7-6-2022

Nursing Anxiety Self-Evaluation and Resiliency Methods

Dianne Deck
University of Missouri-St. Louis, dssvy3@umsystem.edu

Nursing Anxiety Self-Evaluation and Resiliency Methods

Dianne Sakonyi Deck, MSN, APRN, AGACNP-BC, CCRN

MSN Maryville University in St. Louis, 2019

A Dissertation Submitted to the Graduate School at the University of Missouri-St. Louis
in partial fulfillment of the requirements for the degree
Doctor of Nursing Practice

August 2022

Advisory Committee

Susan Dean-Baar, PhD, RN, CENP, FAAN, Chairperson

Debra D'Arcy, DNP, RN, PHCNS-BC

Marilyn Schallom, PhD, RN, CCNS, CCRN-K, FCCM

Abstract

Introduction: Nurses are stressed due to the demands of their job. This study aims to determine whether MICU nurses at a large Midwestern hospital would have reduced stress and anxiety after a 30-day meditation and exercise intervention.

Design and Methods: A quasi-experimental pre-post pilot study design was adopted. The convenience sample consisted of eight Medicine Intensive Care Unit (MICU) nurses in a large Midwestern urban tertiary medical center. Data collected included demographics, pre- post-Beck Anxiety Inventory Scale (BAIS), pre- and post-Single Item Stress Scale (SISS), and weekly diaries on exercise and meditation.

Results: The pre- post-SISS showed statistical significance in reducing work stress ($t(7)=2.76$, $p=0.03$). The pre-post-intervention BAIS did not show statistical significance in the reduction of nurses' anxiety after a 30-day intervention.

Discussion: Stress and anxiety are separate phenomena. The MICU nurses had low levels of anxiety in both the pre-and post-intervention BAIS. However, a reduction in work related stress levels was seen following a four-week intervention of regular exercise and meditation.

Nursing Anxiety Self-Evaluation and Resiliency Methods

Nurses sacrifice their health daily for the love of their work. Additionally, they experience negative stress from their work environment, which over time, leads to health risks, job dissatisfaction, and nursing turnover (Olofsson et al., 2003). Each shift, many nurses will endure physical hardships such as waiting to go to the bathroom, skipping breaks, skipping meals, even delaying getting a drink of water, all for the sake of caring for their patients. Over time this leads to unhealthy behaviors to compensate for their stress. Some nurses find different jobs or leave the profession, others go back to school to advance, and the rest stay where they are (Chana et al., 2015; de Pinho et al., 2021).

Nurses become exposed to many traumatic events associated with their work, such as patient death, patient-family dysfunction, trauma, and patient on-nurse abuse. As the fulcrum of care, nurses face demands from patients, the patient's family, physicians, coworkers, nurse managers, and consults (Colville et al., 2017; Mo et al., 2020). These circumstances put nurses in vulnerable positions where they either adapt with resiliency or become depressed and dissatisfied with their job (Baskin & Bartlett, 2021).

Nurses endure environmental, physical, mental, emotional, financial, and ethical stress. As a profession devoted to caring for others, this group must train to recognize their needs and screen for their health issues (Bates et al., 2020). As nurses become empowered with self-evaluation and self-advocacy, the result will improve nurses' resiliency. An initial step in empowering nurses is utilizing self-screening for anxiety to identify those symptoms that can be addressed and prevent the onset of more severe problems such as depression (D'emeh et al., 2021).

Risk factors for nursing depression include physical stress such as working the night shift, exposure to contagions, and working while injured (chronic back or knee pain) (Booker et al., 2019; Sampson et al., 2020). Mental stressors such as fear of failure, nurse-on-nurse bullying, self-doubt, and financial stressors such as working extra shifts, paying student loans all contribute to utilizing coping mechanisms whether those actions are healthy or not. Inpatient nurses' jobs are stressful due to environmental, physical, mental, emotional, and financial causes; often, nurses' coping mechanisms are ineffective or unhealthy (Chueh et al., 2021; Marthoenis et al., 2021; Tran et al., 2019).

The significance of nursing stress is that over time, nurses leave their jobs or leave the profession entirely. For some, chronic work-related stress can contribute to depression and lead to unhealthy coping mechanisms such as abuse of alcohol, drugs, or misplaced anger (Booker et al., 2019; Huang et al., 2018). Therefore, nurses need to make a conscious mental shift from allowing work stress to become harmful versus keeping stress in check by utilizing self-care. This mental shift needs to be taught and encouraged to ensure nurses have resources to keep them mentally strong (Andersen et al., 2021).

Self-care techniques are actions used to help people cope with stress, stay healthy, prevent diseases (Fang et al., 2019; Hofmeyer & Taylor, 2021; Peñacoba et al., 2021; Rodriguez-Vega et al., 2020). The actions one uses in self-care include many things, including exercising regularly, meditating, utilizing mindfulness, drinking eight glasses of water per day, sleeping at least seven hours at night, eating healthy, getting a massage or a manicure (Craigie et al., 2016; Hong et al., 2021; Manomenidis et al., 2019; van der Riet et al., 2018).

The purpose of this project was to develop and implement a 30-day self-care intervention to decrease anxiety and stress in registered nurses. The overall aim of this project was to determine whether MICU nurses at a large midwestern hospital would have reduced anxiety and stress after a 30-day meditation and exercise intervention measured with Beck's Anxiety Inventory Scale (BAIS) (Beck et al., 1988), a validated screening tool to self-diagnose their risk for anxiety, and stress, measured with a single item stress score, before and after implementation of the program. This study used the Johns Hopkins Evidence-Based Practice Model (Dang & Dearholt, 2018). This model contained the PET process where a Practice question was asked, Evidence was appraised, and Translated into patient care and outcomes. The primary outcome measured was the nurses' level of anxiety after a 30-day intervention. Secondary measures included nurses' self-report about perceived stress after the 30-day intervention. Therefore, the study question was for inpatient intensive care nurses in a large Midwestern hospital, what was the impact on their anxiety levels after utilizing a 30-day self-care intervention.

Review of Literature

This literature review process included searching the databases of Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline, and Scopus. Key search terms utilized are *nurs*, stress, health, "quality of life", "emotional stress", "retention strategies", "coping with stress", "physical stress", "alcohol abuse", "coping skills", "stress and depression", "burnout"*, in addition to utilizing Boolean operators AND and OR. Each search engine provided over 100,000 results, thereby necessitating the application of inclusion and exclusion criteria. Inclusion criteria were studies from 2016 to 2021, English language, Peer-Reviewed, Research Article, and

Linked full text. Exclusion criteria were textbooks, editorials, non-human studies, non-nurses as the primary subjects, and outpatient nurses. After applying these filters, CINAHL found 349 articles, Medline found 87 articles, Scopus found 285 articles, and APA PsycInfo found 51 articles. Upon reviewing the material and eliminating the duplicate articles, 63 articles were generated; articles were further excluded if they did not specifically address nursing stress primarily. This resulted in 33 articles included in the literature review (Appendix A). Two exceptions to the search were an article from 2003 that inspired the project and a recent article by Melnyk et al. (2021), where stress and anxiety are still prevalent. The article by Olofsson et al. (2003) highlights the depth of the problem and exemplifies that this issue has been significant for over 20-years.

The literature review noted that nurses experience high levels of stress due to their work. Over time the stress evolved into anxiety because nurses are not trained for and are seldom encouraged through their work to utilize positive coping mechanisms (Badu et al., 2020; Booker et al., 2019). Nursing stress was associated with low resilience, errors, negative attitudes, burnout, and poor coping mechanisms (Melnyk et al., 2021). Strategies to support nurse resiliency included mindfulness, meditation, exercising, positive thinking, quality sleep, healthy diets, low alcohol intake, verbalizing feelings and emotions, and strong collegial support. Self-care was noted to reduce stress and anxiety while building resiliency and retention (Baskin & Bartlett, 2021; Bates, 2020; Batra et al., 2020).

Nursing resiliency and stress are problems that contribute to the quality of patient care and medical mistakes. Nurses become stressed and anxious due to many factors that influence their daily lives (Andersen et al., 2021; Craigie et al., 2016). All nurses face

challenges and circumstances that increase the likelihood of anxiety related to work stress. Additionally, there are growing demands at work that only intensify the downward spiral of mental health and self-care, such as coping with death, traumatic events, codes, violent or abusive patients, and their families (Andersen et al., 2021; Mealer et al., 2014; Melnyk et al., 2021; Mo et al., 2020; Olofsson et al. 2003). Compassion fatigue, COVID-19, and physical injury are among the most stressful daily nursing challenges. When nurses repeatedly ignore their own basic needs to care for patients, their work is affected (Bates et al., 2020; Batra et al., 2020; Bredicean et al., 2021; Zhang et al., 2021). As nurses continue to put others' needs over their own, they unintentionally make mistakes because their attention is not entirely focused on their tasks. Nurses with high levels of anxiety showed increased alcohol consumption and sleep loss (Booker et al., 2019; Chueh et al., 2021).

Nurses with the most effective methods for coping with stress have also been more resilient. These strategies included taking breaks, mentally recharging, being on time to work, drinking more water than other drinks, arriving to work prepared, exercising, and positive interaction with coworkers (Badu et al., 2020; de Pinho et al., 2021). Numerous studies demonstrated that anxiety was reduced when stress was alleviated and mindfulness was incorporated (Baskin & Bartlett, 2021; Bates et al., 2020; D'emeh et al., 2021; Duhoux et al., 2017; Magtibay et al., 2017). Unfortunately, few studies focused on simple interventions to achieve less daily stress (Badu et al., 2020; Imamura et al., 2021).

These papers were similar in that they all found that nurses deal with stress every day. There was little time for nurses to recuperate between shifts and their days off to make a difference in their mental status. Nurses had more resilience if they made time for

self-care. Without self-care, there was the risk of mistakes, physical injury, mental anguish, or less resiliency. Empowered nurses utilized self-care, self-awareness, thoughtfulness to themselves and their coworkers, encouraged each other, and worked as teams (Badu et al., 2020; Baskin & Bartlett, 2021; Bredicean et al., 2021; Magtibay et al., 2017).

Differences in these studies exemplified various ways to get to a goal. Some differences focused on eliminating or reducing unhealthy behaviors such as alcohol or caffeine consumption (Badu et al., 2020; Baskin & Bartlett 2021; Duhoux et al., 2017). Some studies suggested adding positive actions to improve mental health, such as exercising, increasing sleep, meditating, creating bonds with coworkers (Chana et al., 2015; Craigie et al., 2016; de Pinho et al., 2021; Fang et al., 2019; Imamura et al., 2021). Additional differences included the expected time needed to see a difference in stress and anxiety levels (Batra et al., 2020; Booker et al., 2019).

These studies had many strengths. The majority opinion by nurses was that conditions need to improve. Studies that showed the highest outcomes involved the most time and commitment by the participants. This was difficult to replicate when today's staffing shortages impact the ability to get time off. Intervention for stress and anxiety had positive impacts on the nurses within the studies (Batra et al., 2020; Chana et al., 2015; de Pinho et al., 2021; Drury et al., 2014; Kinser et al., 2016; Labrague et al., 2020).

Limitations of these studies were due to the difficulty of replicating the interventions within a short time. In addition, the cost of implementing exercise and therapy programs limited some financially struggling hospitals (Mealer et al., 2014). Furthermore, time was a limiting factor for many nurses as they do not have much

downtime to implement private therapy groups, exercise groups, and group meetings. Nevertheless, studies showed that nurses needed to take the time to help themselves (Imamura et al., 2021; Labrague et al., 2020; Magtibay et al., 2017; Mealer et al., 2014).

The literature studies cited gaps where more information from the surveys and more participants are needed. Gaps included comparing males versus females, day shift versus night shift, floor nurse versus intensive care unit nurse. Unfortunately, replicating previous studies was complex due to time constraints and finding enough participants willing to meet regularly.

The literature showed that nurses often placed their patient's needs above their own (Melnyk et al., 2021). Nurses delayed meeting their own basic needs or compensate their comfort to tend to the patient first. Self-sacrificing may be noble, but there was a silent, deep cost to the nurse. And over time, the nurse was at risk for stress and depression (Olofsson et al., 2003). There were many ways that nurses compensated to get through their shifts, such as drinking caffeine, skipping meals, and skipping breaks. These unhealthy behaviors ended up negatively affecting the nurse (Olofsson et al., 2003). Nurses with resilience understood the balance of taking care of themselves so that the patient would receive a higher quality of care (Saffari et al., 2021).

This project utilized the Johns Hopkins EBP Model as a framework. This model incorporated the PET process because it provided a detailed structure that ensured that the correct plans were put into action. In addition, the Johns Hopkins EBP model utilized inquiry and considered internal and external factors influencing education, practice, and research. This was the model most used by the hospital where the current research took place (Dang & Dearholt, 2018).

PET is abbreviated for asking a clinically significant “Practice” question, researching “Evidence” that either supports or refutes the hypothesis, and then “Translating” the action if there is supportive evidence. The practice question was whether ICU nurses that self-administered a screening test for anxiety, then completed a 30-day self-care intervention (walking two times a week for 20 minutes each time and meditating for five minutes daily) would have reduced anxiety when repeating the same self-assessment scale. Through the evidence produced from a 30-day intervention, nurses would reduce some of their stress and continue to utilize self-care techniques (Dang & Dearholt, 2018).

Methods

Design

This was a quasi-experimental pre- post-pilot study.

Setting

The setting for this project was in a Medicine Intensive Care Unit (MICU) of a large midwestern urban tertiary medical center. The total nursing staff of this ICU was approximately 150 registered nurses split evenly between day and night shifts.

Sample

A convenience sample of all registered nurses in the MICU was used. The inclusion criteria were being a registered nurse in the MICU during January and February 2022. The sample included both staff and traveling nurses caring for patients at the bedside.

Approval Processes

This project received approval from UMSL IRB and the site’s New Study Proposal Review Committee. By completing the survey, the nurses provided their consent

(Appendix B) to be a participant in the project. Risks were considered minimal, and participation was voluntary. Participants could withdraw at any time. Risks included participant data being identified with the participant. The development of a unique code known only to the participant was used to minimize this risk. Benefits included learning self-help practices for better coping with anxiety. Participants were not given an incentive or gift for participation.

Data Collection/Analysis

Those that agreed to participate in the project completed pre- and post-intervention surveys that included the BAIS (Beck, et al., 1988), a single item stress scale (State of Louisiana Civil Service, 2018, Appendix C), Demographic information (Appendix C), and the four weekly diaries (Appendix D) of meditation and exercise activities. Data was collected using paper surveys. Surveys and diaries were collected in a locked container in the staff breakrooms for anonymity. To match the pre and post survey responses, each participant created a unique code known only to them. The code included, in this order the first letter of the name of their pet or an "X" if there was none, the second letter was the first letter of their high school, the third digit was where they are in their birth order, and the fourth digit was the first initial of their mother's middle name. Participants were asked to not include their names on the data collected.

The BAIS is a 21-item questionnaire surveying common symptoms of anxiety rated on a Likert Scale from "0=not at all, 1=mildly, but it didn't bother me much, 2=moderately—it wasn't pleasant at times, 3=severely—it bothered me a lot." The symptoms are "feeling numbness or tingling, feeling hot, wobbliness in legs, unable to relax, fear of worse happening, dizzy or lightheaded, heart-pounding/racing, unsteady,

terrified or afraid, nervous, feeling of choking, hands trembling, shaky/unsteady, fear of losing control, difficulty in breathing, fear of dying, scared, indigestion, faint/lightheaded, face flushed, and hot/cold sweats" (Beck et al., 1988). The BAIS is a reliable and validated scale with a Cronbach's alpha of 0.92 (Beck, et al., 1988).

A single item stress scale (State of Louisiana Civil Service, 2018, Appendix C) asked nurses to rate their work-related stress level in the past month on a scale from 1-10, where ten was the highest level of debilitating stress. Levels 1-3 indicated low levels of stress, levels 4-7 indicated moderate levels of stress, and levels 8-10 indicated high levels of stress (State of Louisiana Civil Service, 2018). The validity of the single item stress scale was satisfactory for group analysis (Elo et al., 2003; Houdmont et al., 2004).
The demographic information included age range (18-24, 24-29, 30-34, 35-39, 40-44, 45-49, 50 and older), years of nursing experience (1 year or less, 2-3 years, 4-10 years, 11-15 years, more than 15 years), shift schedule (day only, night only, day/night rotation), gender identification, currently weekly exercise, or meditation practices (none, 1-3 times a week, 4-7 times a week, more than 7 times a week).

Data analysis included descriptive statistics for demographics. The pre-post-anxiety severity stress scale was analyzed with descriptive and inferential statistics. BAIS results were analyzed using descriptive statistics for individual items and a paired t-test to compare pre- and post-intervention scores. T-tests were used to evaluate for any relationship between demographics (age, gender, years of experience) with the 1-item stress scale in pre and post intervention levels. Non-parametric equivalent tests were considered depending upon sample size.

Procedures

The nurse manager of the MICU was contacted about the project and welcomed the study in the MICU to possibly help the staff. The project idea was also presented to the MICU management and received support. The key stakeholders were the MICU nurses and MICU nursing administration.

The principal investigator provided information about the study during the pre-shift huddle for one week (7am and 7pm), an email sent to each nurse in the unit and flyers placed on the unit's bulletin boards provided more details. An explanation of the study included the information that was collected, the self-care intervention, and the post-intervention survey. Surveys packets were placed on each of the MICU nurses' lockers and were available from the principal investigator. The packet contained the BAIS, the one-item stress scale, demographic data, a diary split into one week per page, and post survey.

The intervention had instructions on the top of the diary page. Participants began the intervention the day after they completed the initial survey. Participants were asked to meditate for five minutes when the nurse found meditation most convenient or beneficial, and exercise (walk, run, yoga, or participants' regular routine) for 20 minutes-2 times a week. Meditation was defined as laying or sitting in a quiet space, with eyes closed, then focusing on deep, calming breaths --clearing thoughts as they occur while breathing (Rodgers, 2021). Participants were asked to keep track of the days and number of daily minutes spent meditating and exercising. Participants were asked to return all diaries to the lock box weekly even if they were partially completed or if no interventions were done.

After the 30-day intervention, nurses completed a post-intervention survey utilizing the same Beck's Anxiety Inventory Scale, rating current stress level, and the record of the amount of time and days spent using meditation and exercising. An additional question was added, asking whether the nurse experienced a stressful or traumatic event in the last 30 days. Participants were not given an incentive or gift for participation.

Data submitted to the lock boxes were collected weekly. If the participant had a BAIS rating of 36 or higher, the directions with the project material encouraged participants to contact one of the various employee assistance programs offered at the facility to provide mental health intervention at the RNs discretion.

Results

Eight MICU bedside registered nurses completed the full study. Three additional participants provided incomplete data, which could not be included in the analysis. The majority of nurses in the sample were 50+ years old, had more than 15 years of experience, and worked only day shifts. No males or travel nurses participated in this study. Seventy-five percent (n=6) of participants exercised an average of one to three times per week prior to this study, and 50% (n=4) participants meditated one to three times a week, while the other four did not meditate (Table 1). Mental health resources were utilized by 62.5% (n=5) of the participants prior to this study.

Table 1

Demographics

		n	*%*
Age (years)	24-29	1	12.5
	35-39	1	12.5
	45-49	2	25.0
	50+	4	50.0
Experience	1 or less	1	12.5
	4-10	1	12.5
	11-15	1	12.5
	15+	5	62.5
Shift Schedule	Days	5	62.5
	Nights	1	12.5
	Rotation	2	25.0
Exercise (days/week)	None	1	12.5
	1-3	6	75.0
	4-7	1	12.5
Meditation (days/week)	none	4	50.0
	1-3	4	50.0

The BAIS provided a total score that ranges from 0 to 63. Anxiety was categorized as mild (score of 0 to 21), moderate (score of 22 to 35), or severe (score of 36 to 63). Pre-intervention BAIS noted one participant with severe anxiety and seven with mild anxiety. Post-intervention BIAS found all eight participants had mild anxiety levels (Table 2). There was no significant difference in the pre-intervention and post-intervention total BAIS score ($t(7)=1.22$, $p=0.26$)

Table 2

Participants' BAIS Total Score

	Pre-intervention	Post-intervention
Mild	7	8
Severe	1	0
Severity Average	11.75	8.25

A total of 56 symptoms were identified across all the participants in the pre-intervention BAIS and 44 in the post-intervention BAIS. Inability to relax was the most common pre-test and post-test symptom among participants. Fear of losing control was noted for 62.5% (n=5) of participants on the pre-survey; however, in the post-intervention survey, 25% (n=2) participants felt this symptom (Table 3). The mean number of symptoms in the pre-intervention BAIS was 4.5, and in the post-intervention, BAIS was 3.14 There was a statistical difference in the number of symptoms before and after the intervention ($t(20)=2.37$, $p=0.03$).

Table 3

BAIS Number of Symptoms Experienced

	n= Frequency of symptoms	
Symptom	Pre-BAIS	Post-BAIS
Numb/tingling	2	2
Feeling hot	2	4
Unable to relax	6	7
Fear of worst	5	4
Dizzy	2	1
Heart pound	4	4
Unsteady	2	1
Terrified	1	0
Nervous	6	4
Choking	2	1
Hands trembly	1	1
Shaky	1	1
Fear of losing control	5	2
Difficulty breathing	2	0
Fear of dying	0	1
Scared	1	1
Indigestion	6	5
Faint	1	0
Flushed	4	2
Cold Sweats	3	1

The most common pre-intervention symptom severity noted from greatest to least in the BAIS were indigestion, inability to relax, feeling nervous, heart pounding, feeling flushed, having cold sweats, feeling hot, fear of the worst thing happening, feeling unsteady, and losing control. The most common post-intervention symptom severity noted from greatest to least in the BAIS were indigestion, inability to relax, feeling hot, fear of the worst thing happening, nervousness, and heart pounding.

Severity of overall symptoms decreased from pre- to post-intervention BAIS. Symptoms with reduced severity included feeling flushed, cold sweats, being unsteady,

feeling terrified, fear of losing control, difficulty breathing, and feeling faint. Some symptoms increased in severity but not by more than one point greater than the pre-test value. Those symptoms included feeling hot, inability to relax, and fear of the worst happening (Table 4). There was no statistical difference in severity rating of any symptoms from pre-intervention BAIS to post-intervention BAIS.

Table 4

Beck's Anxiety Inventory Data Severity of Symptoms

Symptom	*Pre-test*	*Post-test*
Numb/tingling	3	2
Feeling hot	5	6
Unable to relax	9	10
Fear of worst	5	6
Dizzy	3	2
Heart pounding	7	5
Unsteady	5	2
Terrified	3	0
Nervous	8	6
Choking	4	2
Hands trembly	2	2
Shaky	1	1
Fear of losing control	5	2
Difficulty breathing	3	0
Fear of dying	0	1
Scared	3	2
Indigestion	12	11
Faint	3	0
Flushed	7	3
Cold Sweats	7	3

Indigestion was the most common pre-intervention symptom found in 75% (n=6) of participants, corresponding with the highest in severity of all the symptoms (Table 2).

Post-intervention, indigestion was still present in 63% (n=5) of participants and, again, was the highest in severity. Inability to relax was another common symptom found in 75% (n=6) 0f participants and was second highest in severity pre-BAIS. In the post-intervention BAIS, 88% (n=7) noted an inability to relax, and the corresponding severity also increased (Table 3).

The Single Item Stress Scale (SISS) asked participants to rate their work-related stress level pre- and post-intervention. The pre-intervention mean was 5.9 and the post-intervention mean was 4.5. There was a significant decrease in perceived work-related stress ($t(7)=2.76$, $p=0.03$).

The post-intervention survey showed 37.5% (n=3) of participants experienced a traumatic work event during the 30-day intervention. During the first week participants meditated an average of 3.6 times and averaged 5.8 minutes in each session. Meditation averaged four times a week and 6.5 minutes per session in the second week. The third week meditation averaged four times for 6.3 minutes a session. The participants averaged meditation for week four was four times a week and 5.8 minutes each session. There was variation in times per week spent meditating, as well as length of time spent meditating.

On average, participants exercised 3.9 times in week one and for 19.6 minutes each time. In week two, the participants exercised 3.4 times for a total of 17.3 minutes average. In week three, participants averaged for exercise was 3.5 times per week, and 18.7 minutes a session. In the fourth week, participants exercised three times a week for 15.9 total minutes per exercise day. Exercise type varied among participants, including, walking, yoga, and cross-training.

Discussion

This study took place during a low COVID-19 census compared to the surge in COVID-19 admissions from the previous two years. The results show that most of the nurses participating in the study utilized exercise and meditation prior to the project. Exercise was utilized by 87.5% (n=7) of the participants, and 50% (n=4) of the participants meditated regularly prior to the intervention. Mental health support systems offered by the hospital were utilized by 62.5% (n=5) of the participants. These results show that the participating nurses employed coping mechanisms that may have prevented a noticeable impact on the study findings.

The results showed a shift in the nurses' perception of their work-related stress. The SISS showed statistical significance in the reduction of the nurses' perception of work-related stress, indicating that the nurses' level of stress was less during the four-week meditation and exercise intervention period. Conversely, the BAIS did not show a statistically significant difference, indicating that the nurses' overall symptoms of anxiety did not change after the four-week meditation and exercise intervention. Seven of the nurses had low BAIS levels on the pre- and post-intervention survey, and one nurse was severely anxious only in the pre-intervention survey. Overall, the sample population was more stressed than anxious.

Participants noted more symptoms with greater severity on the pre-intervention BAIS than the post-intervention BAIS. Nurses' anxiety symptoms were lower in the post-intervention BAIS but not significantly due to the already low pre-intervention BAIS scores. The majority of nurses in this sample had over fifteen years of experience, so it is understandable that this population has self-selected and adapted to the demands of this

working environment. Furthermore, these nurses utilized multiple self-care practices prior to the study which may have contributed to the lower BAIS pre-intervention results.

Additionally, the BAIS symptoms were noted to be also symptoms associated with menopause. The majority of this sample population is within the age that menopause is commonly occurring. Results may skew differently if more younger and male nurses participated. This symptom differentiation would be important to parse out in further studies. And despite the activity in the unit, the nurses that completed the self-care intervention reduced their stress levels with this feasible study.

Limitations

This study had limitations. The small sample size prevented a complete understanding and comparison of the impact of exercise and meditation on work related stress and anxiety across the MICU's demographics. Despite encouragement to participate, male nurses and travel nurses were not represented in this study. Nurses with less experience and night and rotating shift nurses were underrepresented in this study as well. The nature of rating feelings and symptoms may result in self-reporting bias due to inaccurate self-assessments.

Implications

Nurses need to be aware of their feelings and perceptions. Nurses in this project and studies reported in the literature that exercise and meditate regularly showed a reduction in stress. Self-care such as, utilizing hospital offered therapies and being consistent with meditation and exercise improves stress levels.

This sample of ICU nurses did not have high average anxiety scores in the pre- or post-intervention surveys. However, the nurses did rate their stress higher in the pre-

survey than the post-intervention survey. The BAIS is an excellent tool to measure generalized anxiety; however, it was not the best instrument choice for this study, with 87.5% of the participants having mild initial anxiety symptoms. The SISS measured the nurses' perception of work-related stress in the past month and did show improvement with self-care interventions. Stress and anxiety are separate phenomena. These results suggest that MICU nurses compartmentalize work stress from anxiety.

The literature review accurately reflected the benefits of self-care for nurses by reducing work stress. This study correlates with the literature review on the reduction of work stress. But this study did not reflect significant anxiety reduction after a 30-day intervention. Strategies for change include providing a space for nurses to take a short break between stressful events and ensuring that nurses have staff support to cover lunch and bathroom breaks. Managerial support can offer incentives in participating in exercise programs or provide up-to-date information on current hospital wellness and support programs. Sustaining change involves changing the culture through orientation classes or classes in the annual company education modules. Nursing schools teach about mental health regarding patients; teaching can also encompass self-care and awareness of the nurse's mental health.

Conclusion

Nurses' perception of stress showed significant reduction after a 30-day intervention of exercise and meditation. Even though this study had a small sample size, it supports evidence from the literature that routine self-care methods are beneficial to perceptions of stress. Nursing stress and anxiety are treatable conditions that need more attention by the health care community.

Changing nursing behaviors requires a culture change. Including information for nurses on self-care and strategies to manage stress and anxiety from the beginning of their education, orientation, and annual competency training would benefit their population. Schools must teach nursing students to become aware of their mental health and to utilize strategies such as meditation and exercise to deal with stress. Hospitals need to make sure that nurses are aware of resources available to aid mental health. In addition, as annual skills-days and staff compliance training are required, nurses need yearly training to assess their own mental health. Stress and anxiety management through exercise and meditation are valuable skills that may help nurse resiliency. Learning to self-evaluate and use self-help strategies may contribute to sustaining many nurses in their careers. Self-awareness is the initial step in seeking help to alleviate a problem. The longevity of the profession depends on it.

References

Andersen, S., Mintz-Binder, R., Sweatt, L., & Song, H. (2021). Building nurse resilience in the workplace. *Applied Nursing Research, 59.* https://www.sciencedirect.com/science/article/pii/S0897189721000392.

Badu, E., O'Brien, A., Mitchell, R., Rubin, M., James, C., McNeil, K., Nguyen, K., & Giles, M. (2020). Workplace stress and resilience in the Australian nursing workforce: A comprehensive integrative review. *International Journal of Mental Health Nursing, 29*(1), 5–34. https://doi.org/10.1111/inm.12662.

Baskin, R.G., & Bartlett, R. (2021). Healthcare worker resilience during the COVID-19 pandemic: An integrative review. *Journal of Nursing Management*, *29*. https://doi.org/10.1111/jonm.13395.

Bates, A., Ottaway, J., Moyses, H., Perrrow, M., Rushbrook, S., & Cusack, R. (2020). Psychological impact of caring for critically ill patients during the COVID-19 pandemic and recommendations for staff support. *Journal of the Intensive Care Society*, 22(4), 312-318. https://doi.org/10.1177/1751143720965109.

Batra, K., Singh, T., Sharma, M., Batra, R., & Schvaneveldt, N. (2020). Investigating the psychological impact of COVID-19 among healthcare workers: A meta-analysis. *International Journal of Environmental Research and Public Health 17*(23), 1–33. https://doi.org/10.3390/ijerph17239096.

Beck, A. T., Epstein, N., Brown, G., & Steer, R. (1988). Beck anxiety inventory. *PsycTESTS Dataset*. https://doi.org/10.1037/t02025-000

Benitez, A. (2021). *5-minute meditation for anxiety* [Video]. YouTube. https://youtu.be/p7Rfz3M0hIo.

Booker, L. A., Sletten, T. L., Alvaro, P. K., Barnes, M., Collins, A., Chai-Coetzer, C. L., Naqvi, A., McMahon, M., Lockley, S. W., Rajaratnam, S. M. W., & Howard, M. E. (2019). Exploring the associations between shift work disorder, depression, anxiety, and sick leave taken amongst nurses. *Journal of Sleep Research 29*(3). https://doi.org/10.1111/jsr.12872.

Bredicean, C., Tamasan, S., Lungeanu, D., Giurgi-Oncu, C., Stoica, I., Panfil, A., Vasilian, C., Secosan, I., Ursoniu, S., & Patrascu, R. (2021). Burnout toll on empathy would mediate the missing professional support in the COVID-19 outbreak. *Risk Management and Healthcare Policy, 14*, 2231–44. https://doi.org/10.2147/RMHP.S300578.

Chana, N., Kennedy, P., & Chessell, Z. (2015). Nursing staffs' emotional well-being and caring behaviours. *Journal of Clinical Nursing, 24*(19–20), 2835–48. https://doi.org/10.1111/jocn.12891.

Chueh, K., Chen, K., & Lin, Y. (2021). Psychological distress and sleep disturbance among female nurses: Anxiety or depression? *Journal of Transcultural Nursing, 32*(1), 14–20. https://doi.org/10.1177/1043659619881491.

Colville, G., Smith, J., Brierley, J., Citron, K., Nguru, N., Shaunak, P., Tam, O., & Perkins-Porras., L. (2017). Coping with staff burnout and work-related posttraumatic stress in intensive care. *Pediatric Critical Care Medicine 18*(7), 267–73. https://doi.org/10.1097/PCC.0000000000001179.

Craigie, M., Slatyer, S., Hegney, D., Osseiran-Moisson, R., Gentry, E., Davis, S., Dolan, T., & Rees, C. (2016). A pilot evaluation of a mindful self-care and resiliency

(MSCR) intervention for nurses. *Mindfulness 7*(3), 764–74. https://doi.org/10.1007/s12671-016-0516-x.

Dang, D., & Dearholt, S. L. (2018). *Johns Hopkins nursing evidence-based practice: Model and guidelines*. Sigma Theta Tau International.

de Pinho, L., Sampaio, F., Sequeira, C., Teixeira, L., Fonseca, C., & Lopes, M. (2021). Portuguese nurses' stress, anxiety, & depression reduction strategies during the COVID-19 outbreak. *International Journal of Environmental Research and Public Health*, *18*(7). https://doi.org/10.3390/ijerph18073490

D'emeh, W., Yacoub, M., & Shahwan, B. (2021). Work-related stress and anxiety among frontline nurses during the COVID-19 pandemic: A cross-sectional study. *Journal of Psychosocial Nursing and Mental Health Services 59*(8), 31–42. https://doi.org/10.3928/02793695-20210322-02.

Drury, V., Craigie, M., Francis, K., Aoun, S., & Hegney, D. (2014). Compassion satisfaction, compassion fatigue, anxiety, depression, and stress in registered nurses in Australia: Phase 2 results. *Journal of Nursing Management 22*(4), 519–31. https://doi.org/10.1111/jonm.12168.

Duhoux, A., Menear, M., Charron, M., Lavoie-Tremblay, M., & Alderson, M. (2017). Interventions to promote or improve the mental health of primary care nurses: A systematic review. *Journal of Nursing Management 25*(8), 597–607. https://doi.org/10.1111/jonm.12511.

Elo, A. L., Leppänen, A., & Jahkola, A. (2003). Validity of a single-item measure of stress symptoms. *Scandinavian journal of work, environment & health*, *29*(6), 444–451. https://doi.org/10.5271/sjweh.752

Fang, L., Hsiao, L., Fang, S., & Chen, B. (2019). Associations of work stress and humor with health status in hospital nurses—A cross-sectional study. *Journal of Clinical Nursing 28*(19-20), 3691–99. https://doi.org/10.1111/jocn.14970.

Hofmeyer, A., & Taylor, R. (2021). Strategies and resources for nurse leaders to use to lead with empathy and prudence so they understand and address sources of anxiety among nurses practicing in the era of COVID-19. *Journal of Clinical Nursing 30*(1) 298–305. https://doi.org/10.1111/jocn.15520.

Hong, Y., Lee, J., Lee, H., Kim, K., Cho, I., Ahn, M., Shin, Y., Park, J., & Chung, S. (2021). Resilience and work-related stress may affect depressive symptoms in nursing professionals during the COVID-19 pandemic era. *Psychiatry Investigation 18*(4), 357–63. https://doi.org/10.30773/PI.2021.0019.

Houdmont, J., Jachens, L., Randall, R., Pamia, S., Nuttall, S., & Hopson, S. (2004). Validity of a single-item measure of stress symptoms. *Scandinavian Journal of Work, Environment & Health, 29(6), 444-51.* https://pubmed.ncbi.nlm.nih.gov/14712852/.

Huang, C., Wu, M., Ho, C., & Wang, J. (2018). Risks of treated anxiety, depression, and insomnia among nurses: A nationwide longitudinal cohort study. *PloS One 13*(9). https://doi.org/10.1371/journal.pone.0204224.

Imamura, K., Tran, T., Nguyen, H., Sasaki, N., Kuribayashi, K., Sakuraya, A., Bui, T., Nguyen, A., Nguyen, Q., Nguyen, N., Nguyen, K., Nguyen, G., Tran, X., Truong, T., Zhang, M., Minas, H., Sekiya, Y., Watanabe, K., Tsutsumi, A., & Kawakami, N. (2021). Effects of smartphone-based stress management programs on depression and anxiety of hospital nurses in Vietnam: A three-arm randomized

controlled trial. *Nature News.* https://www.nature.com/articles/s41598-021-90320-5.

Kinser, P., Braun, S., Deeb, G., Carrico, C., & Dow, A. (2016). Awareness is the first step: An interprofessional course on mindfulness & mindful movement for healthcare professionals and students. *Complementary Therapies in Clinical Practice 25*, 18–25. https://doi.org/10.1016/j.ctcp.2016.08.003.

Labrague, L. J., & De Los Santos, J. A. A. (2020). COVID-19 anxiety among front-line nurses: Predictive role of organizational support, personal resilience, and social support. *Journal of Nursing Management*, *28*(7), 1653–1661. https://doi.org/10.1111/jonm.13121.

Magtibay, D., Chesak, S., Coughlin, K., & Sood, A. (2017). Decreasing stress and burnout in nurses: Efficacy of blended learning with stress management and resilience training program. *JONA: The Journal of Nursing Administration 47*(7-8), 391–95. https://doi.org/10.1097/NNA.0000000000000501.

Manomenidis, G., Panagopoulou, E., & Montgomery, A. (2019). Resilience in nursing: The role of internal and external factors. *Journal of Nursing Management 27*(1), 172–78. https://doi.org/10.1111/jonm.12662.

Marthoenis, M., Fathiariani, L., & Nassimbwa, J. (2021). Investigating the burden of mental distress among nurses at a provincial COVID-19 referral hospital in Indonesia: A cross-sectional study. *BMC Nursing 20*(76). https://doi.org/10.1186/s12912-021-00596-1.

Mealer, M., Conrad, D., Evans, J., Jooste, K., Solyntjes, J., Rothbaum, B., & Moss, M. (2014). Feasibility and acceptability of a resilience training program for intensive

care unit nurses. *American Journal of Critical Care 23*(6), e97–105. https://doi.org/10.4037/ajcc2014747.

Melnyk, B., Hsieh, A., Davidson, J., Carpenter, H., Choflet, A., Heath, J., Hess, M., Lee, P., Link, T., Marcus, J., Pabico, C., Poindexter, K., & Stand, L. (2021). Promoting nurse mental health. *American Nurse Journal*, *16*(1), 20–59. https://www.myamericannurse.com/promoting-nurse-mental-health/

Mo, Y., Deng, L., Zhang, L., Lang, Q., Liao, C., Wang, N., Qin, M., & Huang, H. (2020). Work stress among Chinese nurses to support Wuhan in fighting against COVID-19 epidemic. *Journal of Nursing Management 28*(5), 1002–9. https://doi.org/10.1111/jonm.13014.

Olofsson, B., Bengtsson, C., & Brink, E. (2003). Absence of response: A study of nurses' experience of stress in the workplace. *Journal of Nursing Management, 11*(5), 351-8. https://pubmed.ncbi.nlm.nih.gov/12930542/.

Peñacoba, C., Velasco, L., Catalá, P., Gil-Almagro, F., García-Hedrera, F., & Carmona-Monge, F. (2021). Resilience and anxiety among intensive care unit professionals during the COVID-19 pandemic. *Nursing in Critical Care*, *2021,* 1-9. https://doi.org/10.1111/nicc.12694.

Rodgers, L. (2021). How to do a quick 5-minute meditation. *The Healthy.* https://www.thehealthy.com/alternative-medicine/5-minute-meditation/.

Rodriguez-Vega, B., Palao, Á., Muñoz-Sanjose, A., Torrijos, M., Aguirre, P., Fernández, A., Amador, B., Rocamora, C., Blanco, L., Marti-Esquitino, J., Ortiz-Villalobos, A., Alonso-Sañudo, M., Cebolla, S., Curto, J., Villanueva, R., de-la-Iglesia, M.J., Carracedo, D., Casado, C., Vidal, E., … 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(*562578). https://doi.org/10.3389/fpsyt.2020.562578.

Saffari, M., Bashar, F., Vahedian-Azimi, A., Pourhoseingholi, M., Karimi, L., Shamsizadeh, M., Gohari-Moghadam, K., & Sahebkar, A. (2021). Effect of a multistage educational skill-based program on nurses' stress and anxiety in the intensive care setting: A randomized controlled trial. *Behavioural Neurology.* https://doi.org/10.1155/2021/8811347.

Sampson, M., Melnyk, B., & Hoying, J. (2020). The mind body strong intervention for new nurse residents: 6-month effects on mental health outcomes, healthy lifestyle behaviors, and job satisfaction. *Worldviews on Evidence-Based Nursing* 17(1),16–23. https://doi.org/10.1111/wvn.12411.

State of Louisiana Civil Service. (2018). Participant training manual - Louisiana. *Stress and Anger Management Manual.* https://www.civilservice.louisiana.gov/files/divisions/Training/Manuals/StressAndAngerManagementManual.pdf

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

van der Riet, P., Levett-Jones, T., & Aquino-Russell, C. (2018). The effectiveness of mindfulness meditation for nurses and nursing students: An integrated literature

review. *Nurse Education Today*, *65*(6), 201–211. https://doi.org/10.1016/j.nedt.2018.03.018

Zhang, P., Gao, C., Torres, J., Ma, X., Xu, M., Wang, L., & Qu, X. (2021). Physical and psychosocial responses to COVID-19 in Chinese frontline nurses: A cross-sectional study. *Journal of Psychosocial Nursing and Mental Health Services* *59*(9), 30–37. https://doi.org/10.3928/02793695-20210426-01.

Appendix A

Literature Review

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
Badu, E., O'Brien, A. P., Mitchell, R., Rubin, M., James, C., McNeil, K., Nguyen, K., & Giles, M. (2020). Workplace stress and resilience in the Australian nursing workforce: A comprehensive integrative review. *International Journal of Mental Health Nursing*, *29*(1), 5–34. CINAHL. https://doi.org/10.1111/inm.12662	integrative review identify and synthesize evidence on workplace stress and resilience in the Australian nursing workforce.	A search of the published literature EMBASE, MEDLINE, CINAHL (EBSCO), PsycINFO, Web of Science, and Scopus. limited to papers published in English from January 2008 to December 2018.	qualitative and quantitative data into a single synthesis. 41 papers met inclusion criteria, 65.85% (27/41) used quantitative data, 29.26% (12/41) used qualitative data, and 4.87% (2/41) used mixed methods. About 48.78% (20/41) of the papers addressed resilience issues, 46.34% (19/41) addressed workplace stress, and 4.87% (2/41) addressed workplace stress and resilience.	nurses experience moderate to high levels of stress. individual attributes and organizational resources used by nurses to manage workplace adversity include the use of work–life balance and organizing work as a mindful strategy, self-reliance, passion and interest, positive thinking, and emotional intelligence as self-efficacy mechanisms. The organizational resources used to build resilience are support services (both formal and informal), leadership, and role modelling. ~~relatively few studies focus on workplace interventions. ~~research attention be devoted to educational interventions to achieve sustainable improvements in the mental health and wellbeing of nurses.

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
Baskin, R. G., & Bartlett, R. (2021). Healthcare worker resilience during THE COVID-19 Pandemic: An integrative review. *Journal of Nursing Management*. https://doi.org/10.1111/jonm.13395	examine resilience among healthcare workers during the 2019 (COVID-19) pandemic.	32 of 191 articles selected between the two searches. terms: nurse, resilience, and COVID-19 (or coronavirus, 2019-ncov, sars-cov-2, or cov-19 in CINAHL). Articles published in English, full-text, and peer-reviewed	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.	Resilient workers have lower rates of burnout and improved patient outcomes. Data from the United States showed a decrease in nurse resilience, whereas participants from China had increased resilience compared with pre-pandemic levels. 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. Limitation: pandemic is still occurring, so it is difficult to fully capture its effects. 2 data bases used, English/ full text
Bates, A., Ottaway, J., Moyses, H., Perrrow, M., Rushbrook, S., & Cusack, R. (2020).	Finding guiding supportive interventions and staff utilization	N=117, majority were female	Survey: multi-disciplinary cohort of ICU staff online survey of psychological well-being and rated the	Recommends three distinct phases of psychological support: preparation, active phase, and post-pandemic recovery

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
Psychological impact of caring for critically ill patients during the COVID-19 pandemic and recommendations for staff support. *Journal of the Intensive Care Society*, 175114372096510. https://doi.org/10.1177/1751143720965109	Survey ICU staff concerning levels of anxiety and post-traumatic stress symptoms during COVID-19 crisis significantly impacting job-related well-being. Nurses are disproportionately affected.	less than 5 years ICU experience, 77 nurses, 24. Doctors, 16 allied health professionals	perceived usefulness of supportive interventions. designed an 18-section survey comprising demographics and validated well-being questionnaires; Generalized Anxiety Disorder 7-item Scale, Brief Resilience Scale, PTSD Checklist (PCL-5) and the Job-related Affective Well-being Scale (JAWS). Staff also rated range of supportive interventions based on reports from the Second Xiangya Hospital and recommendations from the UK national bodies.	Overall, physiologically protective supportive interventions were preferred by staff; however, staff with established anxiety desire professional psychological help. mitigate long-term psychological consequences of caring for patients during a pandemic, easily deliverable protective strategies should be instigated, supported by formal and longer-term psychological support. Particular attention should be paid to developing strategies which support nursing staff. Limitations: snapshot survey from a single, large teaching hospital. recommend conducting longitudinal studies across multiple centers of varying size. The lack of a matched control cohort makes it possible that stress levels were high prior to the pandemic onset Self-reported questionnaires are vulnerable to selection bias
Batra, K., Singh, T. P., Sharma, M., Batra, R.,	provide evidence related to the	65 studies met the	Meta-Analysis	anxiety, depression, stress, post-traumatic stress syndrome, insomnia, psychological

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
& Schvaneveldt, N. (2020). Investigating the psychological impact of COVID-19 among healthcare workers: A meta-analysis. *International Journal of Environmental Research and Public Health*, *17*(23), 9096. https://doi.org/10.3390/ijerph17239096	psychological impact among healthcare workers.	inclusion criteria total sample constituted 79,437 participants.	Medline, Embase, CINAHL, PsycINFO, and Scopus were searched for studies examining the impact of the COVID-19 pandemic on the psychological health of healthcare workers.	distress, and burnout was 34.4%, 31.8%, 40.3%, 11.4%, 27.8%, 46.1%, and 37.4% higher anxiety and depression prevalence among females, nurses, and frontline responders than males, doctors, and second-line healthcare workers. need for designing targeted intervention to improve resilience and foster post-traumatic growth among frontline responders The pooled prevalence of anxiety in 46 studies with a sample size 51,596 was 34.4% Generalized Anxiety Disorder survey questionnaire Gender data available in 7 studies with a pooled prevalence of 46.9% for females and 44.2% for males. In groups by healthcare professions, the pooled prevalence was higher in nurses compared to doctors (39.3% vs. 32.5%). Anxiety by exposure with a pooled prevalence of 39.8% among frontline HCWs compared to 27.1% prevalence among second line HCWs. Levels of anxiety with the highest pooled prevalence of 60.3% related to mild

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
				symptoms, followed by a 26.0% prevalence of moderate symptoms and a prevalence of only 14.3% for severe symptoms The Perceived Stress Scale (PSS) was used across 8 studies and a pooled prevalence of 61.4% was found. Levels of stress were reported in 6 studies, with the highest pooled prevalence related to moderate symptoms of 52.3%, followed by a 25.8% prevalence of mild and 18.9% of severe symptoms Limitations: heterogeneity across studies in terms of the survey tool and cut-off scores. threshold criteria for defining levels of outcomes varied across studies; for example, some studies reported results as mild, moderate, moderate-severe, and severe, while others reported outcomes as mild, moderate, and severe. Second, data depends on the self-reported psychological outcomes Third, sampling bias may exist because nearly 48% (31/65) of the studies were conducted in China. This may also limit the generalizability of the results.

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
				Fourth, all studies were cross-sectional, which only provided a snapshot of the existing situation with no exploration of longitudinal aspects. language bias only studies published in the English language were included
Booker, L. A., Sletten, T. L., Alvaro, P. K., Barnes, M., Collins, A., Chai-Coetzer, C. L., Naqvi, A., McMahon, M., Lockley, S. W., Rajaratnam, S. M. W., & Howard, M. E. (2020). Exploring the associations between shift work disorder, depression, anxiety, and sick leave taken amongst nurses. *Journal of Sleep Research*, *29*(3), e12872. https://doi.org/10.1111/jsr.12872	Evaluated association between shift work disorder and mental health in hospital-based nurses.	Hospital based nurses. N=202 nurses (95% female; age $M = 35.28$ years $\pm SD = 12$) participated (42% of eligible staff).	online survey demographic questions, the Shift Work Disorder Questionnaire, Patient Health-9 and the General Anxiety Disorder-7 scale. Sick leave data were collected from archival records from the Human Resources Department. Linear regression models	high risk of shift work disorder had higher depression and anxiety compared to those at low risk. Anxiety was associated with more alcohol consumed on non-workdays, fewer night shifts in the past month and high risk of SWD in the current study. Sleep loss can affect resilience to stress, accelerating the development of cognitive consequences and the ability to utilize strategies to manage anxiety sleep is affected by an individual's ability to cope with stress. Individuals who cope better with stress are less likely to have impaired sleep because of the stress Alcohol consumption may also be used to self-medicate and manage anxiety symptoms and as a sleep aid Shift work disorder combined with the number of night shifts and alcoholic drinks on non-workdays accounted for 49.7% of the variance in anxiety scores

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
				Mean sick leave in those with high risk of shift work disorder was increased Depression and years of shift work accounted for 18.9% of the variance in sick leave taken Shift work disorder is strongly associated with depression and anxiety, providing a potential target to improve mental health in shift workers. Depression, in turn, is a significant contributing factor to sick leave.
Bredicean, C., Tamasan, S. C., Lungeanu, D., Giurgi-Oncu, C., Stoica, I.-P., Panfil, A.-L., Vasilian, C., Secosan, I., Ursoniu, S., & Patrascu, R. (2021). Burnout toll on empathy would mediate the missing professional support in the COVID-19 outbreak. *Risk Management and Healthcare Policy*, *14*, 2231–2244. Scopus.	evaluate the psychological distress associated with work-related experiences among medical professionals and supporting staff during the pandemic outbreak.	N=364 hospital professional: consultant, specialty doctor, trainee doctor, senior nurse, trainee nurse or other)	self-administered on-line questionnaire Hamilton Anxiety Rating Scale, nine-item Patient Health Questionnaire (PHQ-9), Maslach Burnout Inventory - General Survey, Connor-Davidson Resilience Scale, and a subscale of the International Personality Item Pool (IPIP) for empathy. 14-item Hamilton	Anxiety, burnout, stress, resilience, and empathy proved to be significantly associated with both the professional category (i.e., consultant, specialty doctor, trainee doctor, senior nurse, trainee nurse or other) and the perceived professional support Limitation: cross-sectional design cannot prove causality. Error in self reporting, coding of empathy. Programs to include mental health screening for identifying early signs of burnout, psychological support and comprehensive educational interventions

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
https://doi.org/10.2147/RMHP.S300578				for mid-career professionals, residents, and medical students.
Chana, N., Kennedy, P., & Chessell, Z. J. (2015). Nursing staffs' emotional well-being and caring behaviours. *Journal of Clinical Nursing (John Wiley & Sons, Inc.)*, *24*(19–20), 2835–2848. CINAHL. https://doi.org/10.1111/jocn.12891	Examine relationships between structural factors (work stressors), individual factors (demographics and personal resources of resilience and social support) and transactional factors (appraisals and coping), and nursing staffs' levels of burnout, psychological distress and caring behaviors. And examine the relationships between nursing staffs' levels of burnout and psychological	102 nursing staff from an Acute National Health Service Trust were recruited in 2010.	cross-sectional correlation-based survey design. Participants completed questionnaires: Nursing Stress Scale, Social Support Questionnaire-Short Form, Connor and Davidson Resilience Scale-2, Occupational Coping Self-Efficacy Scale for Nurses, PsychNurse Scale, Maslach Burnout Inventory, The Hospital Anxiety and Depression Scale and Caring Behaviors Inventory-revised.	It is extremely important that the emotional well-being of nursing staff is supported, both for them, and for the effect this has on patient care. Demographics were not correlated with nursing staffs' burnout, psychological distress, or caring behaviors. Work stressors, coping strategies and self-efficacy correlated with nursing staffs' burnout and psychological distress. Caring behaviors correlated with coping strategies and self-efficacy. correlations were found between caring behaviors and nursing staffs' burnout and psychological distress.

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
	distress and their caring behaviors.			
Chueh, K.-H., Chen, K.-R., & Lin, Y.-H. (2021). Psychological Distress and Sleep Disturbance Among Female Nurses: Anxiety or Depression? *Journal of Transcultural Nursing: Official Journal of the Transcultural Nursing Society*, *32*(1), 14–20. MEDLINE. https://doi.org/10.1177/1043659619881491	To determine which psychological distress factors are associated with sleep disturbances among female nurses.	N=119 female Taiwanese nurses	surveyed using the Occupational Stress Indicator–2, Beck Anxiety Inventory, Beck Depression Inventory–II, and Pittsburgh Sleep Quality Index.	Overall, 68.9% of the nurses were poor sleepers, and 20.2% and 11.7% of them had more than moderate levels of anxiety and depression, sleep disturbances were associated with higher levels of depression and poorer general health. Compared with anxiety, depression more heavily influences sleep disturbances among female nurses. Depression prevention should thus be a focus of mental health promotion for female nurses.
Colville, G. A., Smith, J. G., Brierley, J., Citron, K., Nguru, N. M., Shaunak, P. D., Tam, O., & Perkins-Porras, L. (2017). Coping With Staff Burnout and Work-	Compare associations with symptoms of 1) burnout and 2) work-related posttraumatic stress, in adult and pediatric	N= 377 ICU staff 3 adult ICU, 4 PICU	No Interventions Questionnaires: Brief Resilience Scale, abbreviated Maslach Burnout Inventory, Trauma Screening Questionnaire, and Hospital Anxiety and Depression Scale.	Prevalence of burnout (defined as high emotional exhaustion or high depersonalization) =37%. clinically significant posttraumatic stress symptoms were 13%. overlap between burnout and other measures of distress, most notably for anxiety

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
Related Posttraumatic Stress in Intensive Care. *Pediatric Critical Care Medicine*, *18*(7), e267–e273. CINAHL. https://doi.org/10.1097/PCC.0000000000001179	intensive care staff, focusing on resilience and coping strategies.			coping strategies associated with outcomes: attending debriefing reduced risk of burnout the odds of posttraumatic stress were less if staff used to talk to seniors or hobbies to cope with stress at work. Venting emotion and using alcohol were associated with a doubling in risk of reporting burnout.
Craigie, M., Slatyer, S., Hegney, D., Osseiran-Moisson, R., Gentry, E., Davis, S., Dolan, T., & Rees, C. (2016). A Pilot Evaluation of a Mindful Self-care and Resiliency (MSCR) Intervention for Nurses. *Mindfulness*, *7*(3), 764–774. Scopus. https://doi.org/10.1007/s12671-016-0516-x	Identifying effective workplace strategies to help improve the resilience of nurses evaluated a mindfulness-based intervention aimed at reducing compassion fatigue and improving emotional well-being in nurses.	N=21 nurses from a large teaching. Hospital in Western Australia	a mindful self-care and resiliency (MSCR) intervention. 1-day compassion fatigue prevention educational workshop, followed by a series of weekly mindfulness training seminars conducted over 4 weeks (12 h total intervention time). Participants completed measures at pre, post, and 1-month follow-up. ProQoL5 survey measures compassion satisfaction,	Preintervention 45% had high burnout, post intervention 15%. No significant changes for general resilience, anxiety, or secondary traumatic stress post-intervention relatively brief workplace intervention may represent a feasible approach to improving resilience and well-being among nurses. Limitations: longer follow up time needed to evaluate long term effects.

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
			compassion fatigue, burnout	
de Pinho, L. G., Sampaio, F., Sequeira, C., Teixeira, L., Fonseca, C., & Lopes, M. J. (2021). Portuguese nurses' stress, anxiety, and depression reduction strategies during the COVID-19 outbreak. *International Journal of Environmental Research and Public Health*, *18*(7). Scopus. https://doi.org/10.3390/ijerph18073490	explore association between mental health promotion strategies used by nurses during COVID-19 outbreak and their symptoms of depression, anxiety, and stress. compare depression, anxiety, and stress of mental health nurses to those of non-mental health nurses; and compare the frequency of use of mental health strategies of mental health nurses to those of	N= 821 Portuguese nurses, cross sectional study	A cross-sectional study Univariate and multivariate regression models were developed to identify potential protective factors of depression, anxiety, and stress	Portuguese nurses demonstrated high symptoms of depressive symptoms, stress, and anxiety. Healthy eating, physical activity, rest between shifts, maintaining social contacts, verbalizing feelings/emotions, and spending less time searching for information about COVID-19 were associated with better mental health. Mental health nurses had less depression, anxiety, and stress, and used more strategies to promote mental health than other nurses promote nurses' mental health literacy by encouraging them to develop skills and strategies aimed at improving their resilience and ability to deal with difficult situations while caring for the population.

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
	non-mental health nurses.			
D'emeh, W. M., Yacoub, M. I., & Shahwan, B. S. (2021). Work-Related Stress and Anxiety Among Frontline Nurses During the COVID-19 Pandemic: A Cross-Sectional Study. *Journal of Psychosocial Nursing and Mental Health Services*, *59*(8), 31–42. MEDLINE. https://doi.org/10.3928/02793695-20210322-02	aimed to investigate work-related stress and anxiety among nurses caring for patients with COVID-19.	N= 240 nurses	Online descriptive cross sectional correlational study using the Stress Overload Scale and Self-Rated Anxiety Scale.	Statistically significant differences were found in mean stress overload and anxiety scores based on gender, professional title, average working hours per week, working area, and presence of fear of being infected with COVID-19. Suggests need to promote well-being in nurses and assist nurses and other health care workers experiencing mental and psychological health problems in the context of the COVID-19 pandemic.
Drury, V., Craigie, M., Francis, K., Aoun, S., & Hegney, D. G. (2014). Compassion satisfaction, compassion fatigue, anxiety, depression, and stress in registered	explore the factors impacting upon compassion satisfaction, compassion fatigue, anxiety, depression, and stress and to	N=10	three-phase mixed-method study individual interviews and a focus group. questions that explored participants' feelings about (compassion satisfaction, STS, anxiety, depression,	Findings suggest that a nurse's capacity to cope is enhanced through strong social and collegial support, infrastructure that supports the provision of quality nursing care and positive affirmation. These concepts are strongly linked to personal resilience. Implications for nursing management

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
nurses in Australia: Phase 2 results. *Journal of Nursing Management*, *22*(4), 519–531. Scopus. https://doi.org/10.1111/jonm.12168	describe the strategies nurses use to build compassion satisfaction into their working lives.		and stress) and asked them to identify strategies that might be implemented to alleviate or minimize some of the stressors expressed by participants and build psychological wellness. A interview sheet sent to all participants prior to each interview/focus group to allow each nurse to reflect	These findings support the need for management to develop appropriate interventions to build resilience in nurses.
Duhoux, A., Menear, M., Charron, M., Lavoie-Tremblay, M., & Alderson, M. (2017). Interventions to promote or improve the mental health of primary care nurses: A systematic review. *Journal of Nursing Management*, *25*(8), 597–607. MEDLINE. https://doi.org/10.1111/jonm.12511	synthesize the evidence on the effectiveness of interventions aiming to promote or improve the mental health of primary care nurses.	8 articles reporting on seven unique studies met all eligibility criteria. They were non-randomized pre–post intervention studies and reported positive impacts of	systematic review on the effectiveness of interventions at the individual, group, work environment or organizational level. searches in CINAHL, Medline, Pubmed, Embase and PsycINFO using subject headings and keywords related to 'nurses', 'mental health', 'occupational health' and 'intervention'. Secondary interventions All three of the studies evaluating secondary	found moderate–weak evidence that primary, secondary, and combined interventions can reduce burnout and stress in nurses practicing in community-based health care settings. Implications for nursing management a need for the implementation and evaluation of new strategies tailored for community-based nurses practicing in primary care.

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
		interventions on at least some outcomes	interventions targeted individual nurses that were experiencing work stress. In two studies the authors assessed the effects of 8-week mindfulness continuing education courses on nurses' burnout levels and mental health outcomes. Bazarko's intervention included guided instruction in mindfulness meditation, facilitated group discussion, gentle stretching and yoga, daily work, and home assignments (involving CDs, DVDs and workbooks), and access to individually tailored instruction and support. An instructor delivered only two in-person sessions, with most weekly sessions delivered through a group teleconference call.	

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
Fang, L., Hsiao, L., Fang, S., & Chen, B. (2019). Associations of work stress and humor with health status in hospital nurses—A cross-sectional study. *Journal of Clinical Nursing (John Wiley & Sons, Inc.)*, *28*(19/20), 3691–3699. CINAHL. https://doi.org/10.1111/jocn.14970	analyze the relationship among hospital nurses' socio-demographic data, work stress, humor and health conditions, and to determine the predictors of nurses' health status.	N= 236 nurses in a regional hospital in Taiwan	cross-sectional designs and used structured questionnaires which included socio-demographic data, an Effort-Reward Imbalance questionnaire (ERI), humor and 12-item Chinese health questionnaires (CHQ).	significant predictors of the participants' health were "whether experienced significant life events during the past 3 months," "the degree of work stress" and the level of "humor." recommended that administrators pay attention to the cultivation of nursing staff's humor, such as providing nurses with musical CDs or humorous books and providing stress management training courses to nurses. provide nurses with stress management and resilience enhancement courses Limitations: bias d/t self-administered questionnaire, need more objective measurements i.e., salivary cortisol levels to measure stress
Hofmeyer, A., & Taylor, R. (2021). Strategies and resources for nurse leaders to use to lead with empathy and prudence so they understand and address sources of	Identify strategies and resources for nurse leaders to use to lead with empathy and prudence to improve quality of care and to ease the	empathic conversations with front-line nurses are crucial so nurse leaders can understand	Discursive paper. Identify and include relevant international evidence with clinical discussion	Nurse leaders must ensure adequate PPE supply, upskill nurses to provide safe, quality care for patients with COVID-19 and promote restorative self-care plans. The strategic actions nurse leaders take today can positively impact nurses' well-being and ability to provide safe and quality care for patients in the context of COVID-19.

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
anxiety among nurses practicing in the era of COVID-19. *Journal of Clinical Nursing*, *30*(1–2), 298–305. Scopus. https://doi.org/10.1111/jocn.15520	psychological toll on nurses caring for patients with COVID-19.	their specific needs, sources of anxiety (e.g., risk of infection), and preferences for support.		online, evidence-based information and self-care resources can be applied in clinical practice during the pandemic to inform, educate and prepare nurses to provide compassionate, safe, and quality nursing care for patients with COVID-19, and EOLC as needed. Nurse leaders who want to lead their staff to prevail through the pandemic must ensure nurses are aware of relevant online resources to ease anxiety and strengthen well-being. Leaders must respond with empathy to understand and address the sources of nurses' anxiety and provide tangible organizational compassionate interventions to support their well-being and clinical practice.
Hong, Y., Lee, J., Lee, H. J., Kim, K., Cho, I.-K., Ahn, M. H., Shin, Y.-W., Park, J., & Chung, S. (2021). Resilience and work-related stress may affect depressive symptoms in nursing professionals during	to investigate the effect of nursing professionals' resilience on their mental health, work-related stress, and anxiety in response to the	N= 824 nursing professionals Asan Medical Center & Ulsan University Hospital	Online survey, including demographic variables and the Stress and Anxiety to Viral Epidemics-9 (SAVE-9), PHQ-9, GAD-7, and Brief Resilience Scale scores.	Resilience negatively correlated with Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety Scale-7 items, Stress and Anxiety to Viral Epidem-ics-6 items, and Stress And anxiety to Viral Epidemics-3 items Logistic regression analysis adjusting age, marital status, and years of employment found high level of general anxiety, work-related stress during viral

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
the COVID-19 pandemic era. *Psychiatry Investigation*, *18*(4), 357–363. Scopus. https://doi.org/10.30773/PI.2021.0019	COVID-19 pandemic.	both in South Korea		epidemics, and low-level resilience were expecting variables for the depression of healthcare workers. Limitations: online self-report, no details of psychiatric symptoms. Cannot generalize responses from participants, study conducted in first wave of pandemic, SAVE-9 scale not fully validated.
Huang, C. L.-C., Wu, M.-P., Ho, C.-H., & Wang, J.-J. (2018). Risks of treated anxiety, depression, and insomnia among nurses: A nationwide longitudinal cohort study. *PloS One*, *13*(9), e0204224. MEDLINE. https://doi.org/10.1371/journal.pone.0204224	to explore the risks and influencing factors of treated anxiety, depression, and insomnia among nurses.	registered nurses 20-65 years old in 2010 medical personnel database from NHIRD selected Case group N=89723 Control group N= 860613	claims data obtained from the 2010 National Health Insurance Research Database (NHIRD) in Taiwan. Hospital nurses who had at least 3 coded ambulatory care claims or 1 inpatient claim with a principal diagnosis of anxiety, depression, or insomnia were identified.	hospital nurses have lower hazards of treated anxiety and depression than the general population, although they have a higher hazard of treated insomnia. abundant evidence of higher prevalence of depression and anxiety among nurses than among the general population Limitations: hospital nurses only, diagnoses based on ICD-9, did not incorporated substance use disorder, overload, or workplace stress
Imamura, K., Tran, T. T. T., Nguyen, H. T., Sasaki, N., Kuribayashi, K.,	examine the efficacy of two types of newly developed	N= 951 Random selection large	RCT TRIAL three-arm (including two intervention groups and one control group) randomized trial.	in low-resource settings in LMICs, there is a substantial need for accessible and low-cost intervention programs.

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
Sakuraya, A., Bui, T. M., Nguyen, A. Q., Nguyen, Q. T., Nguyen, N. T., Nguyen, K. T., Nguyen, G. T. H., Tran, X. T. N., Truong, T. Q., Zhang, M. W., Minas, H., Sekiya, Y., Watanabe, K., Tsutsumi, A., & Kawakami, N. (2021). Effect of smartphone-based stress management programs on depression and anxiety of hospital nurses in Vietnam: A three-arm randomized controlled trial. *Scientific Reports*, *11*(1), 11353. MEDLINE. https://doi.org/10.1038/s41598-021-90320-5	smartphone-based stress management programs in improving depressive and anxiety symptoms among hospital nurses in Vietnam.	general hospital in Hanoi, Vietnam.	Two types (free-choice and fixed sequential order) of smartphone-based stress management programs were developed. Participants were randomly allocated to Program A (a free-choice, multimodule stress management), Program B (a fixed-order, internet cognitive behavioral therapy, iCBT), or a control group (treatment as usual). The depressive and anxiety symptoms were measured by using the Depression Anxiety and Stress Scales at baseline, 3-, and 7-month follow-up surveys. primary outcomes measured were depressive and anxiety symptoms measured with the depression and anxiety subscales of the short 21-item version of the	Cognitive behavioral therapy (CBT) has been shown to be effective for reducing depression and anxiety among workers CBT has been reported to be more effective than an organizational approach Program B, an iCBT program with a fixed-sequential order of modules, showed a significant intervention effect on improving depressive symptoms at 3-month follow-up among hospital nurses with a small effect size. Program A, an iCBT program with a free-choice order of modules, did not show a significant intervention effect on any of the primary outcomes. Program B showed no significant effect on improving anxiety symptoms at 3- or 7-month follow-up. completion rates, satisfaction, and usefulness of the two programs were similar. Limitations: full time nurses, mostly female, married, without chronic diseases or depressive symptoms at baseline; self-reporting, nurses comparing contaminated study

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
			Depression Anxiety and Stress Scales	
Kinser, P., Braun, S., Deeb, G., Carrico, C., & Dow, A. (2016). "Awareness is the first step": An interprofessional course on mindfulness & mindful movement for healthcare professionals and students. *Complementary Therapies in Clinical Practice*, *25*, 18–25. CINAHL. https://doi.org/10.1016/j.ctcp.2016.08.003	evaluate the preliminary feasibility, acceptability, and preliminary effects of an 8-week mindfulness curriculum for interprofessional HCPs and trainees	N=27 HCP & trainees	Within group repeated measures design to study effects of 8-weeek mindful-movement based intervention between 9/2014-5/2016	Mindfulness training is feasible to enhance resilience in healthcare professionals. Stress, anxiety, and burnout were significantly reduced after mindfulness training. Further large-scale controlled research is warranted. Limitations: small sample size, statistically significant reductions in perceived stress, anxiety, and specific aspects of burnout from pre-to post-intervention and there was a trend in an enhanced sense of personal accomplishment over time.
Labrague, L. J., & De Los Santos, J. A. A. (2020). COVID-19 anxiety among front-line nurses: Predictive role of organizational support, personal resilience, and social support. *Journal of*	relative influence of personal resilience, social support, and organizational support in reducing COVID-19 anxiety in front-line nurses.	N=325 nurse from Philippines	Cross sectional study using 4 standardized scales COVID-19 Anxiety Scale, the Brief Resilient Coping Scale (BRCS), the Perceived Social Support Questionnaire (PSSQ) and the Perceived	37.8% dysfunctional anxiety Nurse characteristics were not associated with COVID 19 anxiety Resilient nurses perceived higher organizational and social support were more likely to report lower anxiety related to COVID-19. COVID-19 anxiety may be addressed through organizational interventions,

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
Nursing Management, *28*(7), 1653–1661. MEDLINE. https://doi.org/10.1111/jonm.13121			Organizational Support (POS) questionnaire.	including increasing social support, assuring adequate organizational support, providing psychological and mental support services, and providing resilience-promoting and stress management interventions. More than 90% of front-line nurses reported that they were not fully prepared to manage COVID-19 patients, and only 20.3% reported being willing to care for COVID-19 patients. highlights the importance of developing measures or interventions to promote or optimize personal resilience in front-line nurses to reduce their anxiety related to COVID-19. Limitations: cannot generalize throughout country or world, cannot find causal links between variables. Self-reported limitations
Magtibay, D. L., Chesak, S. S., Coughlin, K., & Sood, A. (2017). Decreasing Stress and Burnout in Nurses: Efficacy of Blended Learning With Stress	assess efficacy of blended learning to decrease stress and burnout among nurses through use of the Stress Management and	convenience sample of 50 nurses self-selected to participate.	quasi-experimental, 1-group baseline to postintervention conducted at a large academic tertiary medical center. participants chose the format that met their learning styles and goals;	statistically significant, clinically meaningful decreases in anxiety, stress, and burnout and increases in resilience, happiness, and mindfulness. Results support blended learning using SMART as a strategy to increase access to resiliency training for nursing staff.

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
Management and Resilience Training Program. *JONA: The Journal of Nursing Administration*, *47*(7/8), 391–395. CINAHL. https://doi.org/10.1097/NNA.0000000000000501	Resiliency Training (SMART) program.	Mayo Clinic Rochester, MN	Web-based, independent reading, facilitated discussions. mindfulness, resilience, anxiety, stress, happiness, and burnout were measured at baseline, postintervention, and 3-month follow-up	Limitations: no control group, no continuing education credits offered
Manomenidis, G., Panagopoulou, E., & Montgomery, A. (2019). Resilience in nursing: The role of internal and external factors. *Journal of Nursing Management (John Wiley & Sons, Inc.)*, *27*(1), 172–178. CINAHL. https://doi.org/10.1111/jonm.12662	To examine and compare the impact of individual characteristics, external factors, and coping strategies	1012 Greek nurses/8 hospitals 84%female 16% male Dependent variables- Mental preparation -Education -Anxiety -Social interaction -Relaxation -Location of job (internal medicine ward)	Descriptive cross-sectional study using self-report instruments.	Results: -resilient nurses were better educated, had lower anxiety, used mental preparation strategies before shift More vulnerable groups were less educated and/or worked in internal medicine ward Strength: Large sample size from various hospitals Limitation-cross sectional design limited generalized findings. -could not compare male to female due to small male sample Recommendation: resilience in North American culture would be beneficial

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
		-depression Independent variable: stress		
Marthoenis, Maskur, Fathiariani, L., & Nassimbwa, J. (2021). Investigating the burden of mental distress among nurses at a provincial COVID-19 referral hospital in Indonesia: A cross-sectional study. *BMC Nursing*, *20*(1), 76. MEDLINE. https://doi.org/10.1186/s12912-021-00596-1	prevalence, and risk factors of depression, anxiety, and stress among nurses	N=491 nurses, age 31-56 in Indonesia COVID 19 referral hospital	Cross Sectional Study Depression Anxiety Stress Scale (DASS21), and demographic questions were used to screen the presence of psychological problems, and their associated factors.	prevalence of moderate to extremely severe depression, anxiety and stress was 8.5 %, 20.6 and 6.3 %, respectively Regression analysis showed that anxiety was significantly higher among nurses working in non-COVID wards, those who experienced social rejection, and those who frequently watched television. Those who had temporary contracts were more stressed and those who faced financial hardship during the COVID-19 pandemic significantly experienced depression, anxiety, and stress at 10.5 %, 23.5 %, and 8.1 % respectively prevalence of mental distress in this hospital is low, it exists, and hospital management should consider training for all nurses, public sensitization on COVID-19, and provision of financial subsidies for frontline workers, to manage the risk factors. Limitations: cross-sectional design could not infer the causation between the independent and outcome variables;

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
				conducted in general hospital, self-selection bias
Mealer, M., Conrad, D., Evans, J., Jooste, K., Solyntjes, J., Rothbaum, B., & Moss, M. (2014). Feasibility and acceptability of a Resilience Training Program for Intensive Care Unit Nurses. *American Journal of Critical Care*, *23*(6), e97–e105. CINAHL. https://doi.org/10.4037/ajcc2014747	To determine if a multimodal resilience training program for ICU nurses was feasible to perform and acceptable to the study participants.	N=29 ICU nurses	randomized and controlled 12-week intervention study, treatment and control groups completed demographic questions and measures of resilience, anxiety, depression, posttraumatic stress disorder (PTSD), and burnout syndrome before and after the intervention. Intervention: 2-day educational workshop, written exposure sessions, event-triggered counseling sessions, mindfulness-based stress reduction exercises, and a protocolized aerobic exercise regimen. satisfaction surveys for each component of the intervention. Questionnaires:	multimodal resilience training program was feasible to conduct and acceptable to ICU nurses. Both nurses randomized to the treatment group and nurses randomized to the control group showed a significant decrease in PTSD symptom score after the intervention. 100% ICU were positive for anxiety prestudy 77% depression prestudy Significant reduction in depression PTSD, and improved resilience Resilience can be strengthened and taught through cognitive flexibility, learning to be adept at facing fear, developing active coping skills, having a supportive social network, exercising, and having a sense of humor. Limitations: small sample, not sufficiently powered for statistical significance, complex intervention, need more data past 12 weeks for sustainability

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
			Connor Davidson Resilience Scale Posttraumatic Diagnostic Scale Hospital Anxiety and Depression Scale Maslach Burnout Inventory Client Patient Satisfaction Questionnaire-8	
Mo, Y., Deng, L., Zhang, L., Lang, Q., Liao, C., Wang, N., Qin, M., & Huang, H. (2020). Work stress among Chinese nurses to support Wuhan in fighting against COVID-19 epidemic. *Journal of Nursing Management*, *28*(5), 1002–1009. MEDLINE. https://doi.org/10.1111/jonm.13014	work stress among Chinese nurses who are supporting Wuhan in fighting against Coronavirus Disease 2019 (COVID-19) infection and to explore the relevant influencing factors.	N=180 anti-epidemic nurses from Guangxi	Cross sectional study, convenience sampling, online questionnaire Chinese version of Stress Overload Scale Self-rating Anxiety Scale	Nurses who fight against COVID-19 were generally under pressure. Implications for Nursing Management Nurse leaders should pay attention to the work stress and the influencing factors of the nurses who are fighting against COVID-19 infection and offer solutions to retain mental health among these nurses. A total of 180 (100%) nurses took the initiative to ask for participation in support and treatment and received support and encouragement from their loved ones. After wearing a full set of protective clothing, nurses' breathing will be limited to a certain extent. To save the use of isolation clothing during work, nurses do

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
				not drink water or go to the toilet, thereby increasing the difficulty of nursing work. In this case, the longer the working time per week is, the higher the consumption of body and mind will be. Hence, the body is in a state of tension and fatigue anxiety is positively correlated with stress load. Limitations: 18 males, 162 females; cultural bias; no interventions
Peñacoba, C., Velasco, L., Catalá, P., Gil-Almagro, F., García-Hedrera, F. J., & Carmona-Monge, F. J. (2021). Resilience and anxiety among intensive care unit professionals during the COVID-19 pandemic. *Nursing in Critical Care*. Scopus. https://doi.org/10.1111/nicc.12694	prevalence of symptoms associated with GAD; relationship between GAD symptoms and resilience skills, which of the resilience skills were associated with a probable GAD among the ICU professionals during the	N= 448 ICU nurses Spain	Cross sectional online survey	participants showed high resilience levels more than half of them presented symptoms consistent with a possible diagnosis of GAD. GAD more prevalent in women significant negative correlations between resilience skills and GAD symptoms were found. resilience skills acted as a protective factor. Limitations: small sample size limits generalizability, sampling bias, self-selection bias, self-reporting i.e., desirability biases, no causal relationships due to cross sectional nature of design

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
	COVID-19 pandemic			
Rodriguez-Vega, B., Palao, Á., Muñoz-Sanjose, A., Torrijos, M., Aguirre, P., Fernández, A., Amador, B., Rocamora, C., Blanco, L., Marti-Esquitino, J., Ortiz-Villalobos, A., Alonso-Sañudo, M., Cebolla, S., Curto, J., Villanueva, R., de-la-Iglesia, M.-J., Carracedo, D., Casado, C., Vidal, E., … 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*	examining the feasibility of brief mindfulness-based interventions during the COVID-19 outbreak.	N=7000 healthcare workers in University Medical Hospital in Spain participated in 1 session. N=150 completed questionnaire N=92 2+sessions 80%women 46% nurses	exploratory study with a post intervention assessment. Intervention: an on-site brief mindfulness and evaluate helpfulness, safety, and feasibility. 5–10 min of mindfulness practices delivered twice daily (1) self-care, as professionals are the most valuable means the system deals with the crisis. There is no care for others if there is no care for oneself; (2) Placing mind training and emotion regulation at the same level of importance as the dressing and undressing of the personal protective equipment; and (3) The need to build an inner space of calm	utility, safety, and feasibility of an on-site, brief mindfulness-based intervention designed to reduce stress for frontline health workers during a crisis. participants perceived the intervention as being helpful for reducing stress Limitations: bias, small sample Some of these challenges are: the consideration on the part of managers and the own health professionals that self-care is a luxury and not a need; struggles of healthcare professionals with being in touch with their own feelings, and the recognition of emotions such as fear or anxiety that may produce shame or guilt; asking for help and support can be associated with stigmatization; frontline health workers tend to be in “doing mode” during the emergency, having difficulty to take or make little breaks during work time

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
Psychiatry, *11*. Scopus. https://doi.org/10.3389/fpsyt.2020.562578				
Saffari, M., Bashar, F. R., Vahedian-Azimi, A., Pourhoseingholi, M. A., Karimi, L., Shamsizadeh, M., Gohari-Moghadam, K., & Sahebkar, A. (2021). Effect of a Multistage Educational Skill-Based Program on Nurse's Stress and Anxiety in the Intensive Care Setting: A Randomized Controlled Trial. *Behavioural Neurology*, *2021*, 8811347. MEDLINE. https://doi.org/10.1155/2021/8811347	investigating the effects of 3 skill-based educational programs on stress and anxiety among critical care nurses.	N=160 nurses 4 mixed medical surgical ICUs in Tehran, Iran	RCT prospective, randomized, parallel, controlled triple-blinded trial with repeated measurements. 4 groups 1 control received routine education only. 3 interventions booklet, booklet/oral presentation, and booklet/oral presentation/clinical teaching over a period of one month to reduce different types of stress and anxiety Perceived stress, state anxiety, trait anxiety, and work-related stress were assessed at baseline and	To improve the mental health and performance of the intensive care unit nurses, knowledge-based and skill-based training programs seem useful. Continuous training may help to maintain the effectiveness of these programs over time. Result: no significant change in the control group in terms of study variables during follow-up assessments, whereas measures of stress and anxiety were reduced after intervention in the trial groups except trait anxiety. Nurses in the mixed-method group (booklet+oral presentation+clinical teaching) showed less stress and anxiety during follow-ups. stress and anxiety scores decreased in the first and second follow-ups, there was no significant reduction in the third follow-up.

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
			three times after the intervention (15 days, 3 months, and 21 months). Perceived Stress Questionnaire State and Trait Anxiety Questionnaire Nurses Critical Care Stressor questionnaire	LIMITATIONS: ICU nurses only with 1 year or more experience with 4-year degree, need longitudinal study to evaluate success over time.
Sampson, M., Melnyk, B. M., & Hoying, J. (2020). The MINDBODYSTRONG Intervention for New Nurse Residents: 6-Month Effects on Mental Health Outcomes, Healthy Lifestyle Behaviors, and Job Satisfaction. *Worldviews on Evidence-Based Nursing*, *17*(1), 16–23. CINAHL. https://doi.org/10.1111/wvn.12411	evaluated the 6-month effects of the MINDBODYSTRONG for Healthcare Professionals program on the mental health, healthy lifestyle behaviors, and job satisfaction of NLRNs participating in a nurse residency program.	N=89 new RNs, Midwest academic medical center.	6-month follow-up study to a prospective, blinded, cluster randomized controlled trial (RTC) pilot study Intervention 8 (30-35 min weekly sessions MIDBODYSTRONG program, cognitive behavioral skill building program incorporating mental, physical health improvements. Control group 8 (30-35 min debriefing sessions as part of NRP program)	intervention group scored better on mental health outcomes, healthy lifestyle behaviors, and job satisfaction at 6 months postintervention than the control group. Significant improvements were found for depressive symptoms and job satisfaction. At 6 months postintervention, there was a significant difference for depressive symptoms, with MINDBODYSTRONG participants reporting fewer depressive symptoms, which were in the normal range. improving the mental health, job satisfaction, and healthy lifestyle behaviors of new nurses with the manualized, cognitive behavioral skill-building MINDBODYSTRONG program.

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
			Data baseline, postintervention, 3 mon, 6 months Perceived Stress Scale Generalized Anxiety Disorder Scale PHQ-9 Job Satisfaction Scale Healthy Lifestyle Behaviors Scale	Potential for sustaining positive outcomes with CBT Strength: measured short- and long-term effects Limitations: only new RNs, no ICU, no COVID-19,
Tran, T. T. T., Nguyen, N. B., Luong, M. A., Bui, T. H. A., Phan, T. D., Tran, V. O., Ngo, T. H., Minas, H., & Nguyen, T. Q. (2019). Stress, anxiety, and depression in clinical nurses in Vietnam: A cross-sectional survey and cluster analysis. *International Journal of Mental Health Systems*, *13*, 3. MEDLINE. https://doi.org/10.1186/s13033-018-0257-4	examine the co-occurrence of stress, anxiety, and depression among clinical nurses, and to explore socio-demographic characteristics of, and working conditions experienced by, nurses that may be associated with these three mental health conditions.	N=600 RNs Hanoi city, Vietnam	Cross sectional study Depression, Anxiety and Stress scale (DASS21)	Institutional effort should be emphasized to support nurses in their career development to reduce psychological strains. Half clinical nurses suffered from at least one mental problem and 7.3% reported all three conditions—stress, anxiety, and depression The prevalence of self-reported stress, anxiety and depression were 18.5%, 39.8% and 13.2%, respectively .45.3% participants reported at least one mental disorder, 7.3% had all three. Nurses in the first cluster (high prevalence of mental disorders), had high task demand and conflict at work with low job control and reward. The second cluster nurses (moderate percentage of

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
				mental strain) were significantly older and in marital relationship, high task demand and job control, and presence of chronic diseases. The lowest proportion of self-perceived mental disorders were observed in the cluster three who were younger and had fewer years of services, moderate task demand and low job control and better physical health in comparison with those in the other two clusters Limitations: 1 tertiary surgical hospital, heavy workloads, high task demands; cross sectional study limited causal inferences, factors contributing, bias with self-administered questionnaire
van der Riet, P., Levett-Jones, T., & Aquino-Russell, C. (2018). The effectiveness of mindfulness meditation for nurses and nursing students: An integrated literature review.	critically appraise the literature that related to the effectiveness of mindfulness meditation programs for nurses and nursing students.	16 of 1703 articles met criteria	Whittemore and Knafl's framework for integrated reviews. Using the terms mindfulness, mindfulness-based-stress reduction, Vipassana, nurses, and nurse education a comprehensive search of the following electronic	mindfulness meditation is effective strategy to prevent and manage workplace stress & burnout The demanding nature of healthcare underscores the need for strategies that can reduce stress and build resilience. Beneficial outcomes of mindfulness meditation for nurses and nursing students.

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
Nurse Education Today, *65*, 201–211. CINAHL. https://doi.org/10.1016/j.nedt.2018.03.018			databases was conducted: CINAHAL, Medline, PsycINFO, EMBASE. EMCARE, ERIC and SCOPUS.	Mindfulness meditation Significant impact on stress, depression, anxiety, and burnout. Limitations small sample
Zhang, P., Gao, C., Torres, J., Ma, X., Xu, M., Wang, L., & Qu, X. (2021). Physical and Psychosocial Responses to COVID-19 in Chinese Frontline Nurses: A Cross-Sectional Study. *Journal of Psychosocial Nursing and Mental Health Services*, *59*(9), 30–37. MEDLINE. https://doi.org/10.3928/02793695-20210426-01	survey physical and psychosocial responses to the (COVID-19) pandemic among Chinese frontline nurses and to identify the most vulnerable groups for future reference and interventions.	N= 115 RNs China Exclusion criteria were: (a) Chinese nurses employed outside mainland China; (b) non-frontline nurses; and (c) nurse assistants.	Cross sectional study Self-administered online questionnaire Gordon's Functional Health Pattern Model survey comprised two main sections: a general sociodemographic survey (GSS), and the 52-item version of Gordon's Functional Health Questionnaire (GFHQ-52).	Prevalent issues: altered self-image due to constant use of masks (87.8%), excessive attention to clinical signs of COVID-19 (59.2%), depression (54%), forgetfulness (40.9%), and anxiety (39.1%). vulnerable groups were those with younger age (<21 years), chronic disease, and those who were divorced. strong social support system benefited many frontline nurses psychologically, least 38.3% of nurses needed professional assistance to confront psychological stress. Gordon's Functional Health Model for comprehensively evaluating health function. Productive and strong social supports were pivotal in buffering and alleviating the negative stress responses among nurses. There is need for special attention for vulnerable frontline nurses, such as those who are younger, have chronic disease, and are divorced.

CITATION	PURPOSE BACKGROUND	PARTICIPANTS / SETTING	METHODS / DESIGN	RESULTS / LIMITATIONS /RECOMMENDATIONS
				Limitations: 11% response rate, 91.2% female response, 60% 21-30 yrs age, conducted during initial outbreak

Appendix B

Participation Consent

Information Sheet

Dianne S. Deck Principal Investigator

Diannedeck@mail.missouri.edu

UMSL IRB Project Number 2081904

Summary of the Study

Nursing Anxiety Self-Evaluation and Resilience Methods is a voluntary 30-day study with a pre and post evaluation of nursing anxiety. A simple 30-day intervention will be done during January and February 2022 at the participants convenience to determine whether meditation and exercise helps relieve anxiety. Participants will complete the weekly diary with days and time that the intervention was done and return the diaries and the surveys to the lock boxes in the staff breakrooms.

Staff and Travel RNs in the MICU are invited to participate in this study by Dianne Deck, Principal Investigator and Susan Dean-Baar, PhD. The purpose of this research is to determine if simple interventions relieve nursing anxiety.

Your participation will involve taking a presurvey including demographic data. Then for 4 weeks record the number of minutes and type of intervention that was completed. After the 4-week intervention a post survey will be taken to reassess anxiety and stress.

Anonymity will be protected with a four-digit code placed on each submitted evaluation and diary and known only to that participant. The participants' identities will not be revealed in any publication.

Approximately 160 staff and travel RNs may be involved in this research at the University of Missouri-St. Louis and Hospital site.

The amount of time involved in your participation will be dependent on the type of intervention and the time spent doing the intervention. Participants are asked to meditate daily for 5 minutes and walk (or do any other exercise) for 20 minutes, 2 times a week. Participants will not receive compensation for their time.

The survey and intervention have no known risks to the participant. The possible benefits to the participant from this research are feeling less anxious.

Participation is voluntary, participants may withdraw consent at any time. Participants will not be penalized should they withdraw from the study.

We will do everything we can to protect your privacy. As part of this effort, your identity will not be revealed in any publication that may result from this study. In rare instances, a researcher's study must undergo an audit or program evaluation by an oversight agency (such as the Office for Human Research Protection) that would lead to disclosure of your data as well as any other information collected by the researcher.

If you want more information or have additional concerns, you may contact the Lead Investigator, Dianne Deck at DianneDeck@mail.missouri.edu. You may also ask questions or state concerns regarding your rights as a research participant to the Office of Research, at 314-516-5897.

By taking the survey, the RN agrees that they are voluntarily participating.

Appendix C

Single Item Stress Scale (SISS)

Each participant is asked to create a unique code known only to them.
The code includes, in this order the first letter of the name of their pet or an "X" if there is none, the second letter is the first letter of their high school,
and the third digit is where they are in their birth order.

Please write your unique code at the top of each page.
PLEASE DO NOT USE YOUR NAME

Single Item Stress Scale
Please circle if this reflects
pre intervention or post intervention

(State of Louisiana Civil Service, 2018).

1: I'm creatively and cheerfully engaged in life.

2: I'm relaxed and expect to stay this way.

3–5: I can handle stresses and think of positive solutions to my challenges.

6–7: I'm moderately irritable, anxious, or overwhelmed, and stresses feel burdensome.

8: My problems seem unsolvable. Many things are irritating or upsetting me.

9: Help! I'm about to lose it!

10: I have chart-topping negative emotions.

Appendix D

Weekly Diary

Each participant is asked to create a unique code known only to them.
The code includes, in this order the first letter of the name of their pet or an "X" if there is none, the second letter is the first letter of their high school,
and the third digit is where they are in their birth order.

Please write your unique code at the top of each page.
PLEASE DO NOT USE YOUR NAME.

Intervention
Participants are asked to meditate for five minutes after every shift or before going to bed and to exercise (walk, run, yoga, or participants' regular routine) for 20 minutes-2 times a week.

Meditation Instructions
Meditation is defined as laying or sitting in a quiet space, with eyes closed, then focusing on deep, calming breaths --clearing thoughts as they occur while breathing (Rodgers, 2021). Participants may set a timer if they wish. Participants are asked to keep track of the days and amount of daily time spent meditating and exercising using the diary separated by week1, week2, week 3, and week 4.

Diary Week 1

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Meditation time & location	Meditation time & location	Meditation time & location	Meditation time & location	Meditation time & location	Meditation time & location	Meditation time & location
Exercise time and type of exercise	Exercise time and type of exercise	Exercise time and type of exercise	Exercise time and type of exercise	Exercise time and type of exercise	Exercise time and type of exercise	Exercise time and type of exercise