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REVIEW ARTICLE

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Healthcare worker resilience during the COVID-19 pandemic: An integrative review

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Abstract

Aim: The purpose of this review was to examine resilience among healthcare workers during the coronavirus-disease-2019 (COVID-19) pandemic.

Background: The COVID-19 pandemic has caused an unprecedented strain on healthcare workers internationally. Rising infection rates, inadequate personal protective equipment, and the lack of availability of hospital beds has resulted in further deterioration of the already-fragile mental health of healthcare workers. Resilient workers have lower rates of burnout and improved patient outcomes.

Evaluation: PubMed and the Cumulative Index to Nursing and Allied Health Literature databases were searched using the terms resilience, nurse and COVID-19 to identify studies on resilience during the COVID-19 pandemic. Results were organized by outcome measures for comparison.

Key Issues: Resilience scores among frontline healthcare workers worldwide during the COVID-19 pandemic in the studies reviewed were overall found to be in the moderate range. Data from the United States showed a decrease in nurse resilience, whereas participants from China had increased resilience compared with pre-pandemic levels.

Conclusions: Building resilience in nurses and other healthcare workers can serve as a protective factor against negative outcomes related to the job, including burnout, anxiety and depression, and can improve patient outcomes.

Implications for Nursing Management: Strategies for building resilience in healthcare workers are discussed.

KEYWORDS
burnout, COVID-19, health personnel, psychological, resilience, psychological, review (publication type)

1 | INTRODUCTION

The coronavirus-disease-2019 (COVID-19) pandemic has caused an unprecedented strain on healthcare systems and healthcare workers around the world. Rising infection rates, inadequate personal protective equipment, and the lack of availability of hospital beds has resulted in further deterioration of the already-fragile mental health of healthcare workers (Firew et al., 2020). The negative state of healthcare worker mental health was documented prior to the COVID-19 pandemic (National Academies of Sciences, Engineering, and Medicine, 2019). Being a healthcare worker during a pandemic comes with a myriad of stressors beyond those typically experienced. According to the National Academies of Sciences, Engineering, and Medicine (2021) *Future of Nursing 2020–2030* report, nurses' well-being is affected by the demands of the job, which in turn affects their work.

Resilience is defined as the ability to positively adapt to traumatic or adverse experiences (Luthar & Cicchetti, 2000). Resilience can be

measured using various tools, including the Connor–Davidson Resilience Scale (CD-RISC) 25-item version and 10-item version (CD-RISC10). Davidson (2018) recommended that scores be interpreted based on the quartiles of scores obtained from the general population. Scores within the first quartile are considered low resilience scores, the second and third quartiles are considered intermediate resilience scores, and scores in the fourth quartile are considered high resilience scores (Davidson, 2018). Based on the United States (U.S.) general population, a score of 73 or below indicates low resilience, and a score of 91 or higher indicates high resilience (Connor & Davidson, 2003; Davidson, 2018). The CD-RISC 25-item scale had a Cronbach's alpha value of 0.89 in the general population, indicating good internal reliability (Connor & Davidson, 2003).

"When stress overpowers resilience, performance … can degrade" (National Academies of Sciences, Engineering, and Medicine, 2019, p. 42). With the challenges of the pandemic and their effect on healthcare workers, it is imperative that leaders and healthcare institutions understand the current state of healthcare worker resilience and burnout. Understanding the broad range of effects associated with the pandemic will inform leaders as they plan for helping healthcare personnel manage current and future challenges associated with their work.

Prior to the COVID-19 pandemic, burnout was occurring at alarming rates of 35%–54% among nurses and physicians (National Academies of Sciences, Engineering, and Medicine, 2019). The inverse relationship between resilience and burnout has been established in previous studies (Colville et al., 2015; Guo et al., 2018; Rushton et al., 2015). Interventions aimed at building resilience in healthcare workers can help to decrease rates of burnout, therefore improving patient safety (Garcia et al., 2019) and decreasing hospital-acquired infections (Cimiotti et al., 2012; Van Bogaert et al., 2014) and medication errors (Van Bogaert et al., 2014). Not only does resilience correlate negatively with burnout, but there is also evidence of its inverse relationship with post-traumatic stress disorder (PTSD), further elevating the importance of resilience among health care workers (Rodríguez-Rey et al., 2019; Schäfer et al., 2018).

Previous systematic reviews related to the COVID-19 pandemic have looked at the effects of the pandemic on mental health outcomes including depression, anxiety and fear in nurses and other healthcare workers (da Silva & Neto, 2021; de Pablo et al., 2020; Sheraton et al., 2020). None of these reviews have measured resilience, an important factor associated with burnout prevention (National Academies of Sciences, Engineering, and Medicine, 2019). The purpose of this integrative review was to examine resilience in healthcare workers during the COVID-19 pandemic. Based on the results of this review, methods of increasing nurse resilience will be discussed.

2 | METHODS

This integrative review was conducted to identify levels of resilience among healthcare workers during the COVID-19 pandemic, because resilience is associated with burnout and patient outcomes. Methodology by Whittemore and Knafl (2005) was the guiding framework for this integrative review. The review process is made up of five stages: problem identification, literature search, data evaluation, data analysis and presentation (Whittemore & Knafl, 2005). The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement was utilized to guide the search methodology (Moher et al., 2009). Two searches were performed in December 2020 and February 2021 for relevant published articles from 2019 forward. The Cumulative Index to Nursing and Allied Health Literature (CINAHL) and PubMed databases were searched using the terms: nurse, resilience, and COVID-19 (or coronavirus, 2019-ncov, sars-cov-2, or cov-19 in CINAHL). Articles were limited to those published in English, available in full-text, and from peer-reviewed journals.

Per PRISMA guidelines, eligible articles were screened for relevance to the review, and duplicates were removed (Moher et al., 2009). Studies were considered eligible for inclusion if they explored resilience either quantitatively or qualitatively in frontline healthcare workers specifically during the COVID-19 pandemic. Articles were excluded if they were not empirical research, if the data reported were not collected during the COVID-19 pandemic, and if resilience was not measured. Some of the studies also reported on burnout among healthcare workers, psychological outcomes including PTSD, anxiety and depression, and some reported on work engagement.

Figure 1 shows the PRISMA flow diagram and demonstrates how many articles were reviewed at each stage of the search process (Moher et al., 2009). Eligible articles were exported to a computer-based software (Zotero) for screening of abstracts, then for full-text article review (Zotero.org, n.d.). Data within the full-text articles were searched for measurement of resilience using a formal tool (if a quantitative design). Means and/or correlation values were examined. Due to different resilience tools being utilized by the studies included in this review, scores had to be converted to low resilience, moderate resilience and high resilience for comparison. Results of Pearson correlations and regression analyses were also reviewed to identify relationships of resilience to other variables studied during the pandemic including anxiety, depression, work engagement and others.

3 | RESULTS

A total of 191 articles were screened for inclusion criteria between the two searches; 32 were selected for this review (Figure 1). The studies were conducted from countries worldwide, including China ($n = 11$) (Cai et al., 2020; Hu et al., 2020; Huang et al., 2020; Leng et al., 2020; Li et al., 2020; Liang et al., 2020; Lin et al., 2020; Liu et al., 2020; Lyu et al., 2020; Ou et al., 2020; Pang et al., 2021), Italy ($n = 1$) (Catania et al., 2020), Iran ($n = 2$) (Afshari et al., 2021; Meybodi & Mohammadi, 2020), France ($n = 1$) (Altmayer et al., 2020), Japan ($n = 1$) (Awano et al., 2020), Saudi Arabia ($n = 1$)

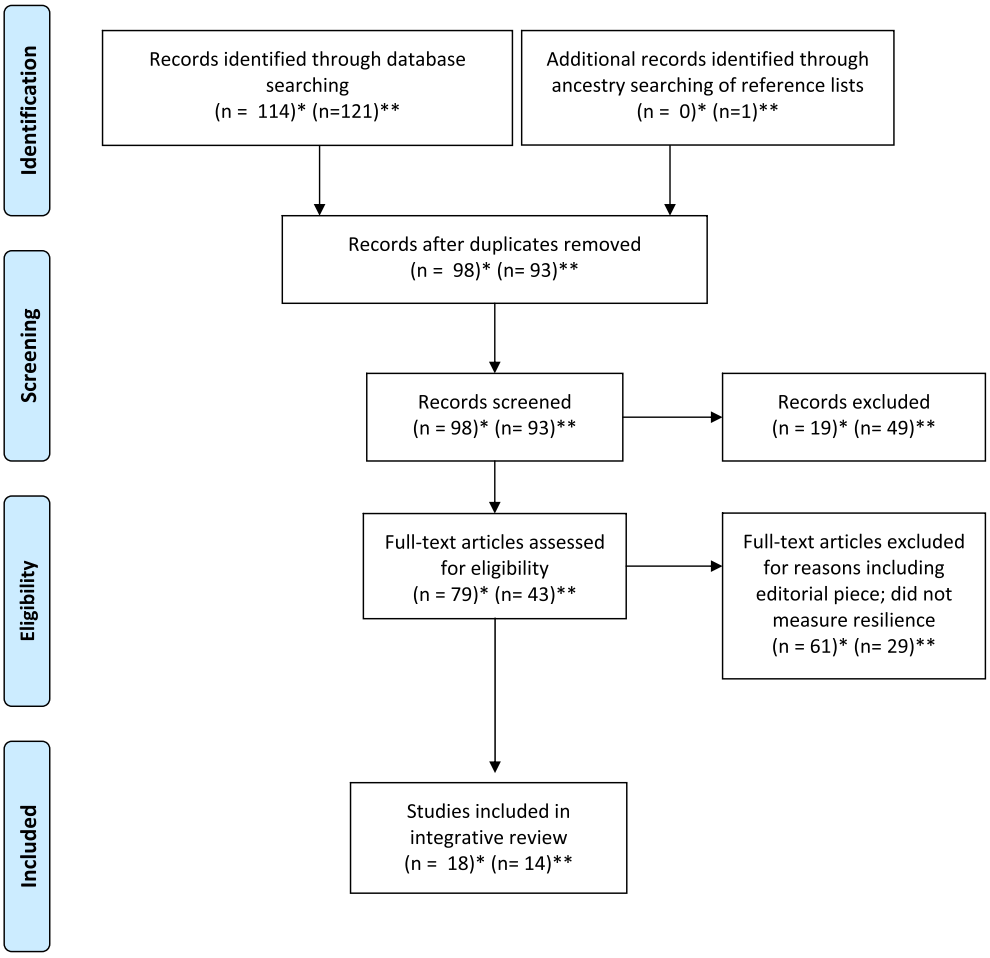

FIGURE 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram of literature search

*Literature search conducted in December 2020; **Literature search conducted in February 2021

(Balay-odao et al., 2021), the United States, ($n = 3$) (Barzilay et al., 2020; LoGuidice & Bartos, 2021; Resnick, 2020), Singapore ($n = 1$) (Goh et al., 2020), India ($n = 2$) (Jose et al., 2020; Nathiya et al., 2021), Turkey ($n = 3$) (Kılınç & Çelik, 2020; Yıldırım et al., 2020; Yörük & Güler, 2020), the Philippines ($n = 1$) (Labrague & de los Santos, 2020), Canada ($n = 1$) (Lapum et al., 2020), Spain ($n = 2$) (Lorente et al., 2020; Luceño-Moreno et al., 2020), the United Kingdom ($n = 1$) (Roberts et al., 2021) and Ethiopia ($n = 1$) (Tsehay et al., 2020). A summary of the articles included in this integrative review and their results can be found in Table 1.

Overall, resilience scores among frontline healthcare workers during the COVID-19 pandemic in the studies reviewed were in the moderate range (CD-RISC range = 35.54–92.77) (Afshari et al., 2021; Cai et al., 2020; Jose et al., 2020; Kilinc & Celik, 2020; Leng et al., 2020; Li et al., 2020; Lin et al., 2020; Lyu et al., 2020; Nathiya et al., 2021; Ou et al., 2020; Pang et al., 2021). In two studies conducted in Asia, physicians had higher resilience scores than nurses (Awano et al., 2020; Lin et al., 2020), and support staff had the highest resilience scores (mean = 73.48) compared with doctors (mean = 67.78) and nurses (mean = 64.86) (Lin et al., 2020). Frontline workers, (e.g., doctors, nurses and ancillary staff) had lower CD-RISC10 scores than non-frontline workers (median = 18 and median = 23, respectively; = 0.061) (Awano et al., 2020). Nurses on the frontline reported emotions across a spectrum from negative to positive: from sadness, hopelessness and exhaustion to hopeful, grateful, and supported (Resnick, 2020).

Resilience scores had statistically significant ($p < 0.05$ or smaller) inverse relationships with PTSD (Li et al., 2020; Luceño-Moreno et al., 2020), anxiety (Awano et al., 2020; Barzilay et al., 2020; Hu et al., 2020; Labrague & de los Santos, 2020; Lin et al., 2020; Luceño-Moreno et al., 2020; Pang et al., 2020; Roberts et al., 2020; Yıldırım et al., 2020) and depression (Awano et al., 2020; Barzilay et al., 2020; Hu et al., 2020; Lin et al., 2020; Luceño-Moreno et al., 2020; Pang et al., 2021; Roberts et al., 2021; Yıldırım et al., 2020; Yörük & Güler, 2020). Roughly half of nurses reported moderate to high burnout, and those who had higher burnout scores reported lower resilience scores (Hu et al., 2020). There were statistically significant ($p < 0.05$ or smaller) negative correlations between resilience and the burnout subscales emotional exhaustion and depersonalization, and a positive correlation with the burnout subscale personal accomplishment (Hu et al., 2020; Jose et al., 2020; Luceño-Moreno et al., 2020; Yörük & Güler, 2020). Spending more

TABLE 1 Summary of literature

Study	Purpose	Study design	Measurement scales	Participants (n)	Data outcomes
Afshari et al., Iran	Identify resilience scores and demographic factors among nurses working in hospitals caring for COVID-19 patients	Descriptive	CD-RISC, demographic information questionnaire	387	CD-RISC range 26–96 (mean = 61.18). 12% of sample had high resilience (>80). Pearson correlations between resilience and: Age ($r = 0.61$*), work experience ($r = 0.572$*), and level of education ($r = 0.514$*).
Altmayer et al., France	Comparison between regular staff and reinforcement staff's psychological status in a neuro ICU	Descriptive	HADS, PCL-5, McGill Quality of Life Questionnaire-Revised (MQOL-R), CD-RISC10	69	CD-RISC scores regular staff (mean = 29) and reinforcement staff (mean = 28).
Awano et al., Japan	Assess anxiety, depression, resilience, and other psychiatric symptoms in healthcare workers during COVID-19	Descriptive	CD-RISC 10, GAD-7, CES-D	848	Median CD-RISC10 = 22; Spearman's correlation GAD7 and CDRISC $r = -0.27$***; CESD & CDRISC $r = -0.43$***
Balay-odao et al., Saudi Arabia	Determine psychological burden and resilience among nurses, and the predictors of hospital preparedness in managing COVID-19 patients	Cross- sectional	Hospital preparedness assessment tool, DASS-21, resilience scale for nurses	281	Resilience scale mean = 4.03 (high). The addition of 1 year to the participant's age resulted in a 0.2 increase in resilience ($p = 0.027$).
Barzilay et al., United States	Explore anxiety, depression, and resilience scores in healthcare workers during the COVID-19 pandemic	Descriptive	21- item resilience survey and assessment of COVID-19-related stress (worries), GAD7 and PHQ2	3,402	Those who had higher resilience scores had lower COVID-19 related worries than participants with lower resilience scores. Higher resilience scores were associated with lower generalized anxiety*** and depression***.
Cai et al., China	Investigate psychological effects in healthcare workers during the COVID-19 pandemic and associations between social support, resilience, and mental health.	Cross- sectional	SCL-90, CD-RISC, SSRS	1,521	Staff who did not experience a public health emergency before had significantly lower CD-RISC scores than experienced staff***. CD-RISC scores in 'fresh staff' = 67.73 ($SD = 14.85$), vs. experienced staff = 75.36 ($SD = 13.27$).
Catania et al., Italy	Explore issues with nursing	Qualitative descriptive	N/A	23	6 themes that emerged: organizational and

(Continues)

TABLE 1 (Continued)

Study	Purpose	Study design	Measurement scales	Participants (n)	Data outcomes
	management in the setting of the COVID-19 pandemic via narratives of nurses				logistic change; leadership models adopted to manage the emergency; changes in nursing approaches; personal protective equipment (PPE) issues; physical and psychological impact on nurses; and team value/spirit.
Goh et al., Singapore	Explore nurses' experiences of working in the hospital during the COVID-19 pandemic	Qualitative descriptive	N/A	17	Three main themes emerged: challenging moments of COVID, the professional role of the nurse, and support for nurses
Hu et al., China	Examine burnout, anxiety, depression, and fear and their associated factors among frontline nurses caring for COVID-19 patients in Wuhan, China	Cross-sectional, descriptive, correlational	MBI, SAS, SDS, FS-HPs, GSS, SLS, MSPSS, CDRISC10	2014	The participants had moderate levels of burnout: EE (mean = 23.44, *SD* = 13.80), DP (mean = 6.77, *SD* = 7.05), and PA (mean = 34.83, *SD* = 9.95). Mean CD-RISC = 26.14 (*SD* = 7.33). Resilience was significantly correlated (*r*) with the following: EE = −0.325***, DP = −0.208***, PA = 0.436***, anxiety = −0.427***, depression = −0.554***, and fear = −0.121***.
Huang et al., China	Determine levels of anxiety and associated risk factors in health care workers	Cross- sectional, observational	SAS, CD-RISC	364	16.2% of sample had resilience scores <50, 83.8% had scores >50. Resilience (*b* = −0.349***) was protective for the development of anxiety.
Jose et al., India	Determine rates of burnout and resilience and their associated factors in nurses providing direct patient care in a tertiary care centre emergency departments	Descriptive, cross-sectional	MBI-HSS, CD-RISC	120	CDRISC range 43–97 (mean = 77.77, *SD* = 12.41). 47.5% of the sample had high resilience. Significant correlations between resilience and EE (*r* = −.252*) and resilience and reduced personal accomplishment (*r* = −0.313**) were identified.
Kilinc and Celik, Turkey	Determine the relationship between resilience	Descriptive, cross-sectional	MSPSS, CD-RISC, descriptive properties form	370	Mean CD-RISC = 64.28 (*SD* = 15.99). Pearson's correlation (*r*) between

(Continues)

TABLE 1 (Continued)

Study	Purpose	Study design	Measurement scales	Participants (n)	Data outcomes
	and social support in nurses during the COVID-19 pandemic in Turkey				CD-RISC and MSPSS was 0.424***.
Labrague and de los Santos, Philippines	Examine the relationship between resilience, social support and organizational support to reduce COVID-19 anxiety in frontline nurses	Cross- sectional	COVID-19 anxiety scale, BRCS, PSSQ, POS	325	BRCS mean = 4.190 ($SD = 0.687$). Pearson's correlation (r) between anxiety and resilience was −0.217*** resilience predicted COVID-19 anxiety ($\beta = -0.151$, $p = 0.008$).
Lapum et al., Canada	Explore how nurses are emotionally affected by working in the acute care COVID-19 setting	Narrative methodology	N/A	20	Themes that emerged: the emotional experience, the agency of emotions, and how emotions shape nursing and practice
Leng et al., China	Quantify the severity of nurses' PTSD symptoms and stress while caring for COVID-19 patients and explore influencing factors on their psychological health	Cross- sectional	PTSD checklist-civilian, PSS	90	Mean CD-RISC = 79.34 ($SD = 11.98$). PTSD scores ranged from 17–42 (mean = 24.62, $SD = 6.68$).
Li et al., China	Evaluate psychological well-being and factors associated with PTSD among nurses during the COVID-19 pandemic	Predictive	PSS, PCL-5, CD-RISC	356	Mean CD-RISC = 59.6. Nurses with PTSD had significantly lower resilience than those without PTSD***.
Liang et al., China	Evaluate psychological symptoms in frontline healthcare workers in China during the COVID-19 pandemic and compare to the general population.	Descriptive	PHQ9, GAD-7, ISI, CDRISC-10	899 frontline workers and 1,104 general population	Mean CD-RISC10 medical workers in Hubei province = 26.36, vs. Hubei gen pop = 25.80; mean CD-RISC10 medical workers other regions = 27.47 vs. other region gen pop = 26.35.
Lin et al., China	Investigate resilience of nonlocal medical workers sent to support local medical workers fighting the COVID-19 pandemic	Cross- sectional	CD-RISC, HADS, SCSQ	114	Mean CDRISC = 67.04; RN resilience = 64.86, physician resilience = 67.78, other medical workers = 73.48. Resilience correlations (Pearson's r): anxiety = −0.498*, depression = −0.47*, active coping = 0.733*,

(Continues)

TABLE 1 (Continued)

Study	Purpose	Study design	Measurement scales	Participants (n)	Data outcomes
					and passive coping = 0.012.*
Liu et al., China	Describe the experiences of healthcare providers in the early stages of the COVID-19 outbreak	Empirical phenomenological	N/A	13	Three themes were identified: being responsible for the patients' well-being, challenges of working on COVID-19 wards, and resilience despite the challenges
LoGuidice and Bartos, United States	Understand nurses' lived experiences and levels of resilience during the COVID-19 outbreak	Convergent mixed methods	BRCS	43	Mean BRCS = 14.4 (*SD* = 2.3). 9 participants were highly resilient copers, 19 were medium resilient copers, and 15 were low resilient copers. Themes from the qualitative analysis: restorative self-care. Proud to be a nurse, the never-ending sanitize cycle, how nurses bridge the gap in family ties, and 'what's the protocol today? And where is the research?'
Lorente et al., Spain	Effect of sources of stress on nurses' psychological distress during the COVID-19 pandemic and the mediating role of coping strategies and resilience	Cross-sectional	Nursing stress scale (NSS), brief COPE scale, resilience scale, DASS-21	421	Resilience mean = 3.79 (*SD* = 0.83). Resilience was negatively and significantly correlated to: insufficient preparation (−0.19***), fear of infection (−0.12, $p = 0.016$), problem focused coping (0.28***), and emotion focused coping (0.43***).
Luceño-Moreno et al., Spain	Analyse post-traumatic stress, anxiety, and depression during the COVID-19 pandemic	Cross- sectional	IES-R, HADS, MBI-HSS, BRS	1,422	Mean BRS = 3.02. Resilience was significantly correlated with: intrusion ($r = -0.361^{**}$), avoidance ($r = -0.324^{**}$), hyperarousal ($r = -0.434^{**}$), posttraumatic stress ($r = -0.412^{**}$), anxiety ($r = -0.461^{**}$), depression ($r = -0.460^{**}$), EE ($r = -0.324^{**}$), DP ($r = -0.161^{**}$), and PA ($r = 0.259^{**}$).
Lyu et al., China	Explore how organizational identity and resilience affect work engagement	Associational	General information questionnaire, UWES, CD-RISC, OIQ	216	CD-RISC mean = 92.77 (*SD* = 13.06). A significant positive correlation was found between nurses'

(Continues)

TABLE 1 (Continued)

Study	Purpose	Study design	Measurement scales	Participants (n)	Data outcomes
	in frontline nurses during the COVID-19 pandemic				resilience and work engagement ($r = 0.491^{**}$)
Meybodi and Mohammadi Iran	Identify the components of spirituality that affect resilience in nurses caring for COVID-19 patients	Qualitative descriptive	N/A	11	7 themes identified: religious values, ethical orientation, wisdom, voluntary activities, self-awareness, belief in otherworld, and patience and hope.
Nathiya et al., India	Investigate the psychological impact of the COVID-19 pandemic on frontline workers and its associations to quality of life, resilience, and mental health outcomes	Descriptive, cross-sectional	IES-R, CD-RISC, ProQOL	418	Participants working in COVID-19 areas had lower resilience (OR: 0.85, $p = 0.009$). Resilience scores as follows: COVID-19 unit (mean = 35.79, $SD = 13.2$), ICU (mean = 35.54, $SD = 12.5$), ED (mean = 42.3, $SD = 11.1$), comparison unit (mean = 48.37, $SD = 9.6$). Correlations between resilience and: Satisfaction (0.63), burnout (-0.469^{**}), stress (-0.297^{**}), avoidance (-0.392^{**}), and hyperarousal (-0.433^{**}).
Ou et al., China	Investigate psychological symptoms in nurses and assess the impact of hospital support interventions on their psychological symptoms	Cross- sectional	CD-RISC, SCL-90	92	Mean CD-RISC = 87.04 ($SD = 22.78$).
Pang et al., China	Explore factors related to anxiety and depression in nurses fighting COVID-19 in China	Cross- sectional	GAD-7, PHQ9, CD-RISC, SCSQ	282	Median CDRISC score = 81. CDRISC correlations to GAD-7 (-0.379^{**}) and PHQ-9 (-0.375^{**}) were both significant.
Resnick, United States	Explore long-term care nurses' experiences during the COVID-19 pandemic	Qualitative	N/A	20	Emotions expressed by participants included: exhaustion, helpless, sad, hopeful, grateful, and supported. Participants requested more PPE and education on its use. Participants also provided self-care recommendations.
Roberts et al., United Kingdom	Explore UK nurses' experiences of working in a	Cross-sectional	RS14, GAD7, PHQ9	255	Median score for resilience was 82 (range 14–98). Resilience had a

(Continues)

TABLE 1 (Continued)

Study	Purpose	Study design	Measurement scales	Participants (n)	Data outcomes
	respiratory clinical area during the COVID-19 pandemic				significant negative correlation with both anxiety ($r = -0.316^{***}$) and depression ($r = -0.372^{***}$).
Tsehay et al., Ethiopia	Report the prevalence of COVID-19 related psychological distress in healthcare workers, factors associated with psychological distress, and their coping behaviours	Cross- sectional	Kessler psychological distress scale (K10), BRCS, SSRS	423	BRCS data: High $n = 14$ (3.4%), moderate $n = 98$ (23.7%), and low $n = 301$ (72.9%). K10 > 20 = 42%.
Yıldırım et al., Turkey	Examine the effects of resilience and fear in the relationship between perceived risk and mental health outcomes in health professionals caring for COVID-19 patients	Correlational	DASS-21, BRS	204	Resilience correlations with: Coronavirus fear ($r = -0.33^{**}$), depression ($r = -0.36^{**}$), stress ($r = -0.43^{**}$), and anxiety ($r = -0.38^{**}$) were significant. Correlations between perceived risk and resilience was $r = -0.19$.
Yörük and Güler, Turkey	Determine the relationship between resilience, burnout, stress, and socio-demographic variables with depression in nurses and midwives during the COVID-19 pandemic	Cross- sectional	PSS, BDI, MBI-HSS, RSA	377	Resilience mean = 124.87 ($SD = 18.43$). Correlations between resilience and: perceived stress ($r = -0.23^{***}$). Depression ($r = -0.51^{***}$), PA ($r = 0.33^{***}$), DP ($r = -0.25^{***}$) and EE ($r = -0.26^{***}$). High psychological resilience was found to be protective against depression risk (OR: 0.95***, 95% CI: 0.93–0.96).

Abbreviations: BDI, Beck Depression Inventory; BRCS, Brief Resilient Coping Scale; BRS, Brief Resilience Scale; CD-RISC, Connor–Davidson Resilience Scale; CES-D, Center for Epidemiologic Studies Depression Scale; DASS-21, Depression, Anxiety, and Stress Scale-21; DP, depersonalization; EE, emotional exhaustion; FS-HPs, Fear Scale for Healthcare Professionals; GAD-7, Generalized Anxiety Disorder Scale, 7-item; GSS, General Self-efficacy Scale; HADS, Hospital Anxiety and Depression Scale; IES-R, Impact of Event Scale- Revised; ISI, Insomnia Severity Index; MBI, Maslach Burnout Inventory/ MBI-HSS, Human Services Survey; MSPSS, Multidimensional Scale of Perceived Social Support; OIQ, Organizational Identity Scale; PA, personal accomplishment; PCL-5, Post-traumatic Stress Disorder Checklist for the DSM-5; PHQ2, Patient Health Questionnaire 2; PHQ9, Patient Health Questionnaire 9; POS, Perceived Organizational Support; ProQOL, Professional Quality of Life Scale; PSS, Perceived Stress Scale; PSSQ, Perceived Social Support Questionnaire; RS14, Resilience Scale-14 items; SAS, Self-Rating Anxiety Scale; SCL-90, Symptom Checklist-90; SCSQ, Simplified Coping Style Questionnaire; SDS, Self-Rating Depression Scale; SLS, Skin Lesion Scale; SSRS, Social Support Rating Scale; UWES, Utrecht Work Engagement Scale.
$^{*}p < 0.05$. $^{**}p < 0.01$. $^{***}p < 0.001$.

than 50% of work time with COVID-19 patients was associated with higher burnout scores among healthcare workers compared to those who worked with COVID-19 patients less than 25% of the time (Firew et al., 2020).

Work engagement had a moderate correlation with nurse resilience ($r = 0.491$, $p < 0.01$) (Lyu et al., 2020). One nurse reported that building resilience while working during the pandemic was essential (Resnick, 2020). Nurses in Italy reported the anxiety they experienced

was related to infection control processes, risk of infecting loved ones, and the distress of watching colleagues suffer, and even die, from COVID-19 (Catania et al., 2020). These nurses also emphasized that the presence of teamwork increased resilience and their drive to overcome the challenges that the COVID-19 pandemic presented to them (Catania et al., 2020).

4 | DISCUSSION

The findings from this review confirmed what has been reported in previous studies in terms of the existence of an inverse relationship between resilience and burnout (Colville et al., 2015; Guo et al., 2018; Rushton et al., 2015). The articles included in this review also provided insight on the strength and direction of the relationships between resilience and other variables including work engagement ($r = 0.491$, $p < 0.01$) (Lyu et al., 2020), social support ($r = 0.424$, $p < 0.001$) (Kılınç & Çelik, 2020), PTSD ($r = -0.412$, $p < 0.01$) (Luceño-Moreno et al., 2020), anxiety ($r = -0.27$, $p < 0.001$) (Awano et al., 2020) and depression ($r = -0.43$, $p < 0.001$) (Awano et al., 2020) during the COVID-19 pandemic. These results can inform future studies of interventions aimed at increasing resilience to improve mental health outcomes in healthcare workers, which could also improve patient outcomes.

Six of the 12 studies (50%) that measured resilience in this review using the CD-RISC reported resilience scores below the 25th percentile (score of less than 74) based on U.S. population values (Afshari et al., 2021; Cai et al., 2020; Kilinc & Celik, 2020; Li et al., 2020; Lin et al., 2020; Nathiya et al., 2021). However, because the majority ($n = 27$; 84%) of studies were conducted in Europe and Asia, the lower mean resilience score of 59.99 in the Chinese population may be a better comparison value. Connor and Davidson (2003) reported that the mean CD-RISC (resilience) score in the general U.S. population was 80.4, which is considered intermediate or moderate. The mean CD-RISC in a Chinese population in Hong Kong was 59.99 ($SD = 13.92$) (Ni et al., 2015); therefore, moderate and high resilience scores would be a lower number in that population compared to the U.S. population. According to Ni et al. (2015), low scores of resilience in the Chinese population were 53 or below, whereas high resilience scores were 72 and above. Davidson (2018) noted that because scores on the CD-RISC tool depend on geographic location of the sample, results should be interpreted with caution. This makes comparing results of international studies throughout the COVID-19 pandemic more challenging.

The mean CD-RISC score among Chinese nurses in a study prior to the COVID-19 pandemic was 63.52 (Guo et al., 2018), and the mean CD-RISC score in Australian operating room nurses was 75.9 (Gillespie et al., 2007). Mean resilience scores in Chinese nurses during the pandemic ranged from 51 for those with PTSD to 73.5 for those without PTSD (Li et al., 2020). Whereas Chinese nurses showed an increased level of resilience during the pandemic, nurses in the United States had lower resilience scores compared with studies conducted prior to the pandemic. The mean 10-item CD-RISC score in nurses in the U.S. pre-pandemic was 32.08 (Kelly et al., 2021), compared to a mean CD-RISC10 score of 29.74 during the COVID-19 pandemic (Petzel, 2021).

Thus, on the basis of the studies to date, during the COVID-19 pandemic, nurses around the world are reporting moderate resilience scores. Given the previously established link between lower resilience and burnout, and between burnout and both poorer quality of care and patient outcomes, it is critical that nurses, nurse and other leaders, healthcare organizations, and governments prioritize providing support and other resources to healthcare workers. It is particularly important that support and other resources be provided to those in front line positions, especially during a uniquely challenging time like a pandemic.

Some limitations of this integrative review are that the COVID-19 pandemic is still occurring, so it is difficult to fully capture its effects. The CD-RISC manual (Davidson, 2018) states that resilience scores can be influenced by the region from which the data were obtained. Therefore, looking at data gathered from around the world can provide important insights into understanding this phenomenon during the pandemic, but differences in cultures and healthcare systems do not make the findings generalizable. The use of different measurement scales for resilience made comparing the findings across studies challenging. In addition, only two databases were used in this search, and the limitations of full-text and articles written in English contributed to the number of articles available for this integrative review. Finally, grey literature was not included.

5 | IMPLICATIONS FOR NURSING MANAGEMENT

The National Academies of Sciences, Engineering, and Medicine *Initiative for Clinician Wellbeing and Resilience* suggests that interventions to improve well-being and decrease burnout should be provided not only at the individual level, but also at the organizational level (2019). In the *Future of Nursing 2020–2030* report, the National Academies of Sciences, Engineering, and Medicine (2021) emphasized that nurse leaders need to be vigilant and build a long-term strategy to address nurse well-being in the aftermath of stress and trauma created by the COVID-19 pandemic. Nurse leaders bear a responsibility to create an inclusive, safe work environment and implement policies to protect nurses (National Academies of Sciences, Engineering, and Medicine, 2021). Taylor (2019) described three levels of addressing nurse resilience: primary, secondary and tertiary. Primary interventions focus on building resilience through coping and communication skills, whereas secondary interventions should include evaluating levels of burnout and providing support for those who are at risk for or experiencing burnout. Lastly, tertiary level interventions should target nurses who have surpassed their resilience threshold and need support and healing in order to safely return to work.

At this time, there is insufficient experimental data reported on strategies that will strengthen nurse and healthcare worker resilience (Cameron & Brownie, 2010; Delgado et al., 2017; National Academies of Sciences, Engineering, and Medicine, 2019). At the individual level, nurse managers can gauge the current emotional state of staff members on their units, which can be done, for example, by using a mood meter at a monthly staff meeting or at other times (Figure 2). Nurse leaders should remind staff that they are allowed to express feelings and concerns openly (Tomlin et al., 2020) and aim to destigmatize seeking help for mental health issues (Institute for Healthcare Improvement Multimedia Team, 2020).

Another strategy for promoting individual nurse resilience is promoting expression of gratitude. This may be a useful strategy to improve nurse well-being (Kim et al., 2019). Resources for how to build one's expression of gratitude can be found throughout the Internet and in popular books. An example of an Internet resource is PositivePsychology.com. Many exercises for building gratitude can be found on their website (https://positivepsychology.com/gratitude-exercises/).

Tomlin et al. (2020) discussed phases of the COVID-19 pandemic and the interventions that healthcare organizations can employ to build resilience among their workers based on the current phase. The phases of the pandemic they discussed are preparation, pre-phase, initial and core phases, and the end and longer term phases (Tomlin et al., 2020). The preparation phase and pre-phase refer to the time before any cases of COVID-19 have occurred in the practice area. This transitions to the initial and core phases once the first and subsequent cases have been diagnosed. The end and longer term phases refer to when the pandemic has ended and there is a transition into the effects of the aftermath of the pandemic (Tomlin et al., 2020).

Worldwide, we are well beyond the preparation phase that occurred before the first case of COVID-19 emerged. Many countries are currently in the core phase, where they are experiencing continued (and sometimes rising) cases of COVID-19. However, with widespread availability of effective COVID-19 vaccines in some countries, these may be approaching the end phase. Organizational responses during the core phase should include providing timely and evidence-based information on COVID-19 to workers, visible leadership throughout the organization, and ensuring staff autonomy in decision making where appropriate (Institute for Healthcare Improvement Multimedia Team, 2020; Tomlin et al., 2020). This could be done by giving staff members the option to participate in decision making, such as selecting the type of eye protection the healthcare organization will provide for staff members to wear during patient care activities.

Unit resilience can be built if nursing leaders and managers encourage a sense of coherence among members of the interdisciplinary team (Institute for Healthcare Improvement Multimedia Team, 2020), which can be done through peer support or assigning mentors (Tomlin et al., 2020). In an attempt to negate pessimistic feelings among staff members, nurse leaders can inquire about what is working well for them at the present time (Institute for Healthcare Improvement Multimedia Team, 2020) and overall as they deal with the challenges of the pandemic.

As we remain hopeful to quickly move from the core phase to the end phase at the conclusion of the pandemic, healthcare organizations and leaders need to allow staff time to process their feelings. The end phase is the time for healthcare organizations to thank and reward staff members, as well as recognize staff members who are demonstrating signs of post-traumatic stress and provide them with appropriate mental health resources (Tomlin et al., 2020). A comprehensive brochure that describes symptoms and useful treatments can be found on the National Institute for Mental Health's website at nimh.nih.gov/health/publications/ptsd-listing.shtml. Colleaga, an open access healthcare knowledge repository, keeps a list of organizations throughout the world who provide information about PTSD, as well as a list of resources accessible via the Internet. Their PTSD list can be found at colleaga.org/article/list-ptsd-organizations-and-resources.

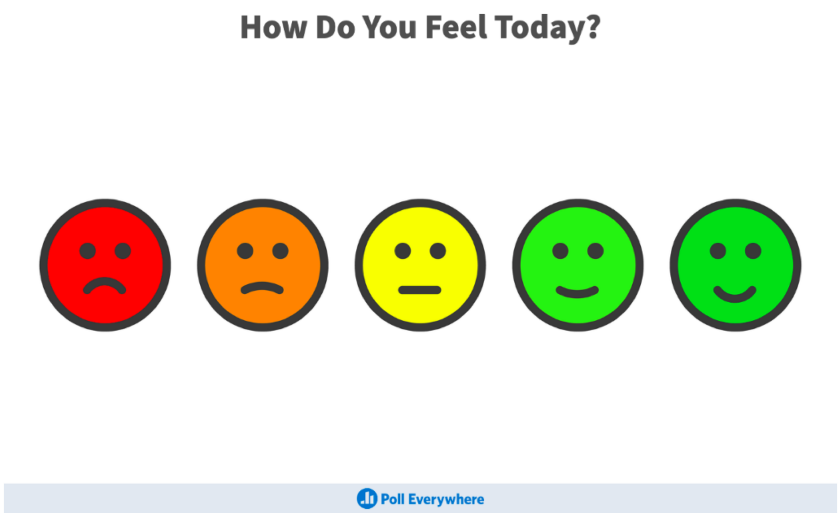

FIGURE 2 Employee emotion meter. Poll Everywhere (n.d.)

6 | CONCLUSIONS

The findings from this review revealed that during the COVID-19 pandemic, nurses have reported lower resilience scores than physicians and other healthcare workers. Nurses who had higher resilience scores experienced fewer negative mental health outcomes including anxiety, depression and PTSD. The results from this integrative review showed that, on average, nurses and healthcare workers exhibited moderate levels of resilience during the COVID-19 pandemic. Even with moderate resilience scores, healthcare workers are not immune to the negative psychological effects of working during a pandemic. It is critical for nurse and other healthcare leaders to identify and provide ways to build resilience among healthcare workers, with a particular focus on how to increase resilience in nurses. Going forward, interventions designed to build resilience should be studied by nurse researchers to identify their impact on resilience scores among nurses and other healthcare workers, and the impact of resilience on patient outcomes. In addition, as identified by the National Academies of Sciences, Engineering, and Medicine (2019), organizational interventions must be explored to address the challenges of the effect of nurse burnout on the provision of quality healthcare.

COVID-19 has exacerbated challenges in an already fragile healthcare system. According to the National Academies of Sciences, Engineering, and Medicine (2019), individual worker resilience is one mediating factor between health system factors (e.g., excessive workload, inadequate staffing, work distraction and organizational culture) and worker burnout/professional well-being. Because resilience among healthcare workers has been further challenged by the pandemic, it is critical that strategies to enhance worker resilience, both from the individual and the healthcare systems levels, be designed and tested.

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CONFLICT OF INTEREST

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IRB submission was exempt due to this research being a review of publicly available data.

DATA AVAILABILITY STATEMENT

Author elects to not share data.

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REFERENCES

Afshari, D., Nourollahi-darabad, M., & Chinisaz, N. (2021). Demographic predictors of resilience among nurses during the COVID-19 pandemic. *Work*, ahead of print, 68, 297–303. https://doi.org/10.3233/WOR-203376

Altmayer, V., Weiss, N., Cao, A., Marois, C., Demeret, S., Rohaut, B., & Le Guennec, L. (2020). Coronavirus disease 2019 crisis in Paris: A differential psychological impact between regular intensive care unit staff members and reinforcement workers. *Australian Critical Care*, 142–145. https://doi.org/10.1016/j.aucc.2020.11.005

Awano, N., Oyama, N., Akiyama, K., Inomata, M., & Kuse, N. (2020). Anxiety, depression, and resilience of healthcare workers in Japan during the Coronavirus Disease 2019 outbreak. *Internal Medicine*, 59(21), 2693–2699. https://doi.org/10.2169/internalmedicine.5694-20

Balay-odao, E., Alquwez, N., Inocian, E., & Alotaibi, R. (2021). Hospital preparedness, resilience, and psychological burden among clinical nurses in addressing the COVID-19 crisis in Riyadh, Saudi Arabia. *Frontiers in Public Health*, 8. https://doi.org/10.3389/fpubh.2020.573932

Barzilay, R., Moore, T., Greenberg, D., DiDomenico, G., Brown, L., White, L., Gur, R. C., & Gur, R. E. (2020). Resilience, COVID-19-related stress, anxiety and depression during the pandemic in a large population enriched for healthcare providers. *Translational Psychiatry*, 10(1), 1–8. https://doi.org/10.1038/s41398-020-00982-4

Cai, W., Lian, B., Song, X., Hou, T., Deng, G., & Li, H. (2020). A cross-sectional study on the mental health among health care workers during the outbreak of the Corona Virus Disease 2019. *Asian Journal of Psychiatry*, 51. https://doi.org/10.1016/j.ajp.2020.102111

Cameron, F., & Brownie, S. (2010). Enhancing resilience in registered aged care nurses. *Australasian Journal on Ageing*, 29(2), 66–71. https://doi.org/10.1111/j.1741-6612.2009.00416.x

Catania, G., Zanini, M., Hayter, M., Timmins, F., Dasso, N., Ottonello, G., Aleo, G., Sasso, L., & Bagnasco, A. (2020). Lessons from Italian front-line nurses' experiences during the COVID-19 pandemic: A qualitative descriptive study. *Journal of Nursing Management*, 29, 404–411. https://doi.org/10.1111/jonm.13194

Cimiotti, J., Aiken, L., Sloane, D., & Wu, E. (2012). Nurse staffing, burnout, and health-care associated infection. *American Journal of Infection Control*, 40, 486–490. https://doi.org/10.1016/j.ajic.2012.02.029

Colville, G., Dalia, C., Brierly, J., Abbas, K., Morgan, H., & Perkins-Porras, L. (2015). Burnout and traumatic stress in staff working in paediatric intensive care: Associations with resilience and coping strategies. *Intensive Care Medicine*, 41, 364–365. https://doi.org/10.1007/s00134-014-3559-2

Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor–Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, 18(2), 76–82. https://doi.org/10.1002/da.10113

da Silva, F., & Neto, M. (2021). Psychiatric symptomatology associated with depression, anxiety, distress, and insomnia in health professionals working in patients affected by COVID-19: A systematic review with meta-analysis. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 104. https://doi.org/10.1016/j.pnpbp.2020.110057

Davidson, J. R. T. (2018). Connor-Davidson Resilience Scale (CD-RISC) manual. http://www.connordavidson-resiliencescale.com/CD-RISC%20Manual%2008-19-18.pdf

de Pablo, G., Vaquerizo-Serrano, J., Catalan, A., Arango, C., Moreno, C., Ferre, F., Shin, J., Sullivan, S., Brondino, N., Solmi, M., & Fusar-Poli, P. (2020). Impact of coronavirus syndromes on physical and mental health of health care workers: Systematic review and meta-analysis. *Journal of Affective Disorders*, 275, 48–57. https://doi.org/10.1016/j.jad.2020.06.022

Delgado, C., Upton, D., Ranse, K., Furness, T., & Foster, K. (2017). Nurses' resilience and the emotional labour of nursing work: An integrative review of empirical literature. *International Journal of*

Nursing Studies, 70, 71–88. https://doi.org/10.1016/j.ijnurstu.2017.02.008

Firew, T., Sano, E., Lee, J., Flores, S., Lang, K., Salman, K., Greene, M. C., & Chang, B. P. (2020). Protecting the front line: A cross-sectional survey analysis of the occupational factors contributing to healthcare workers' infection and psychological distress during the COVID-19 pandemic in the USA. *BMJ Open*, 10(10). https://doi.org/10.1136/bmjopen-2020-042752

Garcia, C., Abreu, L., Ramos, J., Castro, C., Smiderle, F., dos Santos, J., & Bezerra, I. (2019). Influence of burnout on patient safety: Systematic review and meta-analysis. *Medicina*, 55(9). https://doi.org/10.3390/medicina55090553

Gillespie, B., Chaboyer, W., Wallis, M., & Grimbeek, P. (2007). Resilience in the operating room: Developing and testing of a resilience model. *Journal of Advanced Nursing*, 59(4), 427–438. https://doi.org/10.1111/j.1365-2648.2007.04340.x

Goh, Y., Yong, Q., Chen, T., Ho, S., Chee, Y., & Chee, T. (2020). The impact of COVID-19 on nurses working in a university health system in Singapore: A qualitative descriptive study. *International Journal of Mental Health Nursing*, 30, 643–652. https://doi.org/10.1111/inm.12826

Guo, Y., Luo, Y., Lam, L., Cross, W., Plummer, V., & Zhang, J. (2018). Burnout and its association with resilience in nurses: A cross-sectional study. *Journal of Clinical Nursing*, 27(1–2), 441–449. https://doi.org/10.1111/jocn.13952

Hu, D., Kong, Y., Li, W., Han, Q., Zhang, X., Zhu, L., Wan, S., Liu, Z., Shen, Q., Yang, J., He, H., & 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. https://doi.org/10.1016/j.eclinm.2020.100424

Huang, L., Wang, Y., Liu, J., Ye, P., Chen, X., Xu, H., Qu, H., & Ning, G. (2020). Factors influencing anxiety of health care workers in the radiology department with high exposure risk to COVID-19. *Medical Science Monitor*, 26. https://doi.org/10.12659/MSM.926008

Institute for Healthcare Improvement Multimedia Team. (2020). How leaders can promote health care workforce well-being. Institute for Healthcare Improvement. http://www.ihi.org/communities/blogs/how-leaders-can-promote-health-care-workforce-wellbeing

Jose, S., Dhandapani, M., & Cyriac, M. (2020). Burnout and resilience among frontline nurses during COVID-19 pandemic: A cross-sectional study in the Emergency Department of a tertiary care center, North India. *Indian Journal of Critical Care Medicine*, 24(11), 1081–1088. https://doi.org/10.5005/jp-journals-10071-23667

Kılınç, T., & Çelik, A. (2020). Relationship between the social support and psychological resilience levels perceived by nurses during the COVID-19 pandemic: A study from Turkey. *Perspectives in Psychiatric Care*. https://doi.org/10.1111/ppc.12648

Kim, S., Park, O., Kim, H., & Kim, J. (2019). Factors influencing well-being in clinical nurses: A path analysis using a multi-mediation model. *Journal of Clinical Nursing*, 28(23/24), 4549–4559. https://doi.org/10.1111/jocn.15045

Labrague, L., & de los Santos, J. (2020). COVID-19 anxiety among frontline nurses: Predictive role of organisational support, personal resilience and social support. *Journal of Nursing Management*, 28, 1653–1661. https://doi.org/10.1111/jonm.13121

Lapum, J., Nguyen, M., Fredericks, S., Lai, S., & McShane, J. (2020). "Goodbye … through a glass door": The emotional experiences of working in COVID-19 acute care hospital environments. *Canadian Journal of Nursing Research*, 0(0), 1–11. https://doi.org/10.1177/0844562120982420

Leng, M., Wei, L., Shi, X., Cao, G., Wei, Y., Xu, H., Zhang, X., Zhang, W., Xing, S., & Wei, H. (2020). Mental distress and influencing factors in nurses caring for patients with COVID-19. *Nursing in Critical Care*, 26, 94–101. https://doi.org/10.1111/nicc.12528

Li, X., Zhou, Y., & Xu, X. (2020). Factors associated with the psychological well-being among front-line nurses exposed to COVID-2019 in China: A predictive study. *Journal of Nursing Management*. https://doi.org/10.1111/jonm.13146

Liang, Y., Wu, K., Zhou, Y., Huang, X., Zhou, Y., & Liu, Z. (2020). Mental health in frontline medical workers during the 2019 Novel Coronavirus Disease epidemic in China: A comparison with the general population. *International Journal of Environmental Research and Public Health*, 17(18). https://doi.org/10.3390/ijerph17186550

Lin, J., Ren, Y., Gan, H., Chen, Y., Huang, Y., & You, X. (2020). Factors associated with resilience among non-local medical workers sent to Wuhan, China during the COVID-19 outbreak. *BMC Psychiatry*, 20, 1–7. https://doi.org/10.1186/s12888-020-02821-8

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

LoGuidice, J., & Bartos, S. (2021). Experiences of nurses during the COVID-19 pandemic: A mixed methods study. *AACN Advanced Critical Care*. https://doi.org/10.4037/aacnacc2021816

Lorente, L., Vera, M., & Peiró, T. (2020). Nurses´ stressors and psychological distress during the COVID-19 pandemic: The mediating role of coping and resilience. *Journal of Advanced Nursing*, 77, 1335–1344. https://doi.org/10.1111/jan.14695

Luceño-Moreno, L., Talavera-Velasco, B., Garcia-Albuerne, Y., & Martín-García, J. (2020). Symptoms of posttraumatic stress, anxiety, depression, levels of resilience and burnout in Spanish health personnel during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, 17(15). https://doi.org/10.3390/ijerph17155514

Luthar, S., & Cicchetti, D. (2000). The construct of resilience: Implications for interventions and social policies. *Development and Psychopathology*, 12(4), 857–885. https://doi.org/10.1017/S0954579400004156

Lyu, H., Yao, M., Zhang, D., & Liu, X. (2020). The relationship among organizational identity, psychological resilience and work engagement of the first-line nurses in the prevention and control of COVID-19 based on structural equation model. *Risk Management and Healthcare Policy*, 13, 2379–2386. https://doi.org/10.2147/RMHP.S254928

Meybodi, A., & Mohammadi, M. (2020). Identifying the components of spirituality affecting the resilience of nurses. *Journal of Nursing Management*, 1–7. https://doi.org/10.1111/jonm.13235

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine*, 6(7), e1000097. https://doi.org/10.1371/journal.pmed.1000097

Nathiya, D., Suman, S., Singh, P., Raj, P., & Tomar, B. (2021). Mental health outcome and professional quality of life among healthcare worker during COVID-19 pandemic: A (FRONTLINE-COVID) survey. *Annales Médico-Psychologiques*. https://doi.org/10.1016/j.amp.2020.12.017

National Academies of Sciences, Engineering, and Medicine. (2019). *Taking action against clinician burnout: A systems approach to professional well-being*. Washington, DC: The National Academies Press. https://doi.org/10.17226/25521

National Academies of Sciences, Engineering, and Medicine. (2021). *The future of nursing 2020–2030: Charting a path to achieve health equity*. Washington, DC: The National Academies Press. https://doi.org/10.17226/25982

Ni, M., Li, T., Yu, N., Pang, H., Chan, B., Leung, G., & Stewart, S. (2015). Normative data and psychometric properties of the Connor-Davidson Resilience Scale (CD-RISC) and the abbreviated version (CD-RISC2) among the general population in Hong Kong. *Quality of Life Research*, 25, 111–116. https://doi.org/10.1007/s11136-015-1072-x

Ou, X., Chen, Y., Liang, Z., Wen, S., Li, S., & Chen, Y. (2020). Resilience of nurses in isolation wards during the COVID-19 pandemic: A cross-sectional study. *Psychology, Health & Medicine*. https://doi.org/10.1080/13548506.2020.1861312

Pang, Y., Fang, H., Li, L., Chen, M., Chen, Y., & Chen, M. (2021). Predictive factors of anxiety and depression among nurses fighting coronavirus disease 2019 in China. *International Journal of Mental Health Nursing*. https://doi.org/10.1111/inm.12817

Poll Everywhere. (n.d.). Poll Everywhere (graphic). https://www.polleverywhere.com/

Resnick, B. (2020). Covid-19 lessons learned from the voices of our geriatric nurses: Leadership, resilience, and heroism. *Geriatric Nursing*, 41 (4), 357–359. https://doi.org/10.1016/j.gerinurse.2020.06.008

Roberts, N. J., McAloney-Kocaman, K., Lippiett, K., Ray, E., Welch, L., & Kelly, C. (2021). Levels of resilience, anxiety and depression in nurses working in respiratory clinical areas during the COVID pandemic. *Respiratory Medicine*, 176. https://doi.org/10.1016/j.rmed.2020.106219

Rodríguez-Rey, R., Palacios, A., Alonso-Tapia, J., Pérez, E., Álvarez, E., Coca, A., Mencía, S., Marcos, A., Mayordomo-Colunga, J., Fernández, F., Gómez, F., Cruz, J., Ordóñez, O., & Llorente, A. (2019). Burnout and posttraumatic stress in paediatric critical care personnel: Prediction from resilience and coping styles. *Australian Critical Care*, 32(1), 46–53. https://doi.org/10.1016/j.aucc.2018.02.003

Rushton, C. H., Batcheller, J., Schroeder, K., & Donohue, P. (2015). Burnout and resilience among nurses practicing in high-intensity settings. *American Journal of Critical Care*, 24(5), 412–420. https://doi.org/10.4037/ajcc2015291

Schäfer, S. K., Lass-Hennemann, J., Groesdonk, H., Volk, T., Bomberg, H., Staginnus, M., Brückner, A. H., Holz, E., & Michael, T. (2018). Mental health in anesthesiology and ICU staff: Sense of coherence matters. *Frontiers in Psychiatry*, 9. https://doi.org/10.3389/fpsyt.2018.00440

Sheraton, M., Deo, N., Dutt, T., Surani, S., Hall-Flavin, D., & Kashyap, R. (2020). Psychological effects of the COVID 19 pandemic on healthcare workers globally: A systematic review. *Psychiatry Research*, 292. https://doi.org/10.1016/j.psychres.2020.113360

Taylor, R. (2019). Contemporary issues: Resilience training alone is an incomplete intervention. *Nursing Education Today*, 78, 10–13. https://doi.org/10.1016/j.nedt.2019.03.014

Tomlin, J., Dalgleish-Warburton, B., & Lamph, G. (2020). Psychosocial support for healthcare workers during the COVID-19 pandemic. *Frontiers in Psychiatry*, 11. https://doi.org/10.3389/fpsyg.2020.01960

Tsehay, M., Belete, A., & Necho, M. (2020). Factors associated with psychological distress and brief resilient coping level during the COVID-19 pandemic among health-care professionals in Dessie, Ethiopia. *Psychology Research and Behavior Management*, 13, 1213–1221. https://doi.org/10.2147/PRBM.S288562

Van Bogaert, P., Timmermans, O., Weeks, S., van Heusden, D., Wouters, K., & Franck, E. (2014). Nursing unit teams matter: Impact of unit-level nurse practice environment, nurse work characteristics, and burnout on nurse reported job outcomes, and quality of care, and patient adverse events- a cross-sectional survey. *International Journal of Nursing Studies*, 51, 1123–1134. https://doi.org/10.1016/j.ijnurstu.2013.12.009

Whittemore, R., & Knafl, 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

Yıldırım, M., Arslan, G., & Özaslan, A. (2020). Perceived risk and mental health problems among healthcare professionals during COVID-19 pandemic: Exploring the mediating effects of resilience and coronavirus fear. *International Journal of Mental Health and Addiction*. https://doi.org/10.1007/s11469-020-00424-8

Yörük, S., & Güler, D. (2020). The relationship between psychological resilience, burnout, stress, and sociodemographic factors with depression in nurses and midwives during the COVID-19 pandemic: A cross-sectional study in Turkey. *Perspectives in Psychiatric Care*. https://doi.org/10.1111/ppc.12659

Zotero.org. (n.d.). Zotero. https://www.zotero.org/

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