

Alleviating psychological symptoms in nurses during disease outbreaks: An integrative review

Samah Hawsawi MSN, RN, PhD student 

Department of Nursing, Saint Louis University, St. Louis, Missouri

Correspondence

Samah Hawsawi, MSN, RN, PhD student, SLU
Trudy Busch Valentine School of Nursing, 3525
Caroline St, St. Louis, MO 63104.
Email: samah.hawsawi@slu.edu

Abstract

Aim: To explore interventions and coping strategies used to treat the psychological symptoms associated with compassion fatigue among nurses.

Background: The rapid transmission of infectious diseases (e.g., COVID-19) has put nurses, around the world, at high risk of developing profound psychological health issues due to compassion fatigue. If unrelieved, compassion fatigue can lead to catastrophic psychological symptoms such as depression, stress, anxiety, and insomnia, negatively impacting patient care. This necessitates interventions to prevent or mitigate the psychological symptoms of compassion fatigue.

Method: Following Whittemore and Knaff's integrative review method, the literature search comprised three databases: CINAHL, MEDLINE-OVID, and Scopus.

Results: The 11 included studies were categorized into four themes: (1) using relaxation strategies, (2) neutralizing emotional trauma, (3) enhancing nurses' preparedness for confronting disasters, and (4) educating nurses about coping strategies to manage their psychological issues.

Conclusion: Researchers studied several coping strategies and interventions. There is a need for policymakers' support and hospital-level interventions. Early interventions may prevent or relieve psychological issues.

Implications: The findings have implications for hospital leaders around the world to initiate interventions that teach nurses strategies to cope with stressful events. Future researchers might consider long-term supports and multiple interventions that target several leading causes of psychological symptoms among nurses before, during, and after high-stress situations. Policymakers around the world could use the findings to initiate policies to facilitate nurses' access to needed resources, hence protecting their mental health and increasing the quality of patient care.

KEYWORDS

Compassion fatigue, coping strategies, COVID-19, diseases outbreaks, intervention, nurses, psychological symptoms

BACKGROUND

Infectious disease epidemics and pandemics are public health disasters that negatively affect individuals' health, as well as nurses' psychological health (Al Maqbali et al., 2020). Infectious disease pandemics entail the global spread of an emerging viral disease, while epidemics are defined as the spread of viral diseases over specific countries or continents (CDC, 2012). The globe has witnessed several infectious diseases' outbreaks, including Ebola, severe acute respiratory syndrome (SARS), and Middle East respiratory

syndrome (MERS) (Roychoudhury et al., 2020). Additionally, the most recent pandemic, severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2)—a severe respiratory syndrome called coronavirus disease (COVID-19)—has infected millions of people. The SARS-CoV-2 is considered deadlier than the other past viruses because it affected more people over a short period and resulted in a high mortality rate (Roychoudhury et al., 2020).

The rapid transmission of SARS-CoV-2 has led to unexpected responsibilities for nurses who may not have been equipped to navigate the professional, physical, and



psychological challenges of a pandemic (Fernandez et al., 2020). In confronting COVID-19, nurses have been experiencing challenges, including mandatory quarantine, working overtime under stressful circumstances, and caring for infected people (Fernandez et al., 2020). Additionally, nurses have been experiencing the emotional difficulties resulting from witnessing patients losing their lives or suffering from severe complications (Vizheh et al., 2020). Moreover, the rapid spread of COVID-19 has increased the demand for personal protective equipment (PPE), ultimately causing limited access to it (Iheduru-Anderson, 2021). These challenges contribute to developing several psychological symptoms of compassion fatigue (CF) among nurses, including stress, depression, anxiety, and insomnia (Jin et al., 2021). CF has been associated with continuous exposure to suffering during work, caring for individuals in distress, and unpleasant patient situations, leading to catastrophic psychological symptoms (Jin et al., 2021). The prevalence of CF among nurses has increased dramatically from 23% to 52% before and during COVID-19, respectively (Caron, 2020; Mental Health America, 2020).

The psychological issues merged during the COVID-19 pandemic are not a new phenomena (Alharbi et al., 2019). The prevalence of stress, anxiety, depression, and insomnia was reported to be 11%, 30%, 20%, and 10%, respectively, during the SARS outbreak (Bai et al., 2004; Chen et al., 2006). However, during COVID-19, the prevalence of these symptoms has been declared to be higher than SARS. In a review of 93 studies with nurses ($N = 93,112$) between January 2020 and September 2020, the prevalence of stress, anxiety, depression, and insomnia was reported at 43%, 37%, 35%, and 43%, respectively (Al Maqbali et al., 2020). In another review, Vizheh et al. (2020) reported that psychological issues among nurses, including healthcare providers (HCPs), varied from 29.8% to 62.99% for stress, 24.1% to 67.55% for anxiety, and 12.1% to 55.89% for depression. These parameters explain how CF's psychological symptoms have become an epidemic among nurses during COVID-19 (Hossain et al., 2020).

If left untreated, these symptoms may intensify and negatively impact nurses' job performance, deteriorate healthcare services, and increase medical errors and nurses' turnover rates (Vizheh et al., 2020). The rate of nurses' turnover due to CF during COVID-19 has been reported to be 20%, which will ultimately lead to further nursing shortages, impacting patient care (International Council of Nurses [ICN], 2021).

Furthermore, COVID-19 has been a significant obstacle to delivering optimal care due to its strong influence on nurses' uncertainty about their protection from the disease (Al Maqbali et al., 2020; Iheduru-Anderson, 2021). In previous outbreaks (e.g., SARS, MERS, and Ebola viruses), nurses likewise encountered uncertainty regarding their health while caring for infected patients (Fernandez et al., 2020); therefore, several nurses took sick leave or resigned (Zhu et al., 2021). Due to their anxiety resulting from the COVID-19 crisis, some nurses have been exposed to moral dilemmas, such as deciding whether to care for patients with other chronic or acute health conditions instead of patients infected with COVID-19 (McKenna, 2020; Zhu et al., 2021). According to Fernandez et al. (2020) and Lai et al. (2020), nurses' moral dilem-

mas during disease outbreaks are significantly related to various psychological issues, including stress, anxiety, depression, and insomnia.

As infectious diseases continue to challenge healthcare organizations worldwide, nurses, the keystones of patient care, need better psychological health to effectively care for patients (CDC, 2012). Regardless of the COVID-19 pandemic, psychological coping strategies, interventions, or treatments should be implemented to ensure nurses' and patients' safety. The psychological issues among nurses which resulted from previous disease outbreaks have been reported in several reviews in the context of their prevalence (Al Maqbali et al., 2020), effect on HCPs wellness (Shreffler et al., 2020), associated risk and protective factors (Jin et al., 2021; Preti et al., 2020), and consequences (Fernandez et al., 2020). Although most scholars agree that CF's psychological symptoms is a serious issue, there are limited reviews on the interventions, or coping strategies used to rectify these symptoms during disease outbreaks. Callus et al. (2020) reviewed available interventions for reducing nurses' psychological issues during disease outbreaks. Their review included ($n = 14$) articles, most of which were recommendations, and a digital interventional study that only examined nurses' satisfaction about the intervention (Callus et al., 2020). Cabarkapa and colleagues (2020) conducted a review to identify coping strategies among healthcare workers. However, they only included primary studies with at least 100 frontline workers. Thus, this resulted in eliminating some important studies with smaller samples that might contribute to practice, policy, and future research.

Hence, the aim of this review was to explore interventions and coping strategies used to treat acute or chronic CF's psychological symptoms, including insomnia, stress, depression, and anxiety in nurses caring for patients infected with COVID-19 or other infectious diseases.

METHOD

This review follows the Whittemore and Knaff's (2005) five stages of integrative review.

Problem Identification

The influence of infectious disease outbreaks (e.g., COVID-19) on nurses' psychological health is evident in the literature. Nurses' psychological strain can also impact patients' care and healthcare systems, which necessitates interventions that focus on supporting nurses' psychological health. Researchers have been conducting several different interventional studies and exploring coping strategies; this makes it challenging to identify the optimal intervention or coping strategies to support nurses' psychological health during disease outbreaks. Thus, reviewing available empirical literature is essential to comprehensively understand the studied interventions and coping strategies. Hence, this review was conducted to explore interventions and coping strategies used to alleviate nurses' psychological issues that

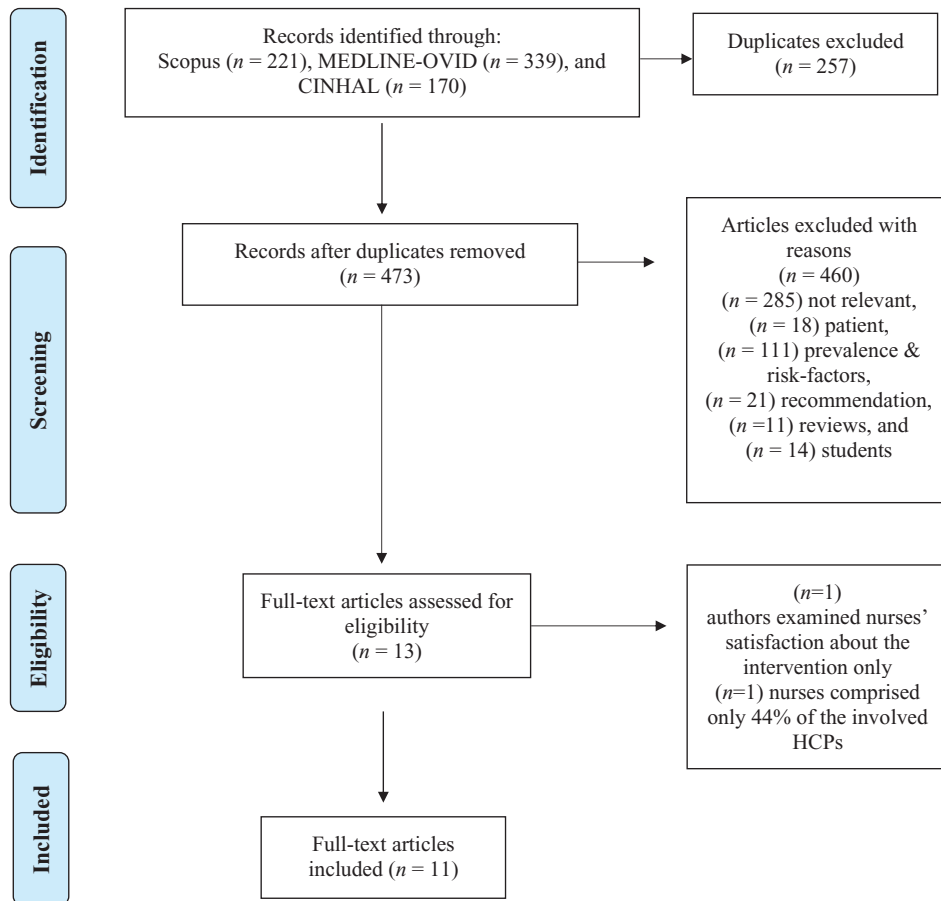


FIGURE 1 PRISMA flow diagram of the selected studies

result from caring for patients during infectious diseases outbreaks.

Literature Search

The literature search strategy for this study included three databases: CINAHL, MEDLINE-OVID, and Scopus, with no time limits. Keywords: (mental health OR “psych*” OR psychological OR psychiatry OR stress OR insomnia OR depression OR anxiety OR “Compassion Fatigue” AND “Disease Outbreaks” OR H1N1 OR pandemic* OR epidemic* OR severe acute respiratory syndrome OR SARS OR Middle East respiratory syndrome OR MERS OR Ebola OR “COVID-19” AND intervention* OR strategy* OR management OR coping).

The inclusion criteria included primary studies: (1) written in English; (2) on coping strategies or interventions to address the CF’s psychological symptom cluster (stress, anxiety, depression, and insomnia); and (3) that involved samples in which at least 50% were nurses. The influence of mental issues on nurses might be different from other HCPs because nurses spend the most time with patients. References that were not peer-reviewed (conference abstracts, dissertations, books, and opinion papers) were excluded. Figure 1 depicts the PRISMA diagram (Page et al., 2021).

Data Evaluation

The studies included comprised empirical research, including cross-sectional and experimental designs. Due to the difference in study designs, data were coded to extract key findings in accordance with each design. This method facilitated the ability to comprehensively compare findings, patterns, samples, and methods used to support nurses’ psychological health. Studies were subjected to quality assessment using the Grading of Recommendations, Assessment, Development, and Evaluations (GRADE) guidelines assessment tool (Balslem et al., 2011). Due to the diversity of the included study designs, none of the studies were excluded based on their quality rating.

Data Analysis

The initial data classification was based on the type of evidence (cross-sectional and intervention studies). Data reduction involved extracting and tabulating data from primary sources, specifically authors and publication dates, purposes, participants and designs, infectious disease, interventions, coping strategies, measurement tools, main results and follow-ups, psychological issues, and study quality (Table 1). This table was used to compare data between studies and identifying patterns.



TABLE 1 Description of studies included in the integrative review

Author/year	Aim	Design/ participants	Pandemic	Chronic/acute- psychological disorder	Intervention	Tools	Results and follow-up	Quality
Interventions used to treat CF's psychological symptoms								
Chen et al. (2006)	To investigate the influence of the SARS prevention program on nurses' anxiety, depression, and insomnia	Longitudinal survey design / (N = 116) nurses	SARS	Insomnia, anxiety, and depression	Intensive SARS protection and prevention training	SAS SDS PSQI	Two-week posttest Sig enhancement in sleep quality ($p < 0.005$) Sig ↓ anxiety ($p < 0.075$) Sig ↓ depression ($p < 0.01$) One-month posttest Sig enhancement in sleep quality ($p < 0.001$) Sig ↓ anxiety ($p < 0.001$) Sig ↓ depression ($p < 0.01$) Three-month follow-up posttest Sig enhancement in sleep quality ($p < 0.008$) Sig ↓ anxiety ($p < 0.001$) Sig ↓ depression ($p < 0.01$)	Low
Dincer and Inangil (2020)	To investigate the effectiveness of EFT in preventing stress, anxiety, and nurses' burnout during COVID-19	RCT/ (N = 72) ICU nurses, control (n = 37)	COVID-19	Stress and anxiety	EFT	SUD STA	Sig ↓ stress ($p < 0.001$) Sig ↓ anxiety ($p < 0.001$)	Moderate
Li et al. (2020)	To investigate: (1) the influence of simulation training on enhancing nurses' ability to wear infection prevention protective devices, (2) the impact of proper implementation of protective equipment on nurses' anxiety and depression.	Quasi-experimental (pretest–posttest) / (N = 60) RNs	COVID-19	Anxiety and depression	Simulation trainings on wearing and taking off personal protective devices/ simulation training once every day, 30–40 min each time, for 1 week.	Passing in implementing standard personal protection 98.33% ($p < 0.05$) SAS SDS	sig ↑ in passing implementing standard personal protection from 65% to 98.33% ($p < 0.05$) Sig ↓ anxiety and depression ($p < 0.05$)	Very low
Liu et al. (2020)	To examine the efficacy of diaphragmatic breathing relaxation training (DBRT) on enhancing sleep quality among nurses during the COVID-19 outbreak.	Quasi-experimental study (pretest–posttest) / (N = 140) RNs	COVID-19	Insomnia, anxiety, and depression	Diaphragmatic breathing relaxation training	PSQI SAS SDS	Sig enhancement in sleep quality ($p < 0.01$) Sig ↓ anxiety ($p < 0.01$) Not-sig depression ($p = 0.35$)	Low

(Continues)

TABLE 1 (Continued)

Author/year	Aim	Design/ participants	Pandemic	Chronic/acute- psychological disorder	Intervention	Tools	Results and follow-up	Quality
Rodriguez-Vega et al. (2020)	To explore the feasibility of mindfulness-based crisis intervention on HCPs' stress during the COVID-19 pandemic.	Exploratory posttest design/ (N = 150) HCP, (n = 99) 66% RNs	COVID-19	Stress	Mindfulness	Short self-report perceived helpfulness of Mindfulness questionnaire designed by authors	HCP-rated mindfulness as effective for reducing stress with a mean of 8.4 on a scale from 0 to 10.	Low
Sanadgol et al. (2020)	To explore the impact of Guided imagery intervention on death anxiety of ICU nurses.	Quasi-experimental (pretest–posttest) / (N = 50) ICU RNs, control (n = 25)	COVID-19	Death anxiety	Guided imagery	DA	Sig ↓ DA (p = 0.004)	Low
Tarquinio et al. (2020)	To explain the significance of the URG-EMDR protocol through a telemental health setting anxiety and depression among nurses during COVID-19.	Pilot quasi-experimental study (pretest–posttest) / (n = 17) RNs	COVID-19	Anxiety and depression	URG-EMDR	HAD	Sig ↓ anxiety and depression (p < 0.001)	Low
Coping strategies used to manage CF's psychological symptoms								
Author/Year	Aim	Design/ participants	Pandemic	Chronic/acute- psychological disorder	Coping strategies	Tools	Outcomes	Quality
Khalid et al. (2016)	To assess the emotional stressors and coping strategies of HCPs during MERS-CoV.	Cross-sectional survey/ (N = 117) HCP, (n = 89) 76% RNs	MERS-CoV	Stress	1. Follow strict personal protective measures 2. Vente emotions by crying, screaming 3. Avoid media news 4. Home in activities 5. Get help from family physicians 6. Self-conversation and motivation about positive attitude 7. Chat with family and friends 8. Relaxation activities, e.g., prayers, sports, exercise 9. Avoid public places 10. Read about MERS-CoV	MERS-CoV staff tool	Strict protective measures → Sig ↓ in anxiety Self-conversation and motivation about positive attitude → sig ↓ in stress	Very low

(Continues)



TABLE 1 (Continued)

Author/year	Aim	Design/ participants	Pandemic	Chronic/acute- psychological disorder	Intervention	Tools	Results and follow-up	Quality
Korkmaz et al. (2020)	To examine anxiety level experienced by healthcare providers during COVID-19, the impacts of anxiety on sleep quality and quality of life, and the association between these variables and problem-solving skills of the healthcare providers.	Cross-sectional survey/ (N = 595) HCP; (n = 298) 50% RNS	COVID-19	Anxiety and sleep quality	1. Problem-solving	PSQI PSI WHOQOL-BREF BAI	↑ Problem-solving → sig ↓ anxiety ($p < 0.05$), sig ↓ sleep disturbance ($p < 0.01$) sig	Very low
Pinho et al. (2021)	To evaluate and compare (1) nurses' depression, anxiety, and stress during COVID-19 and 6 months later; (2) the regular use of mental health promotion strategies in the same period; and (3) to understand the relationship between the regular use of mental health promotion strategies, and depression, anxiety, and stress symptoms among nurses.	Cross-sectional survey/ (N = 424) RN	COVID-19	Anxiety, depression, and stress	Mental health promotion strategies: 1. Physical activity 2. Relaxation activities 3. Recreational activities 4. Social contacts 5. Verbalization of feelings/emotions 6. Healthy diet 7. Break between work shifts 8. Adequate water intake 9. Rejecting unreliable sources' information about COVID-19	DASS-21 Mental health promotion strategies tool	Anxiety, depression, and stress were sign ↓ ($p < 0.001$) in nurses who frequently or always used all strategies except strategy (9), compared with nurses who never or rarely used them. Stress was sig ↑ ($p < 0.009$) in nurses who sometimes, often, or always used strategy # (9)	Very low
Salopek-Žilha et al. (2020)	To explore methods to confront COVID-19 stressor and psychological outcomes in physicians and nurses.	Cross-sectional survey/ (N = 124) HCPs, (n = 97) 78%RN	COVID-19	Anxiety, depression, and stress	Coping strategies: 1. Confrontive coping 2. Distancing 3. Self-controlling 4. Social support 5. Accepting responsibility 6. Escape-avoidance 7. Problem-solving 8. Positive reappraisal	DASS-21 WOC	Most used coping strategies are seeking social support, escape-avoidance, and positive reappraisal. Among all coping strategies, seeking social support was associated with sig ↓ in depression ($p < 0.001$).	Very low

Note: Depression anxiety stress scale (short-version DASS-21); ways of coping questionnaire (WOC); the perceived stress scale (PSS); experienced-new Italian version-25 (COPE-NVI-25) Pittsburgh sleep quality index (PSQI); problem-solving inventory (PSI); World Health Organization quality of life-BREF (WHOQOL-BREF)-short version; Beck anxiety inventory (BAI); 15-item death anxiety (DA); self-rating anxiety scale (SAS); self-rating depression scale (SDS); hospital anxiety depression scale (HAD); subjective units of distress (SUD) scale; state-trait anxiety inventory (STA); lead to (→); decrease (↓); increase (↑); significant (sig); intensive care unit (ICU); healthcare provider (HCP).



Data Presentation

A synthesis in the form of a thematic categorization was developed and presented to comprehensively describe the available methods used to alleviate psychological symptoms among nurses during disease outbreaks (Tables 2–3). The thematic categorization is presented and discussed below.

Ethics

Ethical approval was not required to conduct this review.

RESULTS

The initial search retrieved 730 articles imported to EndNote-X9. After removing 257 duplicates, the author screened titles, keywords, and abstracts for relevancy. After applying the inclusion and exclusion criteria on the remaining 473 articles, 13 studies were read in full, of which two were excluded, one for irrelevancy (authors examined only nurses' satisfaction regarding the provided intervention), and one because nurses comprised only 44% of the involved HCPs. Finally, this review included 11 studies conducted between 2006 and 2021 (Table 1). Sample sizes varied from 17 to 595 participants.

Designs

Four research teams used a pretest–posttest design (Li et al., 2020; Liu et al., 2020; Sanadgol et al., 2020), one of which used a pilot study design (Tarquinio et al., 2020). In four studies, researchers used a cross-sectional survey design (Khalid et al., 2016; Korkmaz et al., 2020; Pinho et al., 2021; Salopek-Žiha et al., 2020), and the three remaining studies include one each a randomized controlled trial (RCT; Dincer & Inangil, 2020), a longitudinal design (Chen et al., 2006), and an exploratory posttest design (Rodriguez-Vega et al., 2020). Quality assessments ranged from very low to moderate. Most of the studies ($n = 6$) rated as very low quality, ($n = 4$) studies rated as low quality, and ($n = 1$) study rated as moderate quality.

Interventions

The findings are discussed according to four specific themes related to the interventions and coping strategies used during infectious disease outbreaks to treat acute or chronic CF's psychological issues among nurses. The themes are: (1) utilizing relaxation strategies, (2) training to neutralize emotional trauma, (3) enhancing nurses' preparedness for confronting disasters, and (4) educating nurses about coping strategies (Table 2).

Utilizing Relaxation Strategies

Evidence suggests that relaxation strategies are effective interventions to mitigate nurses' psychological issues caused by caring for patients during disease outbreaks (Liu et al., 2020). Among the studies reviewed, two research teams used different relaxation strategies, including diaphragmatic breathing relaxation training to enhance sleep quality and reduce depression and anxiety among ($N = 140$) nurses (Liu et al., 2020) and mindfulness to reduce stress among ($N = 150$) HCPs, of which ($n = 99$) were nurses (Rodriguez-Vega et al., 2020). Although the interventions' durations and delivery methods were different, both research teams intended to provide a timely relaxation experience for participants to improve their psychological issues during the stressful time of COVID-19 (Liu et al., 2020; Rodriguez-Vega et al., 2020).

Rodriguez-Vega et al. (2020) conducted face-to-face mindfulness intervention in participants' work settings, comprising five to ten minutes daily sessions twice a week for seven weeks. In contrast, Liu et al. (2020) provided their diaphragmatic breathing relaxation training via videoconferencing for 30 minutes once a day for four weeks. Both research teams engaged certified professionals to deliver the interventions; Rodriguez-Vega et al. (2020) employed a certified mindfulness expert, and Liu et al. (2020) involved a psychological counselor. Both Rodriguez-Vega et al. (2020) and Liu et al. (2020) concluded that their interventions resulted in a significant enhancement in nurses' psychological health. Rodriguez-Vega et al. (2020) found a significant reduction in stress ($p < 0.004$); similarly, Liu et al. 2020 found a significant reduction in insomnia ($p < 0.001$) and anxiety ($p < 0.001$), but not in depression ($p = 0.35$).

Training to Neutralize Emotional Trauma

The findings suggest that the interventions for neutralizing emotional trauma significantly reduced anxiety, depression, and stress among nurses. Three research teams used interventions to neutralize emotional trauma caused by the COVID-19 pandemic, including (1) emotional freedom techniques (EFT) by Dincer and Inangil (2020) to prevent stress and anxiety among ($N = 72$) nurses; (2) urgent-eye movement desensitization and reprocessing (URG-EMDR) by Tarquinio et al. (2020) to reduce anxiety and depression among ($N = 17$) nurses; and (3) guided imagery training by Sanadgol et al. (2020) to relieve death anxiety among ($N = 50$) intensive care unit (ICU) nurses.

Dincer and Inangil (2020) used a single session for 20 minutes, which was developed and delivered by the first author (a certified EFT trainer). Similarly, the average duration of the URG-EMDR intervention was a single session for 2 hours and 14 minutes and was delivered by two EMDR practitioners (Tarquinio et al., 2020). In contrast, Sanadgol et al. (2020) conducted guided imagery training using a longer duration of



TABLE 2 Description of the included interventions

Authors (year)	Intervention	Psychological issue	Minutes/ session	Total sessions	Span of time	Follow-up time	Effectiveness
Utilizing relaxation strategies							
Liu et al. (2020)	DBRT	Insomnia, anxiety, and depression	30 min	Once daily	One month	None	Sig ↓ insomnia ($p < 0.005$) Sig ↓ anxiety ($p < 0.075$) Not-sig depression ($p = 0.35$)
Rodriguez-Vega et al. (2020)	Mindfulness	Stress	5–10 min	Twice daily	7 weeks	None	Sig ↓ in stress $M = 8.4$ on a scale from 0 to 10
Training to neutralize emotional trauma							
Dincer & Inangil (2020)	EFT	Stress and anxiety	20 min	Once daily	One day	None	Sig ↓ stress ($p < 0.001$) Sig ↓ anxiety ($p < 0.001$)
Sanadgol et al. (2020)	Guided imagery	Death anxiety	90 min	Three sessions weekly	One month	None	Sig ↓ death anxiety ($p = 0.004$)
Tarquinio et al. (2020)	URG-EMDR	Anxiety and depression	2 hours & 14 min	One session	One day	<ul style="list-style-type: none"> • One day • One week 	Sig ↓ anxiety and depression ($p < 0.001$)
Enhancing nurses' preparedness for confronting disaster							
Chen et al. (2006)	Intensive SARS protection and prevention training	Insomnia, anxiety, and depression	Not specified	Not specified	One month	One-month posttest Two-month posttest Three-month posttest	Sig ↓ insomnia ($p < 0.005$) Sig ↓ anxiety ($p < 0.075$) Sig ↓ depression ($p < 0.01$)
Li et al. (2020)	COVID-19 simulation training	Anxiety and depression	30–40 min	One session daily	One week	None	Sig ↓ anxiety and depression ($p < 0.05$)

Note: Decrease (↓); increase (↑); significant (Sig).



TABLE 3 Different types of coping strategies

Identified Strategies	Coping strategies reported as effective	Authors/(year)
Emotion-Focused Coping <ul style="list-style-type: none"> • Vent emotions by crying, screaming • Verbalization of feelings/ emotions by talking • Positive Reappraisal • Self-conversation and motivation about positive attitude • Positive attitude toward the stressful situation • Escape-avoidance • Relaxation activities • Self-Controlling 	Verbalization of feelings/emotions Relaxation activities sign ↓ ($p < 0.001$) anxiety, depression, and stress	Pinho et al. (2021)
	Self-conversation and motivation about positive attitude Sig ↓ stress	Khalid et al. (2016)
Problem-Focused Coping <ul style="list-style-type: none"> • Problem-solving • Confrontive Coping • Planful Problem-Solving • Accepting Responsibility 	Problem-solving Sig ↓ anxiety and insomnia	Korkmaz et al. (2020)
Social and Support Coping <ul style="list-style-type: none"> • Maintenance of remote social contacts • Seeking Social Support from family and friends 	Seeking social support Sig ↓ ($p < 0.001$) anxiety, depression, and stress	Pinho et al. (2021)
	Seeking social support Sig ↓ ($p < 0.001$) depression	Salopek-Žiha et al. (2020)
Reactive and Proactive Coping <ul style="list-style-type: none"> • Avoid media news • Follow strict personal protective measures • Distancing • Rejecting information about COVID-19 from unreliable sources • Avoid public places • Read about MERS-CoV, 	Follow strict personal protective measures Sig ↓ in anxiety	Khalid et al. (2016)
Healthy Emotion-Focused Coping <ul style="list-style-type: none"> • Home in activities • Physical activity • Adequate water intake • Healthy diet • Recreational activities • Break between work shifts 	Physical activity Adequate water intake Healthy diet Recreational activities Break between work shifts Sig ↓ ($p < 0.001$) anxiety, depression, and stress	Pinho et al. (2021)

Note: Decrease (↓); increase (↑); significant (Sig).

three 90-minute sessions weekly for four weeks; however, they did not detail who provided the training. All these research teams found a statistically significant reduction in anxiety ($p < 0.001$) (Dincer & Inangil, 2020; Sanadgol et al., 2020; Tarquinio et al., 2020), stress ($p < 0.001$) (Dincer & Inangil, 2020), and depression ($p < 0.001$) (Tarquinio et al., 2020).

Enhancing Nurses' Preparedness for Confronting Disaster

The review of interventions revealed that proper self-protection training for nurses is associated with better psy-

chological health. Of the seven intervention articles reviewed, only two used interventions to enhance nurses' preparedness during the SARS and COVID-19 disasters. Their aims were to reduce anxiety, insomnia, and depression among nurses (Chen et al., 2006; Li et al., 2020). Li et al. (2020) provided ($N = 60$) nurses with a face-to-face simulation training on wearing and removing PPE that was delivered for 30 to 40 minutes daily for one week during COVID-19. In contrast, Chen et al. (2006) delivered a one-month intensive SARS protection and prevention training program to ($N = 116$) nurses before, during, and after the SARS outbreak. One week later, Li et al. (2020) found that nurses who passed the standard personal protection



exam reported a significant reduction in their anxiety and depression ($p < 0.05$). Additionally, Chen et al. (2006) examined the effect of their intervention over three intervals (after two weeks, one month, and three months), concluding that nurses who attended the SARS program demonstrated a significant reduction in insomnia ($p < 0.005$), anxiety ($p < 0.001$), and depression ($p < 0.001$) across all three intervals.

Educating Nurses about Coping Strategies

The use of coping strategies plays a significant role in sustaining nurses' mental health during disease outbreaks (Pinho et al., 2021). Four research teams explored the coping strategies that nurses and HCPs used to treat their psychological issues during two pandemics, COVID-19 (Korkmaz et al., 2020; Pinho et al., 2021; Salopek-Žiha et al., 2020) and MERS-CoV (Khalid et al., 2016). The coping strategies used varied between studies (Table 3). Pinho et al. (2021) found that nurses who use physical activity as a coping strategy experienced a significant reduction ($p < 0.001$) in anxiety, depression, and stress. In contrast, Khalid et al. (2016) reported that nurses who are more likely to use physical activity as a coping strategy experience no significant reduction in their stress levels compared with HCPs who do not maintain activity.

Additionally, social support from family, friends, and colleagues was inversely related ($p < 0.001$) to anxiety, depression, and stress during COVID-19 (Pinho et al., 2021; Salopek-Žiha et al., 2020). This contrasts with Khalid and colleagues (2016) who showed no significant difference in stress among nurses and HCPs who used social support coping strategy. Also, maintaining a positive attitude in negative situations was significantly effective ($p < 0.001$) in reducing nurses' and HCPs' stress levels (Khalid et al., 2016). By contrast, Pinho et al. (2021) and Salopek-Žiha et al. (2020) stated that the positive attitude in negative situations was not significant in alleviating nurses' and HCPs' anxiety, depression, and stress. Moreover, Khalid et al. (2016) found that strict protective measures are a highly significant negative predictor for stress. Moreover, Korkmaz et al. (2020) found that problem-solving was a significant coping strategy for reducing anxiety and enhancing sleep quality.

DISCUSSION

The aim of this paper was to explore interventions and coping strategies for treating nurses' psychological issues during disease outbreaks. Eleven articles were identified that described several interventions ($n = 7$) and coping strategies ($n = 4$) during SARS, MERS-CoV, or COVID-19. However, most studies ($n = 9$) focused on the COVID-19 pandemic. The identified studies were categorized into four themes:

Utilizing Relaxation Strategies

Relaxation interventions have been described by Callus et al. (2020) as strategies that promote the psychological health of nurses. One of the advantages of interventions under this theme was that they aid nurses to cope with and reduce emotional stress resulting from numerous job responsibilities during disease outbreaks. Two studies were categorized under this theme, including diaphragmatic breathing relaxation training (Liu et al., 2020) and mindfulness (Rodriguez-Vega et al., 2020). Based on this review, the duration of both interventions varied significantly; however, it did not impact their effectiveness on nurses' psychological health. Diaphragmatic breathing relaxation training seems to be a significant intervention in reducing anxiety and insomnia, while mindfulness sessions effectively lower nurses' stress levels. Moreover, interventions such as relaxation strategies require certified providers to effectively educate nurses on managing with job-related stress. Thus, this could be a barrier to providing such interventions to nurses, particularly during crises such as COVID-19, requiring immediate interventions. However, Liu et al. (2020) provided their relaxation intervention using online platforms, which successfully reduces nurses' psychological issues. Thus, future researchers might consider delivering such interventions using online platforms during high-stress periods of time.

Training to Neutralize Emotional Trauma Memories

Interventions under this theme allow nurses to confront their fears and thoughts without being as affected as they expected (Tarquinio et al., 2020). Three research teams employed training to neutralize emotional trauma, including EFT (Dincer & Inangil, 2020), guided imagery (Sanadgol et al., 2020), and URG-EMDR (Tarquinio et al., 2020). This type of intervention is effective during crises such as COVID-19 because nurses have been witnessing many suffering patients and high mortality rates, leading to an emotional trauma that necessitates immediate action.

Interventions used to neutralize emotional trauma require a professionally certified individual because they require face-to-face training of a specific technique to confront fear resulting from job-related trauma. However, due to the restrictions during pandemics (social distancing and self-quarantine), it might be challenging to provide face-to-face training, which could be a barrier to effectively delivering such interventions. An additional barrier is that nurses' busy schedules will likely interfere with providing these interventions regardless of whether they are offered in person or online. Hence, it is advisable to regularly train nurses to practice ways to neutralize their emotional trauma so they can effectively use them during difficult times. This review revealed that regardless of the duration of these interventions, they were significantly effective in reducing nurses' depression, stress, and anxiety.

Enhancing Nurses' Preparedness for Confronting Disaster

Researchers have recognized the importance of feelings of safety and self-confidence and of reliable and timely training for improving nurses' psychological health (Huey & Palaganas, 2020). Two studies were categorized under the theme of nurses' preparedness for disasters, including simulation training for wearing and removing PPE (Li et al., 2020) and SARS protection and prevention training (Chen et al., 2006). There is a need to continuously train nurses to protect themselves to feel safe during disasters, thereby increasing their productivity during patient care during unexpected events (e.g., COVID-19).

Educating Nurses about Coping Strategies

According to Dijkstra and Homan (2016), coping strategies are effective in helping individuals to avoid negative consequences of their psychological issues. Beyond the different interventions identified in this paper, four cross-sectional studies have explored how nurses' and other HCPs' coping practices affect their psychological health. There are several coping strategies that researchers claimed to be effective in treating nurses' and other HCPs' psychological issues (Table 3); however, these strategies were described by nurses and HCPs as self-learned techniques. Thus, it is advisable that future researchers should conduct studies that aim at gaining detailed descriptions of the coping strategies used by nurses.

Need for recommendation and implications for research

There were inconsistent findings regarding the most effective intervention type, frequency, and length, as well as the targeted psychological issue (Table 2). Hence, it is challenging to draw conclusions regarding the most effective intervention. Thus, future researchers might compare two or more interventions with nurses experiencing psychological challenges. Furthermore, the seven interventional studies included small sample sizes ranging from 17 to 150 participants (Table 1). This impacts the studies' quality and statistical power, limits generalizability, and increases the possibility of type II errors (Polit & Beck, 2017). Hence, future studies might consider recruiting larger sample sizes to examine interventions' effectiveness and draw more robust conclusions.

Given that depression, anxiety, stress, and insomnia are caused by the inability to cope with stressors, it might take some time for nurses to adopt coping strategies to relieve their symptoms (Preti et al., 2020). Following previous disease outbreaks, symptoms were reported across times ranging from six months to three years (Preti et al., 2020). However, reviewed studies included short-term interventions, ranging from 1 to

49 days. Chen et al. (2006) used a delayed posttest (3 months) to evaluate their intervention's long-term effects. Chmitorz et al. (2018) and Cleary et al. (2018) recommended examining the long-term effects using regular follow-ups, such as every three months for one year. Future researchers might examine long-term psychological support interventions for nurses following infectious disease outbreaks. Moreover, there are few interventional studies conducted to focus exclusively on nurses' psychological issues during disease outbreaks. Hence, future researchers might study only nurses or separate them from other HCPs because of their differing experiences.

Among the seven interventional studies, only Dincer and Inangil (2020) employed an RCT design; the rest used pretest-posttest designs, threatening the internal validity, and impacting the inference of causal relationships (Polit & Beck, 2017). Therefore, stronger research designs, such as RCTs, should be used to examine causal relationships with minimal bias (selection bias) and confounding factors (Polit & Beck, 2017).

Also, cross-sectional designs reveal descriptive and hypothetical outcomes, limiting researchers' understanding of the causal relationships between the coping strategies and psychological outcomes (Polit & Beck, 2017). Moreover, it is challenging to identify a detailed description of each coping strategy due to the nature of the cross-sectional designs. Hence, moving from descriptive to interventional studies would help researchers discover ways that coping strategies might promote nurses' psychological health.

Although nurses' psychological issues resulted from multiple factors during disease outbreaks (e.g., lacking preparedness and witnessing patient suffering and deaths), several researchers conducted interventions that targeted only one factor. Future researchers might consider interventions combining several themes (1) utilizing relaxation strategies, (2) training to neutralize emotional trauma, (3) enhancing nurses' preparedness for confronting disaster, and (4) educating nurses about coping strategies. Targeting more than one factor might make a greater effect in symptoms as well as provide skills that can be transferable to a variety of situations.

Implications for practice

The literature lacks organizational-level interventions to support nurses' psychological distress during disease outbreaks, which was noted in a current review conducted to explore interventions that promote the psychological health of nurses (Callus et al., 2020). This paper presents several psychological support interventions and coping strategies that could be used on the organizational levels around the world to foster and maintain nurses' psychological health, which can be implemented in the short, medium, and long terms. Also, nursing leaders around the world can use the identified coping strategies to educate new and current nurses to cope with stressful situations during disease outbreaks or



other stressful events while providing usual care. This can be achieved by including coping educational programs as a regular part of nurses' training and continuing education. Hence, nurses could practice the learned coping strategies before work, during breaks, or after work, which can help them self-manage their distress, and boost their psychological health, accordingly, improve patient care.

Implications for policymakers

This review has shown that interventions at the policymaker's level (worldwide), including healthcare institutions, administrations, and leaders, are not addressed thoroughly in the literature. Policymakers can use findings from this review to direct future establishment of policies that focus on hospital-level interventions before, during, and after disease outbreaks for new, junior, and senior nurses and nursing students. That is, instead of merely focusing on treating nurses who have psychological health issues already, policies and protocols can be developed to protect or prevent psychological health problems. This could help decrease CF and its related psychological issues in the long term.

Strengths and limitations

The strength of this review results from examining the quality of the included studies using the GRADE guidelines assessment tool (Balslem et al., 2011). Assessing the quality of the studies allows for understanding their limitations, hence aiding future researchers to address these limitations to conduct similar, yet more robust research. This is one of the first reviews on this topic that provides an overview of available interventions and coping strategies to mitigate nurses' psychological issues resulting from caring for patients during disease outbreaks. An additional strength of this review is the presentation of several interventions and coping strategies, which could guide healthcare institutions, policymakers, and stakeholders—nurses—to protect nurses' mental health, which is a significant factor related to patient care.

However, this review has several limitations. First, only one author completed the review, which may have led to selection and methodological bias. Further, only 11 articles from three databases written in English were included; hence, any missing studies may have added additional insight and important interventions. Also, this review includes a small sample size because there are limited studies on this topic that focused on nurses only. However, this review is significant because it presents several interventions that have been studied and demonstrates the gaps for research, policy, and practice.

CONCLUSION

In times of infectious disease outbreaks, nurses are significantly vulnerable to developing several acute or chronic psychological symptoms of CF, including insomnia, fatigue, depression, and anxiety, which impact their health and patient care. This necessitates interventions to support nurses' psychological health, thereby maintaining excellent patient care. Early interventions may prevent or alleviate these psychological issues. The involvement of organizational levels' interventions along with interventions that target different factors causing the psychological issues among nurses could be a helpful, innovative approach to be considered in the future. This review presents the state of the science as it has progressed over time and how it can be further advanced.

ACKNOWLEDGMENTS

I would like to thank Dr. Joanne C. Langan, PhD, RN, CNE, for providing guidance and feedback throughout writing this manuscript.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest.


AUTHOR CONTRIBUTIONS

The author confirms sole accountability for the following: study design, data collection, interpretation of results, and manuscript preparation.

ETHICAL APPROVAL

I Samah Hawsawi confirmed that the review research meets the ethical guidelines, including adherence to the legal requirements of research. I confirm that the manuscript has been submitted solely to this journal and is not published, in press, or submitted elsewhere.

ORCID

Samah Hawsawi MSN, RN, PhD student  <https://orcid.org/0000-0003-0802-4392>

REFERENCES

- Al Maqbali, M., Al Sinani, M., & Al-Lenjawi, B. (2020) Prevalence of stress, depression, anxiety and sleep disturbance among nurses during the COVID-19 pandemic: A systematic review and meta-analysis. *Journal of Psychosomatic Research*, 141. <https://doi.org/10.1016/j.jpsychores.2020.110343>
- Alharbi, J., Jackson, D., & Usher, K. (2019) Compassion fatigue in critical care nurses. An integrative review of the literature. *Saudi Medical Journal*, 40(11), 1087–1097. <https://doi.org/10.15537/smj.2019.11.24569>
- Bai, Y., Lin, C.-C., Lin, C.-Y., Chen, J.-Y., Chue, C.-M., & Chou, P. (2004) Survey of stress reactions among health care workers involved with the SARS outbreak. *Psychiatric Services*, 55(9), 1055–1057. <https://doi.org/10.1176/appi.ps.55.9.1055>
- Balslem, H., Helfand, M., Schünemann, H. J., Oxman, A. D., Kunz, R., Brozek, J., Vist, G. E., Falck-Ytter, Y., Meerpohl, J., & Norris, S. (2011) GRADE guidelines: 3-rating the quality of evidence. *Journal of Clinical Epidemiology*, 64(4), 401–406. <https://doi.org/10.1016/j.jclinepi.2010.07.015>

- Cabarkapa, S., Nadjidai, S. E., Murgier, J., & Ng, C. H. (2020) The psychological impact of COVID-19 and other viral epidemics on frontline healthcare workers and ways to address it: A rapid systematic review. *Brain, Behavior, & Immunity-Health*, 100144. <https://doi.org/10.1016/j.bbih.2020.100144>
- Callus, E., Bassola, B., Fiolo, V., Bertoldo, E. G., Pagliuca, S., & Lusignani, M. (2020) Stress reduction techniques for health care providers dealing with severe coronavirus infections (SARS, MERS, and COVID-19): A rapid review. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.589698>
- Caron, P. (2020) Using provider education about self-care to reduce compassion fatigue among nurses. *Doctor of Nursing Practice*, 37. <https://digitalcommons.pittstate.edu/dnp/37/>
- Centers for Disease Control and Prevention. (2012) Principles of epidemiology. <https://www.cdc.gov/csels/dsepd/ss1978/lesson1/section11.html>.
- Chen, R., Chou, K.-R., Huang, Y.-J., Wang, T.-S., Liu, S.-Y., Ho, & Li, Y. (2006) Effects of a SARS prevention program in Taiwan on nursing staff's anxiety, depression and sleep quality: A longitudinal survey. *International Journal of Nursing Studies*, 43(2), 215–225. <https://doi.org/10.1016/j.ijnurstu.2005.03.006>
- Chmitorz, A., Kunzler, A., Helmreich, I., Tüscher, O., Kalisch, R., Kubiak, T., Wessa, M., & Lieb, K. (2018) Intervention studies to foster resilience—A systematic review and proposal for a resilience framework in future intervention studies. *Clinical Psychology Review*, 59, 78–100. <https://doi.org/10.1016/j.cpr.2017.11.002>
- Cleary, M., Kornhaber, R., Thapa, D. K., West, S., & Visentin, D. (2018) The effectiveness of interventions to improve resilience among health professionals: A systematic review. *Nurse Education Today*, 71, 247–263. <https://doi.org/10.1016/j.nedt.2018.10.002>
- Dijkstra, M. T. M., & Homan, A. C. (2016) Engaging in rather than disengaging from stress: Effective coping and perceived control. *Frontiers in Psychology*, 7. <https://doi.org/10.3389/fpsyg.2016.01415>
- Dincer, B., & Inangil, D. (2020) The effect of emotional freedom techniques on nurses' stress, anxiety, and burnout levels during the COVID-19 pandemic: A randomized controlled trial. *Explore*, 17(2), 109–114. <https://doi.org/10.1016/j.explore.2020.11.012>
- Fernandez, R., Lord, H., Halcomb, E., Moxham, L., Middleton, R., Alananzeh, I., & Ellwood, L. (2020) Implications for COVID-19: A systematic review of nurses' experiences of working in acute care hospital settings during a respiratory pandemic. *International Journal of Nursing Studies*, 103637, 111. <https://doi.org/10.1016/j.ijnurstu.2020.103637>
- Hossain, M. M., Tasnim, S., Sultana, A., Faizah, F., Mazumder, H., Zou, L., McKyer, E. L. J., Ahmed, H. U., & Ma P. (2020) Epidemiology of mental health problems in COVID-19: A review. *F1000Research*, 9. <https://doi.org/10.12688/f1000research.24457.1>
- Huey, C. W. T., & Palaganas, J. C. (2020) What are the factors affecting resilience in health professionals? A synthesis of systematic reviews. *Medical Teacher*, 42(5), 550–560. <https://doi.org/10.1080/0142159X.2020.1714020>
- Iheduru-Anderson, K. (2021) Reflections on the lived experience of working with limited personal protective equipment during the COVID-19 crisis. *Nursing Inquiry*, 28(1), e12382. <https://doi.org/10.1111/nin.12382>
- Jin, M., Wang, J., Zeng, L., Xie, W., Tang, P., & Yuan, Z. (2021) Prevalence and factors of compassion fatigue among nurse in China: A protocol for systematic review and meta-analysis. *Medicine*, 100(3), s24289. <https://doi.org/10.1097/MD.00000000000024289>
- Khalid, I., Khalid, T. J., Qabajah, M. R., Barnard, A. G., Qushmaq, I. A. (2016) Healthcare workers emotions, perceived stressors and coping strategies during MERS-CoV outbreak. *Clinical Medicine & Research*, 14(1), 7–14. <https://doi.org/10.3121/cm.2016.1303>
- Korkmaz, S., Kazgan, A., Çekiç, S., Tartar, A. S., Balci, H. N., & Atmaca, M. (2020) The anxiety levels, quality of sleep and life and problem-solving skills in healthcare workers employed in COVID-19 services. *Journal of Clinical Neuroscience*, 80, 131–136. <https://doi.org/10.1016/j.jocn.2020.07.073>
- Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., Wei, N., ... Hu, S. (2020) Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Network Open*, 3(3). <https://doi.org/10.1001/jamanetworkopen.2020.3976>
- Li, D. F., Shi, C.-X., Shi, F.-Z., Zhao, L., Zhao, R., Kang, W.-Q. (2020) Effects of simulation training on COVID-19 control ability and psychological states of nurses in a children's hospital. *European Review for Medical and Pharmacological Sciences*, 24, 11381–11385. https://doi.org/10.26355/eurrev_202011_23630
- Liu, Yu, Jiang, T.-T., Shi, T.-Y., Liu, Y.-N., Liu, X.-M., Xu, G.-J., Li, F.-L., Wang, Y.-L., & Wu, X.-Y. (2020) The effectiveness of diaphragmatic breathing relaxation training for improving sleep quality among nursing staff during the COVID-19 outbreak: A before and after study. *Sleep Medicine*, 78, 8–14. <https://doi.org/10.1016/j.sleepx.2020.100026>
- McKenna, H. (2020) Covid-19: Ethical issues for nurses. *International Journal of Nursing Studies*, 110. <https://doi.org/10.1016/j.ijnurstu.2020.103673>
- Mental Health America. (2020) The mental health of healthcare workers in COVID-19. <https://mhanational.org/mental-health-healthcare-workers-covid-19>
- International Council of Nurses (ICN). (2021). The global nursing shortage and nurse retention. <https://bit.ly/3uiv7tq>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... Moher, D. (2021) The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, 372, n71. <http://doi.org/10.1136/bmj.n71>
- Pinho, L., Correia, T., Sampaio, F., Sequeira, C., Teixeira, L., Lopes, M., Fonseca, C. (2021) The use of mental health promotion strategies by nurses to reduce anxiety, stress, and depression during the COVID-19 outbreak: A prospective cohort study. *Environmental Research*, 110828, 195. <https://doi.org/10.1016/j.envres.2021.110828>
- Polit, D. F., & Beck, C. T. (2017) *Nursing research: Generating and assessing evidence for nursing practice* (10th ed.). Wolters Kluwer.
- Preti, E., Di Mattei, V., Perego, G., Ferrari, F., Mazzetti, M., Taranto, P., et al. (2020) The psychological impact of epidemic and pandemic outbreaks on healthcare workers: Rapid review of the evidence. *Current Psychiatry Reports*, 22(8), 22–43. <https://doi.org/10.1007/s11920-020-01166-z>
- Rodriguez-Vega, B., Palao, Á., Muñoz-Sanjose, A., Torrijos, M., Aguirre, P., Fernández, A., ... Bayón, C. (2020) Implementation of a mindfulness-based crisis intervention for frontline healthcare workers during the COVID-19 outbreak in a public general hospital in Madrid, Spain. *Frontiers in Psychiatry*, 11, 1170. <https://doi.org/10.3389/fpsyg.2020.562578>
- Roychoudhury, S., Das, A., Sengupta, P., Dutta, S., Roychoudhury, S., Choudhury, A. P., Ahmed, A. B. F., Bhattacharjee, S., & Slama, P. (2020) Viral pandemics of the last four decades: Pathophysiology, health impacts and perspectives. *International Journal of Environmental Research and Public Health*, 17(24), 9411. <https://doi.org/10.3390/ijerph17249411>
- Salopek-Ziha, D., Hlavati, M., Gvozdanovic, Z., Gasic, M., Placento, H., Jakic, H., Klapan, D., & Simic, H. (2020) Differences in distress and coping with the COVID-19 stressor in nurses and physicians. *Psychiatria Danubina*, 32(2), 287–293. <https://doi.org/10.24869/psyd.2020.287>
- Sanadgol, S., Firouzkouhi, M., Badakhsh, M., Abdollahimohammad, A., & Shahraki-Vahed, A. (2020) Effect of guided imagery training on death anxiety of nurses at COVID-19 intensive care units: A quasi-experimental study. *Neuropsychiatria i Neuropsychologia/Neuropsychiatry and Neuropsychology*, 15(3), 83–88. <https://doi.org/10.5114/nan.2020.101290>
- Shreffler, J., Huecker, M., & Petrey, J. (2020) The impact of COVID-19 on healthcare worker wellness: A scoping review. *Western Journal of Emergency Medicine*, 21(5), 1059. <https://doi.org/10.5811/westjem.2020.7.48684>
- Tarquinio, C., Brennstuhl, M.-Jo, Rydberg, J. A., Bassan, F., Peter, L., Tarquinio, C. L., Auxéméry, Y., Rotonda, C., & Tarquinio, P. (2020) EMDR in telemental health counseling for healthcare workers caring for COVID-19 patients: A pilot study. *Issues in Mental Health Nursing*, 24, 3–14. <https://doi.org/10.1080/01612840.2020.1818014>
- Vizheh, M., Qorbani, M., Arzaghi, S. M., Muhidin, S., Javanmard, Z., & Esmaeili, M. (2020) The mental health of healthcare workers in the COVID-19 pandemic: A systematic review. *Journal of Diabetes & Metabolic Disorders*, 19, 1–12. <https://doi.org/10.1007/s40200-020-00643-9>
- Whittemore, R., Knaf, K. (2005) The integrative review: Updated methodology. *Journal of Advanced Nursing*, 52(5), 546–553. <https://doi.org/10.1111/j.1365-2648.2005.03621.x>

Zhu, J., Stone, T., & Petrini, M. (2021) The ethics of refusing to care for patients during the coronavirus pandemic: A Chinese perspective. *Nursing Inquiry*, 28(1), e12380. <http://doi.org/10.1111/nin.12380>

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

How to cite this article: Hawsawi, S. (2022) Alleviating psychological symptoms in nurses during disease outbreaks: An integrative review. *International Nursing Review*, 1–14. <https://doi.org/10.1111/inr.12756>