigma can also affect stress by negatively affecting nurses' mental health (Bhandari et al., 2022; Park et al., 2018; Sonoda et al., 2018).

Depression

Sixteen studies evaluated depression symptoms, 14 of which were carried out during the pandemic. These pandemic-era studies include those by Gázquez Linares et al. (2021), Martínez-Ponce et al. (2023), Nagel & Nilsson (2022*),* Ohue et al. (2021), Pouralizadeh et al. (2020), Sharifi et al. (2022), Sheikhbardsiri et al. (2021), Tamrakar et al. (2023), and Murat et al. (2021), as well as those by Melnyk et al. (2022) and Mao et al. (2023). Two studies were conducted before the pandemic (Tran et al., 2019; Havaei et al., 2021), and one research study in Sweden examined nurses' mental health before and throughout the pandemic (Nagel & Nilsson, 2022). The percentage of the of depression among nurses population ranged from 10.2% (Nagel & Nilsson, 2022) to 85.72% (Bhandari et al., 2022). In one study, 43.7% of nurses were diagnosed with moderate to severe depression. It is interesting to note that nurses who worked in intensive care units with patients who had COVID-19 and nurses who worked in intensive care units with patients who did not have a significantly different prevalence of depression (Tran et al., 2019). Gender was identified as an important determinant of depression. Research from two studies indicated that

depression rates were more common among unmarried women (Pouralizadeh et al., 2020; Sheikhbardsiri et al., 2021). Marital status was also found to be a factor, as being married was a protective element in the prevention of depression (Mao et al., 2023). Factors such as the work environment, working under pressure, a workload of more than 200 hours per month during the pandemic, and lack of training were identified as possible causes of depression among nurses (Bhandari et al., 2022; Nagel & Nilsson, 2022; Sheikhbardsiri et al., 2021). Additionally, nurses who worked during the pandemic experienced fear, and it was observed that nursing is a high-risk population for depression (Gázquez Linares et al., 2021; Havaei et al., 2021). Finally, using personal protective equipment for extended periods was negatively correlated with resilience.

Burnout

Burnout has been evaluated in 10 studies performed during the pandemic period (Nagel & Nilsson, 2022; Kakemam et al., 2021; Karanikola et al., 2022; Melnyk et al., 2022; Murat et al., 2021; Ohue et al., 2021; Sarboozi Hoseinabadi et al., 2020; Siam & Alrasheedi, 2022; Vieira et al., 2022). High levels of burnout were reported even before the COVID-19 pandemic. Before the pandemic, burnout was assessed in four studies, and they found that the highest levels of burnout were among nursing staff who provided intensive care during the pandemic (Marjanovic et al., 2007; Nagel & Nilsson, 2022; Havaei et al., 2021; Zakaria et al., 2022). One study assessing burnout in the same population before and during the pandemic found that emotional exhaustion increased from 8.1% to 26.4% during the pandemic (Nagel & Nilsson, 2022). Frontline nurses who take care on bedside of COVID-19 patients and nurses who work in high-stress environments like emergency rooms or intensive care units reported higher levels of burnout or emotional exhaustion (Karanikola et al., 2022; Melnyk et al., 2022; Murat et al., 2021; Siam & Alrasheedi, 2022; Vieira et al., 2022). However, one study reported negligible differences in burnout levels between COVID-exposed and non-exposed frontline nurses (Sarboozi Hoseinabadi et al., 2020).

High levels of burnout can damage the quality of nursing services by increasing the likelihood of adverse events (Kakemam et al., 2021; Vieira et al., 2022) and may negatively affect nurse performance, potentially leading to work errors (Suzuki et al., 2004). The lack of institutional support (Havaei et al., 2021; Sarboozi Hoseinabadi et al., 2020), as well as insufficient social or familial support (Siam & Alrasheedi, 2022; Zakaria et al., 2022), high work stress (Sarboozi Hoseinabadi et al., 2020), lack of experience (Siam &

Alrasheedi, 2022), and long shifts, are all directly related to higher burnout levels (Zakaria et al., 2022). Male nurses made up a small percentage of the population included in the studies. However, according to one study, they might be more vulnerable to burnout (Siam & Alrasheedi, 2022).

Anxiety

Anxiety is a widespread issue that affects many people worldwide. Sixteen studies have examined anxiety symptoms, including those by Bhandari et al. (2022), Gázquez Linares et al. (2021), Havaei et al. (2021), Nagel & Nilsson (2022), Martínez-Ponce et al. (2023), Mao et al. (2023), Melnyk et al. (2022), Mohamadzadeh Tabrizi et al. (2022), Tamrakar et al. (2023), Pouralizadeh et al. (2020), Sharifi et al. (2022), Sheikhbardsiri et al. (2021), Shen et al. (2021), Ohue et al. (2021), and Tran et al. (2019). Anxiety prevalence doubled during the COVID-19 pandemic, according to a Swedish study that compared nurses' anxiety levels over some time (Nagel & Nilsson, 2022). The prevalence of anxiety varied between 7.9% (Mao et al., 2023) and 100% (Mohamadzadeh-Tabrizi et al., 2022) across different COVID-19 exposures. Before the pandemic, the prevalence of anxiety varied between 5.3% and 63%.

Notably, anxiety levels were generally high, with moderate to severe anxiety ranging from 14.3% to 87.36% (Bhandari et al., 2022). Six studies found that frontline nurses who had contact with COVID-19 patients experienced more anxiety than other nurses (Marcomini et al., 2021; Martínez-Ponce et al., 2023; Melnyk et al., 2022; Sharifi et al., 2022; Tamrakar et al., 2023).

Factors that directly influenced the increase in anxiety during the pandemic include contact with COVID-19 patients (Pouralizadeh et al., 2020; Tamrakar et al., 2023; Ohue et al., 2021), fear of infection (Gázquez Linares et al., 2021), heavy workloads, and night shifts (Marcomini et al., 2021; Sharifi et al., 2022; Sheikhbardsiri et al., 2021; Ohue et al., 2021). Other challenges include inadequate personal protective equipment (PPE) and poor physical working environments (Nagel & Nilsson, 2022; Pouralizadeh et al., 2020), as well as a lack of training to face the pandemic (Bhandari et al., 2022; Sharifi et al., 2022).

Additionally, the lack of social support for nurses, high pressure, and poor relationships with supervisors were factors that existed before the pandemic (Tran et al., 2019). Anxiety is a common factor among nurses and is often co-occurring with depression and PTSD (Mao et al., 2023). Additionally, anxiety can lower the quality of life (Mohamadzadeh-Tabrizi et

al., 2022), increase stress and insomnia (Shen et al., 2021), and cause nurses to quit their jobs (Tamrakar et al., 2023; Ohue et al., 2021).

Insomnia and sleep quality

Insomnia and sleep quality were assessed in five different studies (Belay et al., 2021; Li et al., 2019; Melnyk et al., 2022; Shen et al., 2021). All five studies reported sleep issues, with prevalence ranging from 18.1% to 64.8%. The studies performed during the COVID-19 pandemic identified significant sleep problems. One study found insomnia to be a co-occurring factor with depression and anxiety (Melnyk et al., 2022). Nurses working on the frontline reported more sleep disorders (Melnyk et al., 2022). Nurses with heavy workloads or those exposed to professional risks were also more likely to experience sleep disturbances (Li et al., 2019).

In summary, nurses comprise most healthcare workers (Teixeira et al., 2020), so we highlighted nurses' mental health challenges, as presented in various presentations over two periods. The studies examined clearly show that the pandemic had a high impact on nurses' mental health, increasing stress, anxiety, depression, burnout, and sleep disorders (Labrague et al., 2021; Nagel & Nilsson, 2022). This situation is further supported by other studies showing that the mental health of healthcare personnel, particularly nurses, was severely impacted by COVID-19 (Chutiyami et al., 2022; Yunitri et al., 2022; Varghese et al., 2021).

Research conducted in 14 different countries during the COVID-19 pandemic revealed that nurses' mental health significantly declined. High prevalence rates of mental health issues, such as stress, anxiety, depression, and sleep disorders, were reported. The overall pooled prevalence of stress was 53.63%, anxiety was 40.52%, and depression was 42.32%, while the prevalence of insomnia was 37.42%. These results are consistent with another study that focused on the same topics (Tong et al., 2023).

Studies comparing the pre-pandemic and pandemic periods show considerably stronger impact on nurses` mental health during the pandemic. The prevalence of depression was 9.25% before the pandemic, while during the pandemic, it increased to 38.79%. Stress prevalence was 15.7% before the pandemic, but it rose to 53.63% during the pandemic. Anxiety prevalence was 36.03% before the pandemic, while during the pandemic, it reached 42.64%. Insomnia was highly prevalent, affecting 53.6% of the population (García-Vivar et al., 2023).

Many studies were conducted in 2020, and it is noteworthy that almost all the countries included in these studies reported significant damage to the mental health of nurses. Additionally, during the last three months of

2020 and 2021, there was an exceptionally high prevalence of depression, anxiety, stress, and burnout. Another study showed that the highest prevalence of depression and stress occurred in 2020, while anxiety peaked in 2021 (Tong et al., 2023). It is essential to mention that most studies on the mental health of nurses were conducted in 2020, and nearly all countries included in these studies observed significant mental health challenges among their nursing populations. Frontline nurses and staff in non-COVID-19 wards were particularly afraid of COVID-19. This fear was negatively correlated with resilience. Burnout during the pandemic was assessed in 10 studies, while in 4 studies before the pandemic. These studies indicate that burnout levels were higher among nurses during the pandemic, particularly in the three key assessment areas: depersonalization, emotional exhaustion, and personal accomplishment. These findings align with the results of other review studies (Chutiyami et al., 2022).

Comparing the COVID-19 pandemic to the SARS (2002) and MERS (2012) epidemics, it is evident that COVID-19 has had a more profound impact on the mental health of nurses (Boden et al., 2021; Magnavita et al., 2021; Marcomini et al., 2021; Martínez-Ponce et al., 2023; Mohamadzadeh-Tabrizi et al., 2022; Siam & Alrasheedi, 2022). Given the dynamics of COVID-19, the high risk of exposure while providing care for COVID-19 patients, and the tremendous physical and mental strain nurses endure, this could be a result (Tong et al., 2023).

In this review, 35 studies were analyzed, providing several key recommendations. Nurses should be trained and advised before being assigned to high-pressure wards (Chen et al., 2005; Javadi-Pashaki & Darvishpour, 2019; Karanikola et al., 2022; Li et al., 2019*;* Murat et al., 2021; Park et al., 2018; Sarboozi Hoseinabadi et al., 2020; Tamrakar et al., 2023).

Early detection and psychological support should be implemented for the early detection of factors affecting nurses' mental health, and timely psychological support should be provided (Bhandari et al., 2022; Davey et al., 2019; Havaei et al., 2021; Pouralizadeh et al., 2020; Sharifi et al., 2022; Sheikhbardsiri et al., 2021; Siam & Alrasheedi, 2022; Sonoda et al., 2018; Zakaria et al., 2022).

It is important to create support programs aimed at promoting both mental and physical well-beeing of nurses, helping them to better cope with similar situations in the future (Belay et al., 2021; Bhandari et al., 2022; Gázquez Linares et al., 2021; Kakemam et al., 2021; Labrague et al., 2021; Marcomini et al., 2021; Marjanovic et al., 2007; Martínez-Ponce et al., 2023; Melnyk et al., 2022; Mohamadzadeh-Tabrizii et al., 2022; Ohue et al., 2021; Park et al., 2018; Sarboozi Hoseinabadi et al., 2020; Sharifi et al., 2022; Shen

et al., 2021; Siam & Alrasheedi, 2022; Sonoda et al., 2018; Tran et al., 2019; Vieira et al., 2022; Zakaria et al., 2022).

Mitigating burnout and mental health issues requires improving working conditions, including lowering workload, particularly for frontline nurses (Bhandari et al., 2022; Kaewboonchoo et al., 2009; Karanikola et al., 2022; Mohamadzadeh-Tabrizi et al., 2022; Sharifi et al., 2022; Suzuki et al., 2004).

Conclusions

This review examines nurses' mental health challenges before and through the pandemic. Nursing is an inherently demanding and stressful profession, which can hurt nurses' mental health. The findings highlight that the pandemic has intensified these issues, contributing to heightened levels of stress, anxiety, depression, and burnout among both frontline and general nurses. In particular, female nurses have been the most affected; consequently, during COVID-19, there is a mental health crisis among healthcare workers that needs to be addressed by the relevant authorities. To better prepare nursing staff for the challenges they may encounter in similar situations, training is a crucial investment. This training should begin early in their studies, allowing them to gain awareness of the difficulties they might face in their careers. The review is important for clinical practice and the advancement of the nursing profession. The geographic spread of the research in this article underscores the global relevance of its findings, which are applicable worldwide regardless of a country's socio-economic development. The identification of numerous stressors—both those triggered by the pandemic and those present in non-emergency healthcare settings—that impact nurses' mental health has international relevance for the nursing profession. These factors also influence students' decisions to pursue nursing as a profession. Policymakers must be guided in establishing a supportive mental health environment for nursing staff by addressing these problems and developing workable solutions.

Funding Acknowledgements

This manuscript's publication was financially supported by Transilvania University of Braşov, Romania, within the framework of PhD doctoral studies.

References

Arnetz, J. E., Goetz, C. M., Arnetz, B. B., &Arble, E. (2020). Nurse reports of stressful situations during the covid-19 pandemic: qualitative analysis of survey responses. *International Journal of Environmental Research and Public Health*, *17*(21), 8126. https://doi.org/10.3390/ijerph17218126

Belay, A. S., Guangul, M. M., Asmare, W. N., & Mesafint, G. (2021). Prevalence and associated factors of psychological distress among nurses in public hospitals, Southwest, Ethiopia: A cross-sectional study. *Ethiopian Journal of Health Sciences*, 31(6), 1247–1256. https://doi.org/10.4314/ejhs.v31i6.21

Bhandari, M., Yadav, U., Dahal, T., &Karki, A. (2022). Depression, anxiety and stress among nurses providing care to the COVID-19 patients: A descriptive cross-sectional study. *JNMA; Journal of the Nepal Medical Association*, 60(246), 151–154. https://doi.org/10.31729/jnma.7235

Boden, M., Cohen, N., Froelich, J. M., Hoggatt, K. J., Abdel Magid, H. S., &Mushiana, S. S. (2021). Mental disorder prevalence among populations impacted by coronavirus pandemics: A multilevel meta-analytic study of COVID-19, MERS & SARS. *General hospital psychiatry*, 70, 124–133. https://doi.org/10.1016/j.genhosppsych.2021.03.006

Chen, C. S., Wu, H. Y., Yang, P., & Yen, C. F. (2005). Psychological distress of nurses in Taiwan who worked during the outbreak of SARS. *Psychiatric services (Washington, D.C.)*, *56*(1), 76–79. https://doi.org/10.1176/appi.ps.56.1.76

Chutiyami, M., Cheong, A. M. Y., Salihu, D., Bello, U. M., Ndwiga, D., Maharaj, R., Naidoo, K., Kolo, M. A., Jacob, P., Chhina, N., Ku, T. K., Devar, L., Pratitha, P., & Kannan, P. (2022). COVID-19 Pandemic and overall mental health of healthcare professionals globally: A meta-review of systematic reviews. *Frontiers in psychiatry*, *12*, 804525. https://doi.org/10.3389/fpsyt.2021.804525

Davey, A., Sharma, P., Davey, S., & Shukla, A. (2019). Is work-associated stress converted into psychological distress among the staff nurses: A hospital-based study. *Journal of Family Medicine and Primary Care*, *8*(2), 511–516. https://doi.org/10.4103/jfmpc.jfmpc_419_16

De Hert S. (2020). Burnout in healthcare workers: prevalence, impact and preventative strategies. *Local and regional anesthesia*, *13*, 171–183. https://doi.org/10.2147/LRA.S240564

García-Vivar, C., Rodríguez-Matesanz, I., San Martín-Rodríguez, L., Soto-Ruiz, N., Ferraz-Torres, M., &Escalada-Hernández, P. (2023). Analysis of mental health effects among nurses working during the COVID-19 pandemic: A

systematic review. *Journal of Psychiatric and Mental Health Nursing*, *30*(3), 326–340. https://doi.org/10.1111/jpm.12880

Gaskell, C., Simmonds-Buckley, M., Kellett, S., Stockton, C., Somerville, E., Rogerson, E., & Delgadillo, J. (2023). The effectiveness of psychological interventions delivered in routine practice: Systematic review and meta-analysis. *Administration and policy in mental health*, *50*(1), 43–57. https://doi.org/10.1007/s10488-022-01225-y

Gázquez Linares, J. J., MoleroJurado, M. D. M., MartosMartínez, Á., Jiménez-Rodríguez, D., & Pérez-Fuentes, M. D. C. (2021). The repercussions of perceived threat from COVID-19 on the mental health of actively employed nurses. *International journal of mental health nursing*, *30*(3), 724–732. https://doi.org/10.1111/inm.12841

Havaei, F., Ma, A., Leiter, M., & Gear, A. (2021). Describing the mental health state of nurses in British Columbia: A province-wide survey study. *Healthcare policy = Politiques de Sante, 16*(4), 31–45. https://doi.org/10.12927/hcpol.2021.26500

Hu, D., Kong, Y., Li, W., Han, Q., Zhang, X., Zhu, L. X., Wan, S. W., Liu, Z., Shen, Q., Yang, J., He, H. G., & Zhu, J. (2020). Frontline nurses' burnout, anxiety, depression, and fear statuses and their associated factors during the COVID-19 outbreak in Wuhan, China: A large-scale cross-sectional study. *EClinicalMedicine*, 24, 100424. https://doi.org/10.1016/j.eclinm.2020.100424

Javadi-Pashaki, N., & Darvishpour, A. (2019). Survey of stress and coping strategies to predict the general health of nursing staff. *Journal of Education and Health Promotion*, 8, 74. https://doi.org/10.4103/jehp.jehp_355_18

Kaewboonchoo, O., Saipech, T., Chandanasotthi, P., & Arporn, S. (2009). Mental health status among Thai hospital nurses. *Journal of the Medical Association of Thailand = Chotmaihet Thangphaet,* 92 Suppl 7, S83–S87.

Kakemam, E., Chegini, Z., Rouhi, A., Ahmadi, F., &Majidi, S. (2021). Burnout and its relationship to self-reported quality of patient care and adverse events during COVID-19: A cross-sectional online survey among nurses. *Journal of nursing management*, *29*(7), 1974–1982. https://doi.org/10.1111/jonm.13359

Karanikola, M., Mpouzika, M., Papathanassoglou, E., Kaikoushi, K., Hatzioannou, A., Leontiou, I., Livadiotis, C., Christophorou, N., & Chatzittofis, A. (2022). Work-related traumatic stress response in nurses employed in COVID-19 settings. *International Journal of Environmental Research and Public Health*, *19*(17), 11049. https://doi.org/10.3390/ijerph191711049

Koh, D., & Goh, H. P. (2020). Occupational health responses to COVID-19: What lessons can we learn from SARS?. *Journal of occupational health*, 62(1), e12128. https://doi.org/10.1002/1348-9585.12128

Labrague, L. J., De Los Santos, J. A. A., & Fronda, D. C. (2021). Perceived COVID-19-associated discrimination, mental health and professional-turnover intention among frontline clinical nurses: The mediating role of resilience. *International journal of mental health nursing*, *30*(6), 1674–1683. https://doi.org/10.1111/inm.12920

Li, Y., Fang, J., & Zhou, C. (2019). Work-related predictors of sleep quality in Chinese nurses: Testing a path analysis model. *The journal of nursing research: JNR*, *27*(5), e44. https://doi.org/10.1097/jnr.0000000000000319

Liu, Q., Luo, D., Haase, J. E., Guo, Q., Wang, X. Q., Liu, S., Xia, L., Liu, Z., Yang, J., & Yang, B. X. (2020). The experiences of health-care providers during the COVID-19 crisis in China: a qualitative study. *The Lancet. Global health*, 8(6), e790–e798. https://doi.org/10.1016/S2214-109X(20)30204-7

Magnavita, N., Chirico, F., Garbarino, S., Bragazzi, N. L., Santacroce, E., & Zaffina, S. (2021). SARS/MERS/SARS-CoV-2 outbreaks and burnout syndrome among healthcare workers. an umbrella systematic review. *International Journal of Environmental Research and Public Health, 18*(8), 4361. https://doi.org/10.3390/ijerph18084361

Makhaita, H. M. A., Sabra, A. A., & Hafez, A. S. (2014). Predictors of work-related stress among nurses working in primary and secondary health care levels in Dammam, Eastern Saudi Arabia. *Journal of Family & Community Medicine*, 21, 79–84. https://doi.org/10.4103/2230-8229.134762

Mao, X., Dong, W., Zhang, J., Zhang, F., Deng, W., Li, Z., &Hou, T. (2023). Mental health status and its associated factors among female nurses in the normalization of COVID-19 epidemic prevention and control in China. *Frontiers in public health*, *10*, 1088246. https://doi.org/10.3389/fpubh.2022.1088246

Marcomini, I., Agus, C., Milani, L., Sfogliarini, R., Bona, A., & Castagna, M. (2021). COVID-19 and post-traumatic stress disorder among nurses: a descriptive cross-sectional study in a COVID hospital. *La Medicina del Lavoro*, *112*(3), 241–249. https://doi.org/10.23749/mdl.v112i3.11129

Marjanovic, Z., Greenglass, E. R., & Coffey, S. (2007). The relevance of psychosocial variables and working conditions in predicting nurses' coping strategies during the SARS crisis: an online questionnaire survey. *International Journal of Nursing Studies*, *44*(6), 991–998. https://doi.org/10.1016/j.ijnurstu.2006.02.012

Martínez-Ponce, D., Amat-Traconis, M. A., Cala-Rosabal, L. Y., Chapan-Xolio, E., Valenzuela-Velázquez, L., & Lecourtois-Amézquita, M. G. (2023). Psychological repercussions on nursing staff due to the COVID-19 pandemic: A cross-sectional study. *Journal of Healthcare Quality Research, 38*(1), 3–10. https://doi.org/10.1016/j.jhqr.2022.08.005

Maslach, C., & Leiter, M. P. (2016). Understanding the burnout experience: recent research and its implications for psychiatry. *World psychiatry: official journal of the World Psychiatric Association (WPA)*, *15*(2), 103–111. https://doi.org/10.1002/wps.20311

Melnyk, B. M., Hsieh, A. P., Tan, A., Teall, A. M., Weberg, D., Jun, J., Gawlik, K., &Hoying, J. (2022). Associations among nurses' mental/physical health, lifestyle behaviors, shift length, and workplace wellness support during COVID-19: Important implications for health care systems. *Nursing Administration Quarterly*, *46*(1), 5–18. https://doi.org/10.1097/NAQ.0000000000000499

Mohamadzadeh Tabrizi, Z., Mohammadzadeh, F., Davarinia Motlagh Quchan, A., & Bahri, N. (2022). COVID-19 anxiety and quality of life among Iranian nurses. *BMC Nursing*, *21*(1), 27. https://doi.org/10.1186/s12912-021-00800-2

Muller, A. E., Hafstad, E. V., Himmels, J. P. W., Smedslund, G., Flottorp, S., Stensland, S. Ø., Stroobants, S., Van de Velde, S., & Vist, G. E. (2020). The mental health impact of the covid-19 pandemic on healthcare workers, and interventions to help them: A rapid systematic review. *Psychiatry research*, 293, 113441. https://doi.org/10.1016/j.psychres.2020.113441

Murat, M., Köse, S., & Savaşer, S. (2021). Determination of stress, depression and burnout levels of front-line nurses during the COVID-19 pandemic. *International journal of mental health nursing*, *30*(2), 533–543. https://doi.org/10.1111/inm.12818

Nagel, C., & Nilsson, K. (2022). Nurses' work-related mental health in 2017 and 2020 - A comparative follow-up study before and during the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, *19*(23), 15569. https://doi.org/10.3390/ijerph192315569

Ohue, T., Togo, E., Ohue, Y., & Mitoku, K. (2021). Mental health of nurses involved with COVID-19 patients in Japan, intention to resign, and influencing factors. *Medicine*, *100*(31), e26828. https://doi.org/10.1097/MD.0000000000026828

Okechukwu, E., Tibaldi, L., & La Torre, G. (2020). The impact of COVID-19 pandemic on mental health of Nurses. *La Clinicaterapeutica*, *171*(5), e399–e400. https://doi.org/10.7417/CT.2020.2247

Pappa, S., Ntella, V., Giannakas, T., Giannakoulis, V. G., Papoutsi, E., & Katsaounou, P. (2020). Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. *Brain, Behavior, and Immunity*, *88*, 901–907. https://doi.org/10.1016/j.bbi.2020.05.026

Park, J. S., Lee, E. H., Park, N. R., & Choi, Y. H. (2018). mental health of nurses working at a government-designated hospital during a MERS-CoV outbreak: A cross-sectional study. *Archives of Psychiatric Nursing, 32*(1), 2–6. https://doi.org/10.1016/j.apnu.2017.09.006

Pouralizadeh, M., Bostani, Z., Maroufizadeh, S., Ghanbari, A., Khoshbakht, M., Alavi, S. A., & Ashrafi, S. (2020). Anxiety and depression and the related factors in nurses of Guilan University of Medical Sciences hospitals during COVID-19: A web-based cross-sectional study. *International Journal of Africa nursing sciences*, 13, 100233. https://doi.org/10.1016/j.ijans.2020.100233

Sarboozi Hoseinabadi, T., Kakhki, S., Teimori, G., &Nayyeri, S. (2020). Burnout and its influencing factors between frontline nurses and nurses from other wards during the outbreak of Coronavirus Disease -COVID-19- in Iran. *Investigacion y Educacionenenfermeria*, *38*(2), e3. https://doi.org/10.17533/udea.iee.v38n2e03

Sharifi, A., Fallahi-Khoshknab, M., Mohammadi, S., Zeraati, M., Jamshidi, Z., Aghabeygi-Arani, M., Mirzaei, N., Fallahi-Khoshknab, N., & Rasooli, P. (2022). Depression, anxiety, and stress among Iranian nurses in COVID-19 care wards. *BMC Psychology*, *10*(1), 205. https://doi.org/10.1186/s40359-022-00911-8

Shaukat, N., Ali, D. M., & Razzak, J. (2020). Physical and mental health impacts of COVID-19 on healthcare workers: A scoping review. *International Journal of Emergency Medicine, 13*, 40. https://doi.org/10.1186/s12245-020-00299-5

Shechter, A., Diaz, F., Moise, N., Anstey, D. E., Ye, S., Agarwal, S., Birk, J. L., Brodie, D., Cannone, D. E., Chang, B., Claassen, J., Cornelius, T., Derby, L., Dong, M., Givens, R. C., Hochman, B., Homma, S., Kronish, I. M., Lee, S. A. J., ... Abdalla, M. (2020). Psychological distress, coping behaviors, and preferences for support among New York healthcare workers during the COVID-19 pandemic. *General Hospital Psychiatry, 66*, 1–8. https://doi.org/10.1016/j.genhosppsych.2020.06.007

Sheikhbardsiri, H., Doustmohammadi, M. M., Afshar, P. J., Heidarijamebozorgi, M., Khankeh, H., & Beyramijam, M. (2021). Anxiety, stress and depression levels among nurses of educational hospitals in Iran: Time of performing nursing care for suspected and confirmed COVID-19 patients. *Journal of Education and Health Promotion*, 10, 447. https://doi.org/10.4103/jehp.jehp_1319_20

Shen, Y., Zhan, Y., Zheng, H., Liu, H., Wan, Y., & Zhou, W. (2021). Anxiety and its association with perceived stress and insomnia among nurses fighting against COVID-19 in Wuhan: A cross-sectional survey. *Journal of Clinical Nursing*, 30(17-18), 2654–2664. https://doi.org/10.1111/jocn.15678

Siam, B. G. A. H., & Alrasheedi, L. N. (2022). Burnout among emergency nurses during COVID-19 pandemic at hail governmental hospitals in the kingdom of Saudi Arabia. *Ethiopian journal of health sciences*, *32*(6), 1245–1253. https://doi.org/10.4314/ejhs.v32i6.23

Sonoda, Y., Onozuka, D., & Hagihara, A. (2018). Factors related to teamwork performance and stress of operating room nurses. *Journal of Nursing Management*, *26*(1), 66–73. https://doi.org/10.1111/jonm.12522

Spoorthy, M. S., Pratapa, S. K., &Mahant, S. (2020). Mental health problems faced by healthcare workers due to the COVID-19 pandemic: A review. *Asian Journal of Psychiatry, 51*, 102119. https://doi.org/10.1016/j.ajp.2020.102119

Suzuki, K., Ohida, T., Kaneita, Y., Yokoyama, E., Miyake, T., Harano, S., Yagi, Y., Ibuka, E., Kaneko, A., Tsutsui, T., & Uchiyama, M. (2004). Mental health status, shift work, and occupational accidents among hospital nurses in Japan. *Journal of Occupational Health, 46*(6), 448–454. https://doi.org/10.1539/joh.46.448

Tamrakar, P., Pant, S. B., & Acharya, S. P. (2023). Anxiety and depression among nurses in COVID and non-COVID intensive care units. *Nursing in Critical Care*, *28*(2), 272–280. https://doi.org/10.1111/nicc.12685

Teixeira, C. F. D. S., Soares, C. M., Souza, E. A., Lisboa, E. S., Pinto, I. C. D. M., Andrade, L. R. D., & Espiridião, M. A. (2020). A saúde dos profissionais de saúde no enfrentamento da pandemia de Covid-19. *Ciencia & Saude Coletiva*, *25*, 3465-3474.https://doi.org/10.1590/1413-81232020259.19562020

Tong, J., Zhang, J., Zhu, N., Pei, Y., Liu, W., Yu, W., Hu, C., & Sun, X. (2023). Effects of COVID-19 pandemic on mental health among frontline healthcare workers: A systematic review and meta-analysis. *Frontiers in psychology*, 13, 1096857. https://doi.org/10.3389/fpsyg.2022.1096857

Tran, T. T. T., Nguyen, N. B., Luong, M. A., Bui, T. H. A., Phan, T. D., Tran, V. O., Ngo, T. H., Minas, H., & Nguyen, T. Q. (2019). Stress, anxiety and depression in clinical nurses in Vietnam: a cross-sectional survey and cluster analysis. *International Journal of Mental Health Systems*, 13, 3. https://doi.org/10.1186/s13033-018-0257-4

Varghese, A., George, G., Kondaguli, S. V., Naser, A. Y., Khakha, D. C., &Chatterji, R. (2021). Decline in the mental health of nurses across the

globe during COVID-19: A systematic review and meta-analysis. *Journal of Global Health, 11*, 05009. https://doi.org/10.7189/jogh.11.05009

Vieira, L. S., Machado, W. D. L., Dal Pai, D., Magnago, T. S. B. D. S., Azzolin, K. D. O., & Tavares, J. P. (2022). Burnout e resiliência em profissionais de enfermagem de terapia intensiva frente à COVID-19: estudo multicêntrico. *Revista Latino-americana de Enfermagem*, *30*, e3589. https://doi.org/10.1590/1518-8345.5778.3589

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., McIntyre, R. S., Choo, F. N., Tran, B., Ho, R., Sharma, V. K., & Ho, C. (2020). A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. *Brain, behavior, and immunity*, *87*, 40–48. https://doi.org/10.1016/j.bbi.2020.04.028

WHO. (2019). *World Health Organization International Classification of Diseases (11th revision)*.https://icd.who.int/

Yunitri, N., Chu, H., Kang, X. L., Jen, H. J., Pien, L. C., Tsai, H. T., Kamil, A. R., & Chou, K. R. (2022). Global prevalence and associated risk factors of posttraumatic stress disorder during COVID-19 pandemic: A meta-analysis. *International Journal of Nursing Studies*, *126*, 104136. https://doi.org/10.1016/j.ijnurstu.2021.104136

Zakaria, N., Zakaria, N. H., Bin Abdul Rassip, M. N. A., & Lee, K. Y. (2022). Burnout and coping strategies among nurses in Malaysia: A national-level cross-sectional study. *BMJ Open*, *12*(10), e064687. https://doi.org/10.1136/bmjopen-2022-064687