

UNIVERSITY OF CALIFORNIA

Los Angeles

Evaluating a Brief Mindfulness-based Self-care Intervention on Critical Care Nurses' Resilience
and Well-being During the COVID-19 Pandemic

A dissertation submitted in partial satisfaction of the
requirements for the degree
Doctor of Nursing Practice

by

Laura Marie Quigg

2022

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ABSTRACT OF THE DISSERTATION

Evaluating a Brief Mindfulness-based Self-care Intervention on Critical Care Nurses' Resilience
and Well-being During the COVID-19 Pandemic

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Laura Marie Quigg

Doctor of Nursing Practice

University of California, Los Angeles, 2022

Professor Carol Pavlish, Chair

Background: Critical care nurses faced unprecedented challenges during the pandemic, exacerbating stress, burnout, and moral distress. Despite the significant implications of moral distress, few effective interventions exist. Shifting the focus from mitigating moral distress to strengthening moral resilience may help to address this gap and provides an opportunity to shape future research. Mindfulness practices have been shown to reduce distress and burnout, improve well-being and resilience, and may provide a useful tool in mitigating the negative effects of moral distress. **Objectives:** To determine the efficacy and feasibility of a brief mindfulness-based self-care program on critical care nurses' resilience and well-being during the COVID-19 pandemic. **Methods:** A single-group pretest-posttest design was utilized. From an adult critical

care unit in an academic hospital, a convenience sample of nurses working during the pandemic were enrolled. The four-week intervention was offered through a free online application. Participants were asked to complete five assigned guided practices per week at a location and time convenient to them. Pre-and-postintervention surveys were available through Qualtrics and utilized the 10-item Connor-Davidson Resilience Scale, Rushton Moral Resilience Scale, and Nurse Well-Being Index to evaluate outcome measures. Practice frequency was automatically tracked by the application. Demographic data and feasibility measures were included. Statistical analysis included descriptive statistics, Wilcoxon signed rank tests, nonparametric permutation tests, and nonparametric bootstrap analyses; a regression analysis evaluated relationships between variables. **Results:** Thirty nurses completed pretest data, and twenty-three participated in practices and the postintervention survey. Significant changes in resilience, moral resilience and well-being scores were noted. There was no significant correlation between practice frequency and changes in outcome measures. A positive correlation was found between resilience and moral resilience. Resilience measures were negatively correlated with at-risk well-being scores. Participant responses lent support to the acceptability and feasibility of the intervention. **Conclusion:** Participation in a brief, online MBSC intervention appeared beneficial in fostering resilience, moral resilience, and well-being in a sample of critical care nurses during the COVID-19 pandemic. Future studies are warranted. Interventions that offer room for personal and collective growth may be an important next step, particularly as we look forward.

The dissertation of Laura Marie Quigg is approved.

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2022

This dissertation is dedicated to my family and dear friends who have helped to shape and share my journey, and in loving memory of Cary and Antionette Zwolski.

This work is also dedicated to nurses. Your dedication, passion and sacrifice cannot be overlooked.

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CHAPTER ONE: INTRODUCTION

When the World Health Organization declared 2020 as the Year of the Nurse, no one could have anticipated the effects that 2020 would have on nursing. Despite the portrayal of registered nurses (RNs) as heroes during the Coronavirus disease 2019 (COVID-19) pandemic, those on the front lines have struggled. Unforeseen levels of stress with increased demands, limited support, and ethically distressing situations compounded pre-pandemic rates of distress, burnout (BO) and moral distress (MD) (Dimino, Learmonth & Fajardo, 2021; Dodek, et al., 2016; Donkers et al., 2021; Dzau, et al., 2018; Guttormson et al. 2021; Kok et al., 2021; Lai et al., 2020; Penacoba et al., 2021). Over seventy percent of health care workers reported psychological distress during the pandemic; those who worked as an RN or provided direct care to COVID-19 patients reported more severe symptoms and MD (Kok et al., 2021; Lai et al., 2020). The negative consequences associated with MD pose a significant threat to the physical or psychological well-being of RNs and the care they are able to provide (Dodek, et al., 2016; Donkers et al., 2021; Dzau, et al., 2018; Kok et al., 2021; Lai et al., 2020; Penacoba et al., 2021; Rushton et al., 2021). Despite increased recognition of MD and calls for action, limited evidence exists for effective MD interventions (Holtz, Heinze & Rushton, 2017; Rushton, 2017). Effective and time-sensitive interventions are urgently needed. Self-care practices incorporating mindfulness have been shown to decrease distress and BO, improve well-being and resilience, and may provide a useful tool in mitigating the negative effects of MD.

Background

Based on an early definition by Andrew Jameton in 1984, moral distress occurs when a nurse knows the right or ethical course of action but feels unable to act on this due to actual or perceived constraints. This definition has been expanded to include situations in which

unintentional or involuntary complicity may arise in morally challenging and distressing situations (Fourie, 2017; Hamric & Epstein, 2017). Frequent exposure to ethical dilemmas under high rates of work-related stress may raise the risk for MD, with increased prevalence found in critical care settings (Mealer & Moss, 2016; Rushton et al., 2015; Saechao et al., 2017) and in those working as an RN (Dacar et al., 2019; Donkers et al., 2021; Kok et al., 2021; Lai et al., 2020). Moral distress may further contribute to perceived workplace stress, burnout (BO), and turnover (see Appendix A) which intensified during the pandemic (Azoulay et al., 2020; Guttormson et al., 2021). A strong intercorrelation between these concepts was also noted by Scanlan & Still (2019).

Significant personal and professional implications of distress, MD and BO exist. Psychologic ramifications include depression, anxiety, insomnia, substance abuse, post-traumatic stress disorder, or a diminished sense of well-being or quality of life (Ameli et al., 2020; Delgado et al., 2020; DePierro et al., 2020; Fumis et al., 2017; Kemper & Khirallah, 2015; Melnyk et al., 2020). Professional impacts may present as higher levels of perceived workplace stress, decreased job performance or job satisfaction, and increased turnover or intention to leave (Colville et al., 2019; Dyo, Kalowes & Devries, 2016; Woods, 2020) and intensified during COVID-19 (AACN, 2021). Substantial effects on patient care may result, negatively affecting the quality of care, rate of medical errors, patient outcomes, and patient satisfaction (Delgado et al., 2020; Dodek et al., 2016; Kok et al., 2021). Given the clear adverse effects which can detract from the health and safety of both RNs and patients, it becomes imperative that MD is addressed. However, little evidence on effective interventions for MD currently exists (Holtz, Heinze & Rushton, 2017; Rushton, 2017).

Interventions aimed at cultivating self-care, including mindfulness practices, have been effective in reducing distress and BO while improving well-being and resilience (Botha et al., 2015; Moss et al., 2016; NAM, 2017; Rushton et al., 2021). Resilience, or the ability to bounce back in the face of adversity, includes the capacity to adapt coping strategies as a means of minimizing distress and maintaining personal integrity (Aburn et al., 2016; Jackson et al., 2018). Moral resilience (MR) refers to the ability to effectively navigate through moral adversity. An adaptive response to the moral complexity in the healthcare system, MR may help as focus shifts towards healing and growth (Delgado et al., 2020; Rushton, 2017). Both personal resilience and MR can be learned or fostered and may serve as a protective factor against the negative effects of MD (Delgado et al., 2021; Holtz, Heinze & Rushton, 2017; Rushton, 2017).

Mindfulness can be defined as a focus on the present moment with an increased awareness to thoughts, feelings, and sensations in the body, and participants can learn to approach these internal states with curiosity, acceptance and without judgment (Duarte & Pinto-Gouveia, 2016; Kabat-Zinn, 2009). Rather than relying on habitual, maladaptive responses to stress, participants may learn more beneficial reactions and progress towards improved emotional regulation that protects against distress (Duarte & Pinto-Gouveia, 2016; Kabat-Zinn, 2009; Rushton et al., 2021). MBSC interventions have been effective in improving individual stress, anxiety, depression, well-being, BO, and resilience; workplace effects including fewer medical errors, reduced turnover, and improved patient satisfaction have also been noted (Ameli et al., 2020; Burton et al., 2016; Duarte & Pinto-Gouveia, 2016; Gilmartin et al., 2017). By cultivating resilience and MR through MBSC interventions, critical care RNs may be better equipped to navigate morally complex situations in a manner that sustains their well-being,

minimizes distress, and contributes to a healthy workplace and a more ethical climate (see Appendix B) (Donkers et al., 2021; Hines et al., 2020; Ulrich et al., 2019).

Problem Statement

Strategies to promote RN resilience and foster healthy work environments have not only been linked to clinician wellbeing (Melnyk et al., 2018; Rushton, 2017; Rushton et al. 2021) but also to patient safety (The Joint Commission, 2019). Multiple, large-scale efforts from national nursing organizations contributed to this emerging trend. The American Association of Critical-Care Nurses (AACN) developed the 4As Framework to address MD (2004), with a more recent emphasis on supporting RNs through their Healthy Work Environment (HWE) initiative (AACN, 2014; AACN 2016). The Critical Care Societies Collaborative (CCSC) which includes the AACN developed a call to action to address BO and suggested working towards HWE and building resiliency (Moss et al., 2016). The AACN, American Nurses Association (ANA) and other stakeholders held a symposium, Transforming Moral Distress into Moral Resilience in Nursing, leading to a call to action from the ANA (2017) focused on MR.

Interdisciplinary initiatives have also contributed. The National Academy of Medicine (NAM) launched the Action Collaborative on Clinician Well-Being and Resilience (2017). In their *Future of Nursing 2020-2030* consensus study report (2021), a focus on RN health and well-being was strongly recommended, given the known benefits that RNs can have on patient safety, advocacy, and access to equitable and high-quality care. Furthermore, NAM authors asserted that evidence-based interventions to promote nurses' well-being should be implemented by the year 2021. This recommendation aligns with the *Quadruple Aim of Healthcare* with an included focus on improving the well-being of healthcare professionals in order to improve

patient outcomes, community health, and cost-effective health care (Bodenheimer & Sinsky, 2014).

Despite these widespread efforts to address rates of distress, a significant gap remains between what is suggested and what is occurring, evidenced by the continued high rates of MD and BO (Donkers et al., 2021; Guttormson et al., 2021). The development and implementation of systems change strategies that support HWEs and ethical climates have been proposed in the literature, with the caveat that concurrent strategies to foster the well-being and resilience of individual nurses is necessary (Dimino et al., 2021; Holtz, Heinze & Rushton, 2017). In order to address this gap, support nurses' health, and ultimately improve patient outcomes, effective and time-sensitive interventions are urgently needed to foster resilience.

Clinical Question (PICOT)

For critical care nurses working during the COVID-19 pandemic (P), can a brief mindfulness-based self-care program (I) compared to no program (C) lead to improved well-being, resilience and moral resilience (O) over a 4-week period (T)?

Purpose and Objectives

The primary purpose of this DNP scholarly project was to evaluate the efficacy of a MBSC intervention in improving resilience, MR, and well-being among critical care RNs working during the COVID-19 pandemic. The second objective was to assess the feasibility of the intervention, with the longer-term goal of implementing in similar clinical settings with few existing resources for nurses.

CHAPTER TWO: THEORETICAL FRAMEWORK

The concepts and theories of caring provide foundational support for an evidence based MBSC intervention aimed at enhancing RN well-being and resilience. Caring has been defined

as an act, a process, or a phenomenon and is found as a central tenet in multiple nursing theories (Duffy, 2018) including Dr. Jean Watson's Theory of Human Caring Science. First introduced in *Nursing: The Philosophy and Science of Caring* (1979) as the Theory of Human Caring, the major components consist of a caring occasion or moment, a transpersonal caring relationship, and ten Carative factors (Alharbi & Baker, 2020; Eldridge, 2021; Nelson, 2018). Watson posits that caring is the essence of nursing practice, and the Carative factors serve as the foundation. Further revised to integrate a more spiritual, transcendental dimension to nursing, the Carative framework evolved to become clinical Caritas processes (Duffy, 2018; Linton & Koonmen, 2020; Nelson, 2018; Watson, 2008).

To practice the principles of Caritas and be truly present for another in a transpersonal caring relationship, she contends that self-care is necessary. Watson encourages RNs to increase their capacity for caring by taking a purposeful journey towards self-awareness and continued growth with the sentiment that what we do to care for ourselves will benefit others (Watson, 2008). This aligns closely with the ANA Code of Ethics, provision five, which outlines the duties of a RN to care for self as others, promoting personal health and growth. The Caritas processes describe how RNs can use caring and restorative methods, including mindfulness, to promote self-healing and enhance well-being (Nelson, 2018) as outlined in Appendix C.

A separate framework provided structure to the process of evidence-based practice changes for this DNP scholarly project. The Stetler model of Research Utilization consists of a five-phase process: preparation, validation, comparative evaluation/decision making, translation/application, and evaluation (Stetler, 2001). Its use and relation to the American Association of Colleges of Nursing DNP Essentials (AACN, 2006) is outlined in Appendix D.

CHAPTER THREE: REVIEW OF LITERATURE

Evidence Search

The literature search was conducted using the following databases: CINAHL, EBSCOhost, PsycINFO, PubMed and Google Scholar. Key word search with MeSH terms and Boolean operators included: Mindfulness, mindfulness-based intervention, mindful intervention, nurse, moral distress, burnout, coronavirus, COVID-19, SARS-CoV-2, critical care, intensive care, self-care, well-being, resilience, moral resilience. A total of 46 articles were critically reviewed for relevance to the DNP project. Selected studies included in the Table of Evidence met one or more of the following criteria: prevalence of moral distress in healthcare workers/nurses pre-and post-pandemic; relationships between mindfulness, moral distress, well-being, resilience, and moral resilience; efficacy of mindfulness-based or self-care interventions with RNs, efficacy of mindfulness-based interventions; outcome measurement tools.

Literature Review on Mindfulness Strategies

Mindfulness Based Interventions

Mindfulness-based interventions (MBIs) broadly encompass a variety of practices. A frequently utilized evidence-based MBI is the Mindfulness-Based Stress-Reduction (MBSR) program introduced by Jon Kabat-Zinn in the 1970s. The traditional MBSR program requires weekly two-and-a-half hour meetings, a one-day retreat, and forty-five minutes of daily practice over eight weeks. In a meta-analysis by Khoury et al. (2015), MBSR interventions were found moderately effective in improving stress, distress, anxiety, depression, and quality of life, with a smaller effect on BO. The largest benefits were noted among healthcare workers (HCWs), with effects maintained at follow-up an average of nineteen weeks later. A meta-analysis by Burton et al. (2017) also found a moderate effect of MBIs on stress reduction for HCWs. An integrated review of MBIs by Braun et al. (2019) included adapted or abbreviated MBSR interventions,

with the suggestion that the time-intensive traditional program may limit the feasibility in health care settings.

Mindfulness-Based Stress Reduction Interventions

Several abbreviated MBSR interventions were reviewed, each with statistically significant improvements in stress, burnout, and anxiety or experiential avoidance (Duarte & Pinto-Gouveia, 2016; Duchemin et al., 2015; Magtibay et al., 2017; Mealer et al., 2014).

Duchemin et al. (2015) conducted a randomized controlled trial (RCT) with 32 participants, primarily surgical intensive care RNs and included a biologic marker of stress, salivary α -amylase, as an index of sympathetic activation. A positive correlation ($r = 0.349$; $p = 0.0058$) was found between α -amylase levels and burnout scores, whereas a negative correlation was found between stress and nonreactivity scores ($r = -0.49$; $p < 0.0001$). In a separate non-randomized study of 94 RNs, increased time spent in mindfulness practice was associated with significant improvements in BO ($p = 0.038$) and self-compassion ($p = .0012$) (Duarte & Pinto-Gouveia, 2016).

Mindfulness-based Self-care Interventions

Several MBIs with a self-care focus were also reviewed. Ameli et al. (2020) conducted a RCT with 78 HCWs including RNs in a large research hospital to evaluate a five-week mindfulness-based self-care (MBSC) intervention. Mindfulness exercises were combined with didactic materials, facilitated group discussions related to a weekly theme, and daily self-practice was encouraged. Postintervention rates of stress and anxiety were significantly reduced, while mindful self-care and positive affect significantly improved, with maintenance effects at a thirteen-week follow-up. In another RCT in a large academic tertiary care center, Slatyer et al. (2018) evaluated a mindful self-care and resiliency intervention for RNs. A one-day workshop

was followed by three weekly follow-up mindfulness sessions. Rates of BO significantly improved post-intervention and remained significant six months later. Secondary measures included a significant improvement in self-compassion, with improvements in compassion satisfaction and subjective quality of life, which may serve as protective factors against work-related stress and BO. However, no significant changes were noted for resilience.

Mindfulness Based Interventions and Resilience

Multiple MBIs focused on resilience were reviewed. In a RCT pilot study with 33 critical care RNs by Mealer et al. (2014), improvements in resilience were noted but the final small sample size was insufficiently powered to determine for statistical significance. More recently Magtibay, et al. (2017) conducted a study with 50 RN participants in a nationally recognized academic medical center and offered participants a choice of online content. They found a significant improvement in resilience ($p = .004$), with the greatest change found between eight to twelve weeks post-intervention and continued through week twenty-four.

Two additional resilience-specific interventions were reviewed. Babanataj, et al. (2018) utilized a quasi-experimental design with 30 critical care RNs in a tertiary care center to evaluate a five-session course focused on building resilience. Content included mindfulness-based concepts such as self-awareness, acceptance, internal support, and self-care. Post-intervention rates of stress significantly decreased, while the mean resiliency scores significantly increased (both $p = 0.001$). More recently, Rushton et al (2021) conducted a multi-faceted intervention which involved mindfulness practices in a large academic medical system and included 415 RNs and HCWs. Significant increases in mindfulness ($p = .03$), ethical confidence ($p < .001$), ethical competence ($p < .001$), engagement in work ($p < .001$) and resilience ($p < .001$) were noted. Additionally, BO and intent to leave decreased as resilience and mindfulness improved. The

intervention was found feasible and effective for enhancing RNs' skills to address morally distressing situations by cultivating MR, which may then contribute to RN retention, HWE, and improved patient care.

Brief Mindfulness-based Interventions

Brief MBIs were also evaluated. Gauthier et al. (2015) conducted a pilot study among 38 RNs in an academic hospital. The intervention involved five-minute mindfulness meditation sessions offered on-site during shift change every morning and evening. High rates of stress were reported at baseline, with a significant postintervention decrease ($p = .006$) persisting at the one-month follow-up. Significant correlations between mindfulness and protective factors such as self-compassion were also noted. High rates of emotional exhaustion and depersonalization, as measures of BO, were reported at baseline and were found to be negatively correlated with mindfulness at all time points, whereas personal accomplishment was positively correlated with mindfulness. Findings lend support to mindfulness as a useful tool to help mitigate stress and BO. Unlike many of the MBSR or MBIs reviewed in the literature, this brief MBI had no introduction, nor did it include didactic or group sessions, indicating that a simple and brief MBI can be feasible and beneficial. No association was found between stress reduction and minutes of meditation. In another brief MBI, Kemper and Khirallah (2015) conducted a prospective cohort study with 513 HCWs including RNs in a large academic center. The intervention offered one-hour mindfulness training modules online, with participants free to choose from any of twelve sessions. Most of the participants reported moderate to high levels of stress and greater than half met criteria for BO at baseline. Statistically significant changes ($p < .001$ to $.01$) in rates of mindfulness, empathy, stress, and resilience were noted. In a qualitative study, Resnicoff and Julliard (2018) explored staff perceptions of brief mindfulness sessions offered on-site during

shifts with patient coverage provided. Participant responses were positive, with reported decreases in stress levels, improved staff communication and teamwork leading to perceived improvements in patient care. All expressed the wish to continue the sessions.

Synthesis of Literature Review

A growing body of research has focused on the effects of MBIs. In a meta-analysis by Khoury et al. (2015), MBSR interventions were found moderately effective in improving stress, distress, anxiety, depression, and quality of life, with a smaller effect on BO. The largest benefits were noted among HCWs, with effects maintained at follow-up an average of nineteen weeks later. A meta-analysis by Burton et al. (2017) also found a moderate effect of MBIs on stress reduction for HCWs, while an integrated review of MBIs by Braun et al. (2019) found moderate support for improvements in patient-centered care, patient safety, and treatment outcomes.

A review of the current literature found similar results and lend support to the effectiveness of MBI or MBSC interventions. Multiple studies found significant improvements in stress (Babanataj et al., 2018) which remained significant at follow up (Gauthier et al., 2015). Stress, anxiety, and BO were all significantly improved in several more studies (Duarte and Pinto-Gouveia, 2016; Duchemin et al., 2015; Magtibay et al., 2017; Mealer et al., 2014). A physiologic marker for stress meant to represent sympathetic activation was found to positively correlated with BO, whereas stress and non-reactivity were negatively correlated (Duchemin et al., 2015). As nonreactivity is cultivated as a piece of mindfulness practice, participants may be better able to dampen their sympathetic response to stress which may buffer against BO and MD.

Mindfulness practices were also significantly correlated with protective factors such as self-compassion (Gauthier et al., 2015; Slatyer et al., 2018) and improvements in BO (Duarte and Pinto-Gouveia, 2016; Slatyer et al., 2018) with effects maintained at follow-up in the latter study.

Similarly, mindful self-care, stress, anxiety, and positive affect were significantly improved through follow-up in the study by Ameli et al. (2020).

The relationship between these enhanced protective factors and resilience was less clear. Significant improvements in resilience were not noted in several studies (Mealer et al., 2014; Slatyer et al., 2018) but found in others (Babanataj et al., 2018; Matigbay et al., 2017; Rushton et al., 2021). The latter study results were supported in a recent systematic review by Melnyk et al. (2020) which found MBIs to have medium to large effect sizes for resilience. Less literature exists on the effects on MR. In a recent study analyzing participant subscales of the Rushton Moral Resilience Scale (RMRS), a protective relationship was found with BO and turnover intentions (Antonsdottir et al., 2021) and may help researchers shape future interventions.

There were commonly identified gaps and limitations in the reviewed literature. One common theme was small sample size, even among randomized controlled studies. Of the reviewed studies, the smallest sample size was ten participants in the qualitative study by Resnicoff & Julliard (2018). There were larger sample sizes, for example the 513 participants in the Kemper & Khirallah (2015) study. Shared limitations were noted in many of the studies including the susceptibility to self-selection or report biases. Suggestions for future research include larger sample sizes and more robust studies including RCTs. In the recent systematic review by Melnyk et al. (2020), 29 of the studies were RCTs with moderate quality of evidence. A systematic review by Gilmartin et al. (2017) included no RCTs and only two included more than 100 participants. The data was rated as moderate quality with most scoring poorly on measures of bias or internal validity. They also noted areas where more data could have lent support but was not collected or reported. For example, six studies recommended daily

mindfulness practices at home, but only one reported on adherence, and relied on self-report. Missing or omitted data limits the generalizability and validity of the results.

Most of the reviewed studies included multifaceted interventions, which is in line with findings of systematic reviews by Melnyk et al. (2020) and Gilmartin et al. (2017). There was a similar tendency to employ multiple outcome measures. For some measures, multiple validated and reliable tools exist for these closely related themes and may cloud analysis. The systematic review by Melnyk et al. (2020) noted that the variation in tools for evaluation limited attempts at meta-analysis. While significant findings were noted for many of these variables, the results were not always significant across studies. In the Gilmartin et al. (2017) review, attempts were made to stratify the results using common themes. The common use of multiple tools and outcome measures may be a weakness of the field.

The literature reviewed lends support for the use of MBIs to decrease stress, distress, and BO, and promote well-being and resilience. However, time and location requirements have been noted as potential threats to feasibility and validity. Brief, on-site options have been effective (Gauthier et al., 2015) but may not be feasible during pandemic-related restrictions on gatherings. Interventions with online access may facilitate participation through increased access and flexibility (McVeigh et al., 2021). A paucity of literature on the efficacy and feasibility of brief, technology based MBIs for RNs exist. Several studies offered on-line mindfulness content (Kemper & Khirallah, 2015; Magtibay et al., 2017; Spadaro & Hunker, 2016) with promising results, although they required significant amounts of time. The proposed intervention utilized common themes from the MBSR literature and was designed to be brief, flexible, and easy to utilize. There is potential for this MBSC intervention to contribute to the literature on the effects of mindfulness on well-being and resilience in critical care nurses during the pandemic.

CHAPTER FOUR: METHODS

Ethics and IRB Statement

As a requirement of the DNP program, the Scholarly project was reviewed and met criteria for an evidenced-based clinical project. Neither exemption nor review from the UCLA Institutional Review Board were required. The doctoral committee approved the methods outlined in this paper.

Design

This project was designed as a practice-based clinical inquiry to evaluate the effectiveness and feasibility of a brief MBSC program in improving RN well-being and resilience in a critical care unit. Set in a single-site academic medical center during the COVID-19 pandemic, a one-group pretest-posttest intervention was implemented over four weeks.

Sample and Setting

A nonprobability, convenience sample of RNs working during the pandemic at an academic medical center was recruited for voluntary participation in the project. Inclusion criteria for participation included: (a) actively employed RNs (b) who provide direct patient care (c) in the critical care unit (d) have access to a mobile device and (e) can download and access a free application. Exclusion criteria included: (a) traveler or registry RNs (b) those unable to commit to the four-week course and the pre-post-test surveys, (c) RNs with less than three months of experience, or (d) have not completed orientation. Participant recruitment employed multiple methods. Flyers were placed in high-visibility areas including the unit breakrooms, charting areas, and restrooms three weeks prior to implementation (see Appendix E). An email was sent two weeks prior to implementation with a follow-up one week later (see Appendix F). A ten-minute presentation was provided during staff meetings and recorded to distribute to RNs who were unable to attend. The time requirements of the project, content, and survey completion

were outlined in each of the recruitment activities. The chance to win massage gift cards upon completion was included to encourage participation and limit attrition.

Intervention

A brief mindfulness-based self-care (MBSC) intervention was developed utilizing common themes found in the literature to guide each week's content including (a) introduction & general mindfulness practices, (b) stress reduction, (c) loving-kindness meditation, (d) resilience. Participants were asked to complete five mindfulness-based practices each week, assigned in relation to the theme (see Appendix G). Nurses were free to complete the content at a time convenient for them by accessing a free version of Insight Timer on their mobile devices, tablets, or computers. Instructions were provided to set up the account name using the pseudonym from their preintervention survey to allow for matching of participant data while maintaining anonymity. Using a provided link, they joined a private study group within the application, with access and content controlled by the DNP student. Participants were asked to complete the assigned content by the end of each week with biweekly reminder messages to encourage ongoing participation.

Implemented during the winter surge of Delta and Omicron COVID-19 variants, additional consideration was given to the time requirements of the intervention. Practice time of two to five minutes has been shown feasible and acceptable in prior research. Practice sessions were selected to last five minutes or less. The application automatically tracked activity, eliminating the burdens and limitations associated with self-report. Pre-intervention and post-intervention surveys were similarly timed.

Instruments, Measures and Data Collection

Intervention participation was logged for each participant through the mobile application and was backed up daily. Survey data was collected via Qualtrics at two points: (a) at baseline, with demographic data (Appendix H), (b) postintervention at the end of week four, with feasibility measures (Appendix I). Each was expected to take less than five minutes to complete.

The use of multiple instruments was common in the MBI and MBSC literature, and several valid and reliable tools were identified. The 10-item Connor-Davidson Resilience Scale (CD-RISC 10) and the Rushton Moral Resilience Scale (RMRS) were used to assess the primary outcome measure, resilience. The Nurse Well-being Index (WBI N) was chosen to assess the secondary outcome measure, well-being. Written permission was granted for the use of each.

The original Connor-Davidson Resilience Scale was developed by Kathryn M. Connor and R.T. Davidson in 2003 to measure resilience. Campbell-Sills & Stein (2007) later designed the CD-RISC 10 (APPENDIX J) with ten items rated on a five-point Likert scale ranging from zero to four for a possible score range of zero to forty, with higher scores indicating higher degrees of resilience. The CD-RISC 10 correlated highly to the original scale ($r = .92$), performed well in factor analysis, and was replicated in various countries with good internal consistency with Cronbach's alpha ranging from 0.81 to 0.94 (Davidson, J.R.T., 2021).

As a subset of resilience, the RMRS is used to measure MR (APPENDIX K). The RMRS is a seventeen-item scale rated with a four-point Likert scale, with four subscales of MR. The scale was found to be valid and reliable (overall reliability $\alpha = 0.84$), with the subscales as follows: Responses to Moral Adversity (five items, $\alpha = 0.78$), Personal Integrity (three items, $\alpha = 0.50$), Moral Efficacy (four items, $\alpha = 0.69$), Relational Integrity (three items, $\alpha = 0.78$) (Heinze et al., 2021). Heinze et al. also found that the RMRS was positively correlated with resilience as

measured with the CD-RISC 10 (0.50, $p < 0.001$) and negatively correlated with the Maslach Burnout Inventory-Human Services Survey version (MBI-HSS), demonstrating convergent validity of the scale, and lending further support to the validity and reliability of the RMRS.

The Well-Being Index (WBI) was developed at the Mayo Clinic after its authors felt that existing tools to measure distress could be lengthy and arduous for the test-taker and those analyzing the results (Dyrbye et al., 2010) which may lead to participant fatigue or attrition (Hochheimer et al., 2016) and tended to measure only one area of distress such as BO or MD. The WBI was designed as a brief instrument to assess for symptoms of distress and identify those at risk for related adverse outcomes. Initial testing on medical students as the MSWBI found content validity of 0.94 for relevance, 0.91 for representativeness, strong inter-rater agreement from 85-89% and reasonable reliability ranging from 0.69 to 0.72. Each of the items had more than 74% sensitivity with specificity ranging from 63 to 100% for appropriately detecting distress in each domain (Dyrbye et al., 2010). To assess work-life integration satisfaction and meaning in work, two questions were added to the scale which remained valid and reliable when tested in other HCWs (Dyrbye, et al., 2011, 2013, 2014, 2016, 2017, 2018). A cross-sectional study of over 3,000 U.S. RNs found the Nurse WBI (WBI N) (APPENDIX L) a valid instrument for gauging distress and was able to stratify nurses according to risk with scores ranging from negative two (lowest risk) to nine (highest risk); a cut-off score of two or greater is associated with increased risk for adverse outcomes such as BO, fatigue, decreased QoL or job performance, recent patient care errors and intent to leave (Dyrbye et al., 2018). The authors suggest it may be a useful tool for RNs to bring awareness to personal well-being and prompt those in distress to seek additional support. They also suggest that it may be a useful tool for tracking progress as changes are made that help promote RN well-being.

Data Analysis

The data was analyzed using SPSS software, version 27. Descriptive statistics were applied to demographic and mindfulness variables. To evaluate the effect of the brief MBSC on improving resilience, moral resilience, and well-being, group means of pre-intervention CD-RISC 10, RMRS, and WBI scores were compared with post-intervention scores and Wilcoxon signed rank tests, nonparametric permutation tests, and nonparametric bootstrap analyses were conducted. A regression analysis evaluated correlations between the three outcome measures and between compliance rates and changes in outcome measures. Feasibility measures included recruitment rate, attrition rate, reported issues or concerns, and frequency of intervention use. Post-intervention responses rating perceived benefit, likelihood of continued practice, and ease of use on a five-point Likert scale were calculated to evaluate acceptability; one open-ended question for additional feedback was also included.

CHAPTER FIVE: RESULTS

Participant Characteristics

A total of 30 participants completed the pre-intervention survey, of which 23 participants completed post-intervention surveys. Frequency counts for selected variables are displayed in Table 1. Two thirds identified as female, one third as male, with one participant identifying as gender non-conforming or gender variant. Forty percent identified as White/Caucasian, followed by Asian/Pacific Islander (27%), Hispanic/Latino (13%), Black/African American (10%), Biracial/Multiracial (7%), and Native American/Alaskan Native (3%). Ages ranged from 18-24 (3%), 25-34 (50%), 35-44 (23%), 45-54 (20%), 55-64 (3%). Most reported 3-10 years of nursing experience (40%), followed by 11-20 years (30%), 20-30 years (13%) and 0-2 years (13%) with one over 30 years.

Sixty percent reported prior mindfulness experience. During the four-week intervention rates of compliance ranged from 40 to 100 percent ($M = 91$, $Mdn = 90$). Of the 23 participants who completed the post-intervention survey, most strongly agreed (61%) or somewhat agreed (35%) that the mindfulness practices were helpful; strongly agreed (35%) or somewhat agreed (61%) that they plan to continue mindfulness practices; strongly agreed (52%) or somewhat agreed (43%) that the application was easy to use. Frequency counts for selected mindfulness variables are displayed in Table 2.

Efficacy of the MBSC

Initial statistical analysis was completed for the 23 subjects who completed post-intervention surveys. The paired pre-intervention and post-intervention data was analyzed with Wilcoxon signed rank tests, nonparametric permutation tests, and nonparametric bootstrap analyses. A sensitivity analysis was then conducted to minimize the risk of bias on the effect size of the intervention. Data from the participants lost to attrition were included with the assumption that smaller changes in the outcome measures would have been noted had they completed the post-intervention survey. To represent the smallest possible value on effect size, the post-test scores were set to equal the pre-test scores of the participants who dropped out and the analysis was repeated.

For the resilience outcome measure, changes in the pre-intervention and post-intervention CD-RISC 10 scores ranged from negative one to nine points ($Mdn = 3$, $M = 3.09$) (Figure 1). A Wilcoxon signed-rank test and nonparametric permutation test both resulted in two-sided p -values well below a significance level of 0.001 with a 95% CI [2.20, 3.97] per nonparametric boot strap analysis. On the sensitivity analysis with score ($Mdn = 3$ points, $M = 2.37$ points), there was no change in the p -value of the Wilcoxon test, 95% CI [1.55, 3.19], and the

permutation test p -value remained < 0.001 . This suggests that even with dropouts, there is strong evidence of a difference in pre-intervention and post-intervention means.

For the moral resilience outcome, changes in the pre-intervention and post-intervention Total RMRS scores ranged from -0.18 to 1.36 points ($Mdn = 0.24$, $M = 0.29$) (Figure 2). The Wilcoxon signed-rank test with a continuity correction gave a p -value of < 0.001 , while the nonparametric permutation test gave a two-sided p -value of the same, with a 95% CI [0.17, 0.40] per nonparametric boot strap analysis. The sensitivity analysis for Total RMRS changes in score ($Mdn = 0.18$ points, $M = 0.22$ points) resulted in no change in the p -value of the Wilcoxon test, 95% CI [0.12, 0.32], and the permutation test p -value remained < 0.001 .

The RMRS consists of four subscales. Changes in the first subscale, Response to Moral Adversity had a sample mean of 0.49, Wilcoxon p -value of < 0.001 , 95% CI [0.32, 0.68], and a permutation test for paired data with p -value of < 0.001 . The second subscale, Personal Integrity, had a sample mean 0.16, Wilcoxon p -value of 0.2, 95% CI [0.00, 0.33], and a permutation test for paired data with p -value of 0.11. The third subscale, Relational Integrity, had a sample mean of 0.25, Wilcoxon p -value of 0.003, 95% CI [0.12, 0.40], and a permutation test for paired data with p -value of 0.002. The fourth subscale, Moral Efficacy, had a sample mean of 0.20, Wilcoxon p -value of 0.012, 95% CI [0.09, 0.33], and a permutation test for paired data with p -value of 0.008. The significant changes in three of the subscales, Response to Moral Adversity, Relational Integrity, and Moral Efficacy remained significant with the sensitivity analysis.

For the well-being outcome, changes in the pre-intervention and post-intervention WBI scores ranged from -4 to 3 points ($Mdn = -1$, $M = -1$) (Figure 3). The Wilcoxon signed-rank test with a continuity correction gave a p -value of 0.010, while the nonparametric permutation test for paired data gave a two-sided p -value of 0.015, 95% CI [-1.67, -0.33] per nonparametric boot

strap analysis. The sensitivity analysis for the WBI changes ($Mdn = -1$, $M = -0.77$) did not change the p -value of the Wilcoxon test, 95% CI [-1.30, -0.23], and the permutation test was approximately $p = 0.014$, again suggesting strong evidence of differences in pre-intervention and post-intervention means despite dropouts.

Additional Findings

A regression analysis found no significant relationships between compliance rates and changes in CD-RISC 10, RMRS Total, or WBI scores. There were, however, significant correlations between the outcome measures. A positive correlation was found between changes in resilience and moral resilience scores ($r = 0.45$, $p = 0.03$) outlined in Figure 4. Resilience measures were negatively correlated with at-risk well-being scores, with changes in resilience and well-being scores ($r = -0.42$, $p = 0.04$) on Figure 5, and moral resilience and well-being ($r = -0.39$, $p = 0.06$) on Figure 6.

Summary

Data collected from the critical care nurses who participated in this DNP scholarly project addressed the clinical question of whether a brief MBSC intervention could be effective in improving resilience, moral resilience, and well-being in critical care nurses working during the pandemic. Statistically significant differences were found between baseline and post-intervention CD-RISC 10, RMRS, and WBI scores, with significant correlations noted between the outcome measures. Compliance rates and participant response data suggest that the MBSC may be an acceptable and feasible option for this population.

Figure 1: *Histogram of Differences in Preintervention/Postintervention CD-RISC 10 Scores*

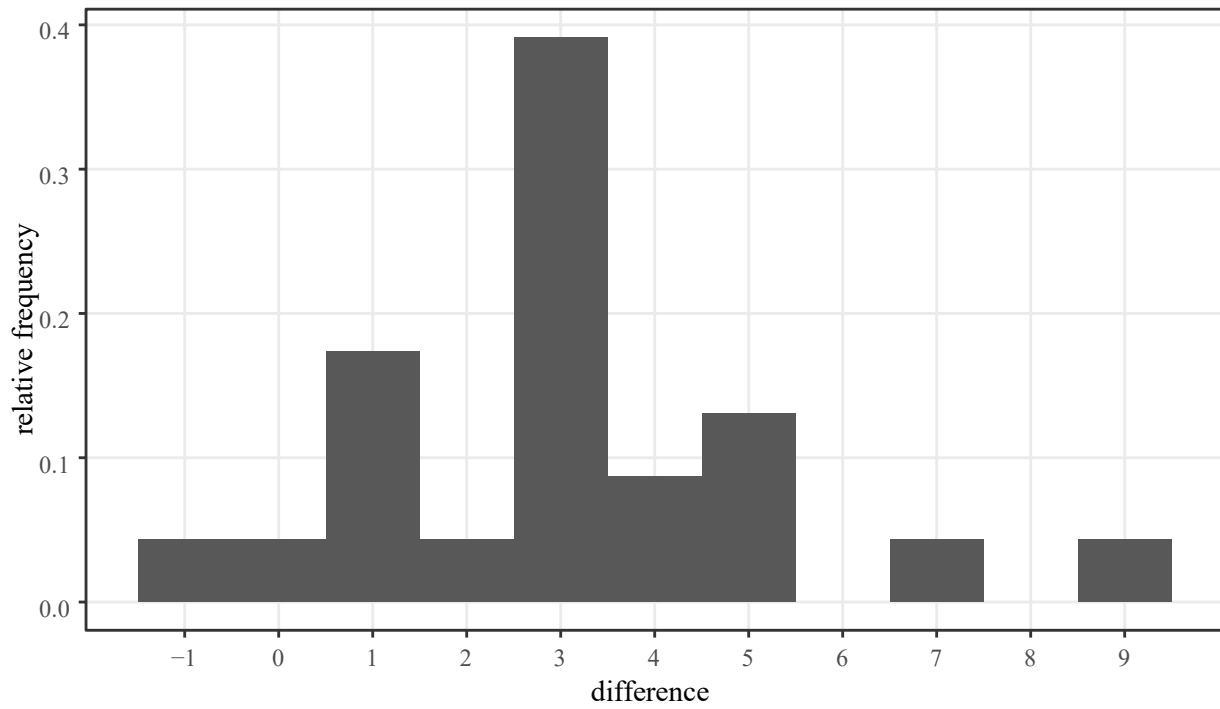


Figure 2: *Histogram of Differences in Preintervention/Postintervention RMRS Scores*

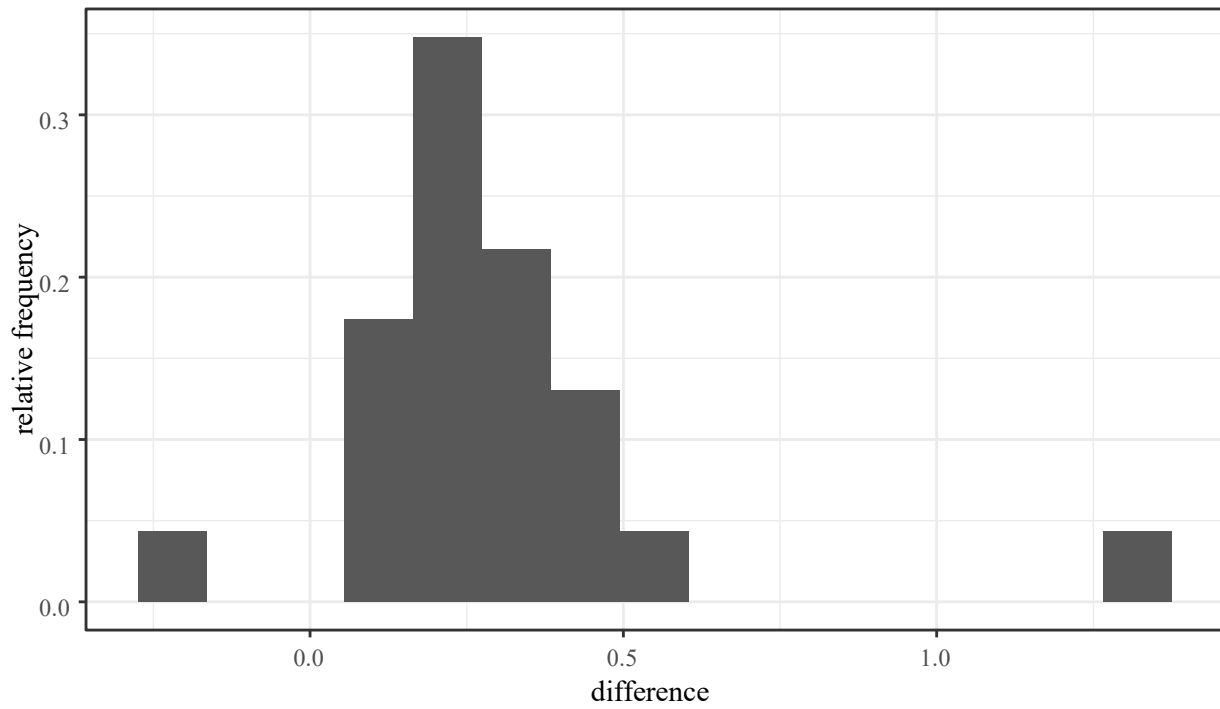


Figure 3: Histogram of Differences in Preintervention/Postintervention WBI N Scores

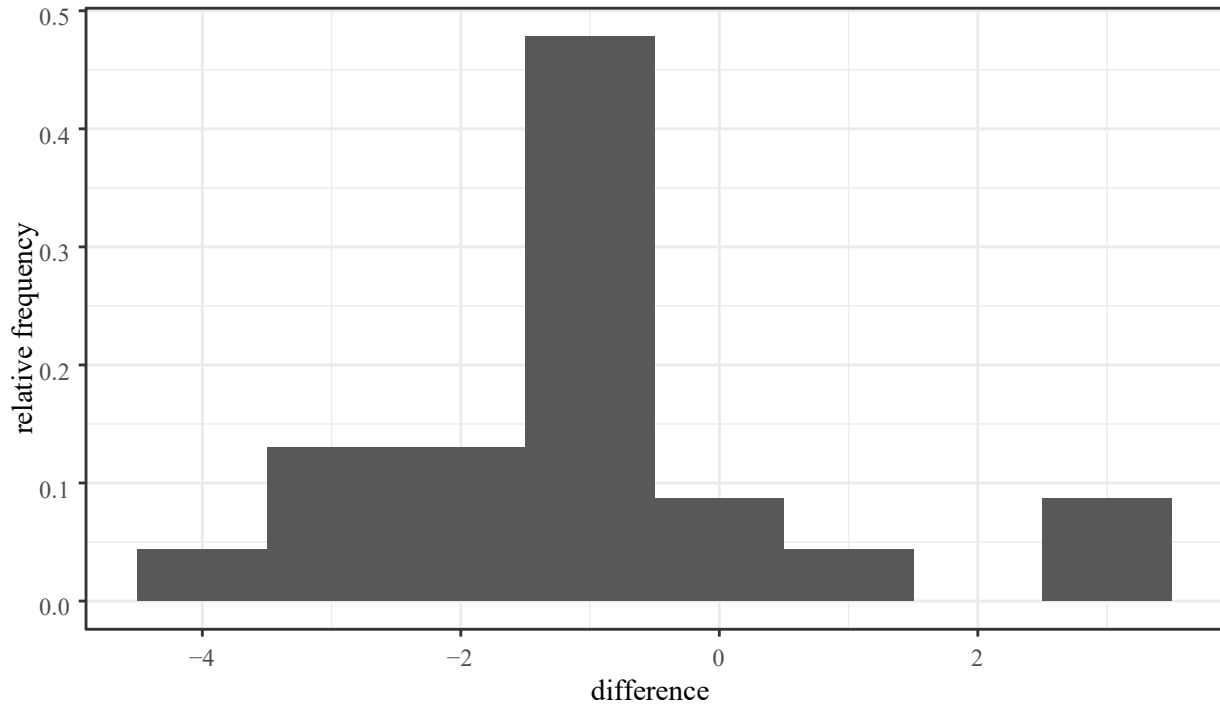


Figure 4: Correlation Between Change in CD-RISC 10 and RMRS

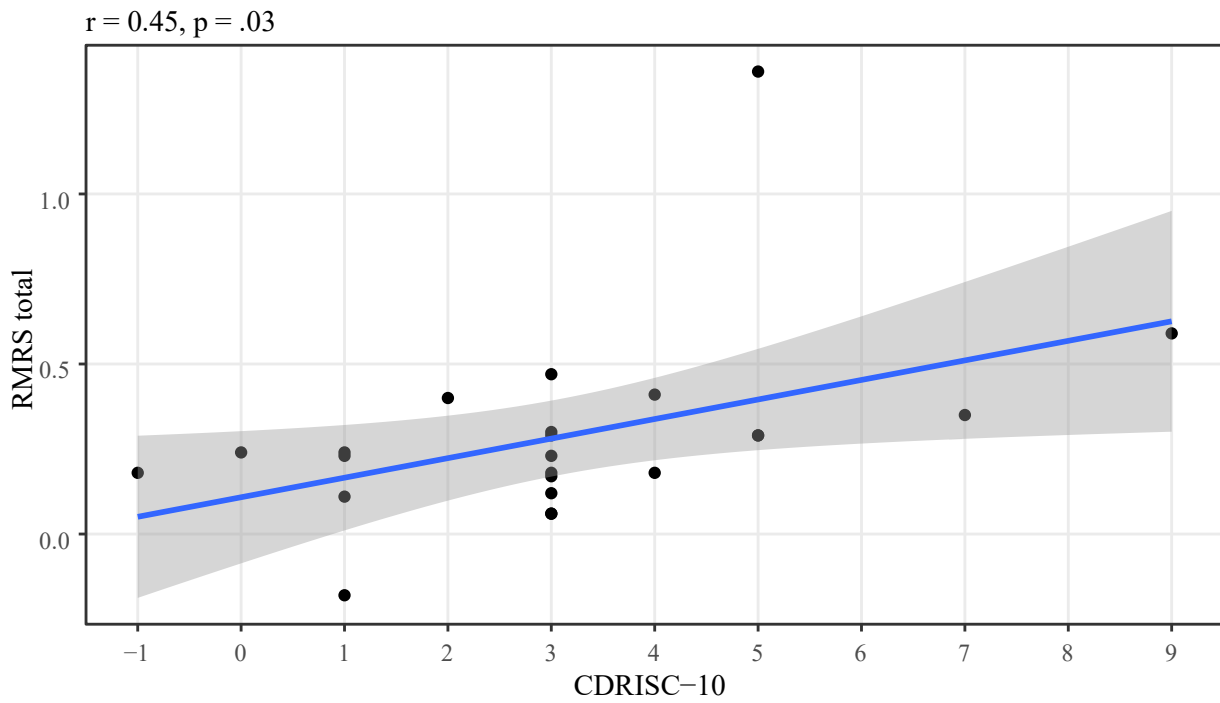


Figure 5: *Correlation Between Change in CD-RISC 10 and WBI N*

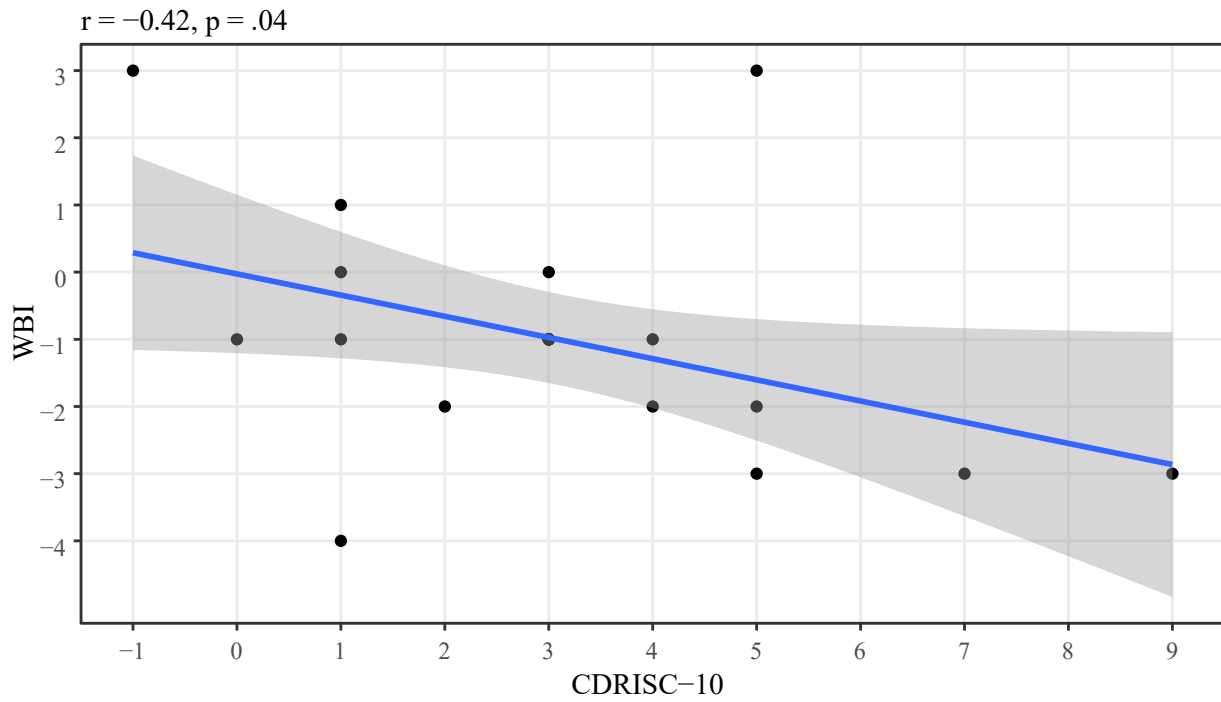


Figure 6: *Correlation Between Change in RMRS and WBI N*

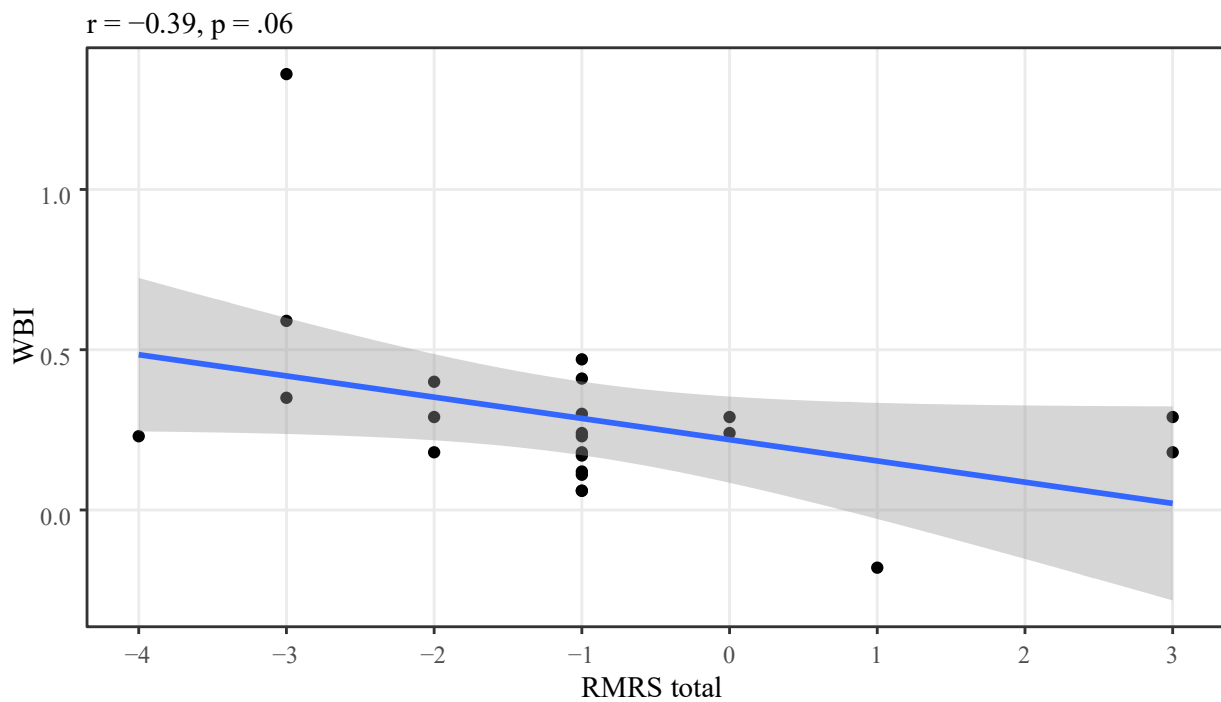


Table 1: Frequency Counts for Demographic Variables

Variable	Category	<i>n</i>	%
Age Category	18-34	1	3.0
	25-34	15	50.0
	35-44	7	23.0
	45-54	6	20.0
	55-64	1	3.0
Gender Identify	Female	19	63.0
	Male	10	33.0
	Non-conforming/Gender-variant	1	3.0
Race/Ethnicity	Asian/Pacific Islander	8	27.0
	Black/African American	3	10.0
	Biracial/Multiracial	2	7.0
	Hispanic/Latino	4	13.0
	Native American/Alaskan Native	1	3.0
	White/Caucasian	12	40.0
Years of Experience	0-2	4	13.0
	3-10	12	40.0
	11-20	9	30.0
	20-30	4	13.0
	30 or more	1	3.0

Table 2: Frequency Counts for Mindfulness Variables (n = 23)

Variable	Category	n	%
Prior Mindfulness Experience	Yes	18	60.0
	No	12	40.0
Post-intervention (n = 23)			
Frequency of Practice	Week 1	21 to 23 sessions	95.6
	Week 2	18 to 23 sessions	88.6
	Week 3	19 to 22 sessions	90.6
	Week 4	20 to 22 sessions	92.2
Post-intervention survey (n = 23)			
Practices Helpful	Strongly agree	14	61.0
	Somewhat agree	8	35.0
	Neutral	1	4.0
Plan to Continue	Strongly agree	8	35.0
	Somewhat agree	14	61.0
	Somewhat disagree	1	4.0
Easy to Use	Strongly agree	12	52.0
	Somewhat agree	10	43.0
	Somewhat disagree	1	4.0

CHAPTER SIX: DISCUSSION

As a clinical inquiry into the relationship between mindfulness, resilience, moral resilience, and well-being in critical care nurses during the pandemic, this project may provide foundational support for future research. Findings offer preliminary support for a brief MBSC intervention as an effective tool in fostering resilience, moral resilience, and well-being.

Resilience

As a construct, resilience considers some aspect of inherent traits but is best viewed as a fluid process shaped by personal, environmental, and contextual factors and suggests that resilience can be both learned and strengthened (Henshall, Davey & Jackson, 2020; Slatyer et al. 2017). Fostering personal resilience has been identified as an essential tool in addressing work related stress, adversity, self-care and well-being (Slatyer et al., 2017). Resilience in the workplace has been studied as means of understanding how individuals respond to workplace stressors and who may face negative outcomes. Rees et al. (2015) developed a Model of Individual Workforce Resilience and included mindfulness as one of the key variables, in addition to other factors such as self-efficacy and coping. These variables may offer protective benefits and have improved with brief MBSC and resiliency interventions (Slatyer et al., 2018). The significant improvements in resilience following this MBSC intervention are consistent with recent study findings (Babanataj et al., 2018; Matigbay et al., 2017; Rushton et al., 2021). While some previous studies found increased resilience was correlated with practice frequency (Kemper et al., 2015), the results of this MBSC found no such correlation.

Moral Resilience

Recognition of the capacity for MR during the pandemic has been suggested as a starting point as we look forward from the pandemic, from which strengths are evaluated and strategies are developed for growth and healing (Ulrich, Rushton & Grady, 2020). The RMRS can be helpful in evaluating relationships between MR and other related constructs. For example, the four subscales of MR (Response to Moral Adversity, Moral Efficacy, Personal Integrity and Relational Integrity) have shown a protective relationship against BO and turnover intention, lending further support for interventions that aim to foster MR (Antonsdottir et al., 2022). No cut-off values exist for the score, but the RMRS can be used to track changes in MR over time. Following this brief MBSC, significant changes in total RMRS scores were noted after four weeks, with significant changes in three of the subscales (Response to Moral Adversity, Relational Integrity, and Moral Efficacy). Changes in the Response to Moral Adversity subscale were the most significant, with a positive correlation to changes in resilience, which may be an area for additional research. Self-regulatory skills fostered through mindfulness practice may play an important role in how RNs navigate through morally complex situations in daily practice (Holtz, Heinze & Rushton, 2017) and key in cultivating MR.

Well-being

The nurse version of the WBI (WBI N) can be useful for identifying those in distress as well as those at risk of adverse personal or professional consequences, such as BO, poor quality of life, recent patient care errors, or intent to leave, with a score range of -2 (lowest risk) to 9 (highest risk). In a national sample of 3,802 U.S. nurses, the median WBI N score was 1.0, mean 1.52, SD 2.64, with the cut-off score of two or greater placing nurses in the at-risk category (Dyrbye et al., 2018). In this small sample of critical care RNs the pre-intervention mean score

was 3.5, well above the national sample and just five RNs were below the cut-off value. There were statistically significant improvements in the WBI N scores following this brief MBSC intervention. Negative correlations were also noted between changes in resilience and moral resilience scores and decreases in well-being scores indicating a lower risk of adverse effects related to distress.

Feasibility

The reviewed literature found interventions incorporating abbreviated MBSR, MBI, MBSC programs or resilience training to be acceptable and feasible for HCWs and RNs (Ameli et al., year; Babanataj et al., year; Duarte & Pinto-G, 2016; Duchemin et al., 2015; Gauthier et al., year; Mealer et al., 2014; Resnicoff & Julliard, 2018; Rushton et al., 2021; Slatyer et al., 2018) including interventions with online or web-based content options (Kemper & Khirilaah, 2015; Magtibay et al., year). Similar to a systematic review by Melnyk et al. (2020), most of the interventions required in-person participation with significant time requirements, which limited the feasibility for this DNP scholarly project, particularly with restrictions due to increased COVID-19 activity.

The recruitment period occurred during what became the height of the local surge of the COVID-19 Omicron variant, with a slow initial response rate. Rather than an open and closed process, which would have yielded just 10 participants, the intervention was left open for ongoing recruitment. A precise recruitment rate was difficult to ascertain with high absence rates and over twenty open RN positions on the unit requiring increased utilization of float pool RNs and travelers. Of the approximately 65 RNs not on leave during the recruitment process there were 30 RNs who completed the pre-intervention study, however, it is not known how many of

these participants were on staff critical care float pool RNs which had not been anticipated. The attrition rate was 23%, similar to related studies with RNs (Lin et al., 2018; Penque, 2019).

Frequency of intervention use was tracked directly from the online application and ranged from 40% to 100%, although the mean was high at 91%. On the postintervention survey, most participants reported that the mindfulness practices were helpful and planned to continue mindfulness them, and most reported the application was easy to use. Only one participant completed the open-ended feedback question, writing “not about improvement, but I just wanted to say that I thoroughly enjoyed the content and plan to continue using these mindfulness practices going forward”. Unexpected findings were the ratings and comments left by participants within the study group on the application. There were too few responses to be analyzed but indicated a positive response to the intervention from those who chose to comment. Eight of the twenty sessions were rated with five out of five stars. Several left comments including “I noticed my mood improving even after just the first video”, “good reminder for self-compassion”, and “I think as nurses, we are taught to put others first. We put our patients first at work, we put our family’s health before our own, and we are more compassionate to others than ourselves. It helps so much to be reminded that we deserve love, kindness, and compassion, especially from ourselves”. Findings of the project lend support to the feasibility and acceptability of the MBSC intervention.

Limitations

Interpretation of results requires careful consideration regarding the reliability of the data and threats to validity. The MBSC project relied on self-report and can be prone to biases such as the Hawthorne effect or testing effect where participants may behave or answer differently based on participation. Nurses may also have more favorable attitudes towards nursing research

(Kovacevic, et al. 2017). One way to strengthen the validity of self-report measures is to compare the results to another similar self-report measure. In this project, the CD-RISC 10 and the Rushton Moral Resilience Scale (RMRS) were both used as a measure of resilience, similar to a recent study by Heinze et al. (2021) which found that the RMRS was positively correlated with the CD-RISC 10. Frequency of intervention use did not rely on self-report which minimizes testing burden as well as errors in reporting.

There are other possible threats to consider. Internal validity considers to what extent the intervention is responsible for the results, and not confounding factors. Self-selection bias is a common threat in MBI literature, as RNs who agree to participate in the study may be more open to mindfulness practices to begin with. The events of a winter COVID-19 surge and sudden changes in staffing could have posed a historical threat. Staff absenteeism, short-staffing, increased workloads, and lack of RN buy-in may have negatively impacted recruitment or attrition rates. Registry and travel RNs were excluded from the project to minimize attrition unrelated to the project. Four of the RNs reported zero to two years of experience which poses a maturation threat as newer nurses' responses may be influenced as their comfort level changes, however, the study excluded RNs working less than three months or who were still on orientation. Risks to internal validity could be minimized with larger sample sizes, blinding of the selection process, or taking steps to limit attrition.

External threats to validity require an evaluation of how generalizable the results are. A single site study in a large academic facility in an urban region of Southern California may yield different results if implemented in a small rural hospital with a less diverse nursing force. Reducing threats to external validity of this study could include the use of probability sampling, random sampling, or replication of the study in a variety of settings and in different populations.

Implications for Practice and Research

Stress, burnout, and moral distress pose a significant threat to the health and safety of nurses and patients alike. A thorough understanding of the pandemic's effect on distress will require ongoing study (Guttormson et al., 2021; McGuire et al., 2020; Ulrich & Grady, 2019;). The need for effective strategies has become more apparent. Interventions such as a brief MBSC program which bolster self-regulatory skills, self-stewardship and resilience may mitigate harmful effects of MD. Fostering MR may help critical care RNs navigate morally adversity in a manner that maintains personal and professional integrity, reduces distress, and leaves space for growth and healing (Heinze et al., 2021; Rushton, 2018). Future research to evaluate the effect of increased MR on RN and patient safety outcomes, as well as related financial impacts has been suggested as a means to bolster organizational support and funding for MR interventions (ANA, 2017).

The healthcare system must also address the structural and cultural shortcomings that contribute to nurses' stress, burnout, and MD (Antonsdottir et al., 2022; Rushton & Sharma, 2018). Critical care RNs surveyed during the pandemic relayed a sense of starkening inequalities and lack of assistance from leadership (Guttormson et al., 2021). Administrative support to ensure appropriate resources, safe staffing, retention, and RN involvement in practice or policy changes is not optional (Ulrich et al., 2020). Resources such as palliative care and ethics teams can provide ethical support and assist with the formation of clear guidelines and policies for pandemic-related decisions such as patient triage (McGuire et al., 2020; Ulrich et al., 2020). Policy and cultural considerations should be addressed for those RNs who bring forth ethical concerns and fear retribution. Leaders and nurse managers can play a vital role in promoting well-being and endorsing mitigation strategies (Dimino et al., 2021). How to access available

resources should be clear for those who seek support. Participation in intervention programs can be encouraged by providing patient coverage for uninterrupted breaks and practice time in a dedicated space (Resnicoff & Julliard, 2018; Woods, 2020).

Nurse leaders committed to ethical practice, interprofessional collaboration, and nurse empowerment have an important role in fostering MR. Efforts to build and support healthy, adaptable work environments and an ethical culture for practice may help to mitigate the negative effects of MD and sustain positive changes (Dimino et al., 2021; Holtz, Heinze & Rushton, 2017; Rushton et al., 2021). This is another area of much needed research. Nurse involvement with professional organizations, regulatory bodies, and policy development at the local and national level can ensure continued interest and funding to support ongoing study.

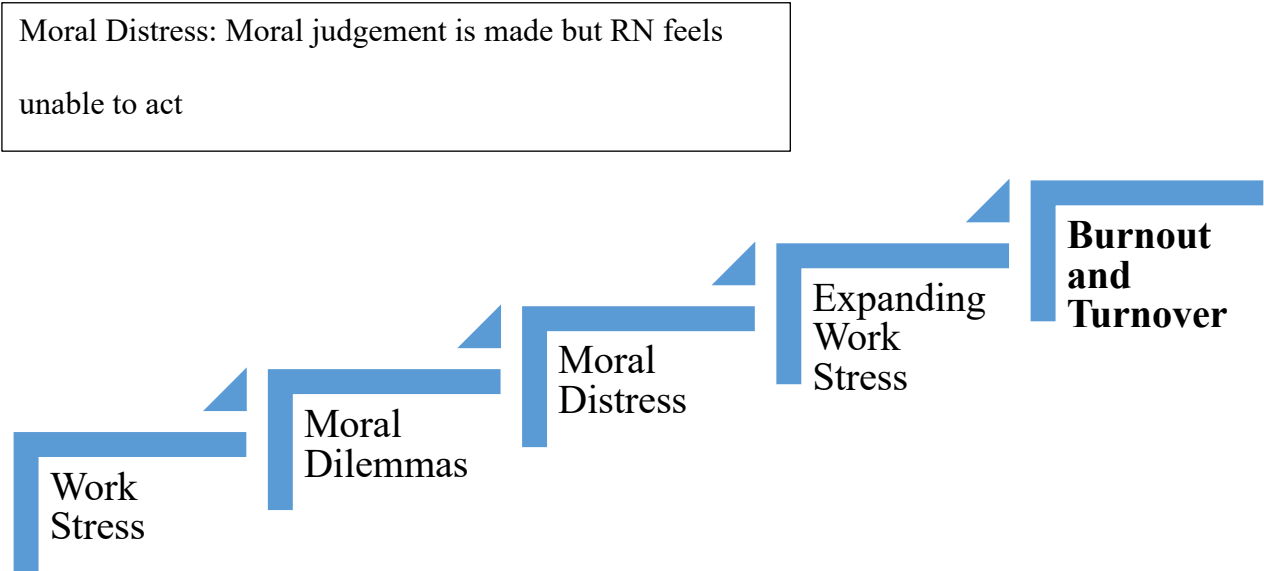
CONCLUSION

As pre-pandemic rates of stress, BO, and MD rose, national healthcare experts and organizations warned the nation that more needed to be done to support RNs. The COVID-19 pandemic brought these struggles to the forefront and exposed our fractured healthcare system, with a national discourse playing out on screens everywhere. Effective interventions were urgently needed to support the health and well-being of nurses. Shifting the focus from alleviating MD to strengthening resilience and MR has been proposed. Interventions incorporating mindfulness were shown to decrease distress and BO, improve well-being and resilience. A brief evidence based MBSC intervention was evaluated for critical care nurses during the pandemic and implemented during the local COVID-19 surge with Delta and Omicron variants. The results indicate that a brief MBSC intervention can be an effective and feasible tool for improving the resilience, MR, and well-being of critical care RNs. Further investigation of the efficacy of MBSC interventions in this population are warranted. The

findings of the small study provide a foundation for ongoing research exploring the impact that mindfulness practices have on resilience, MR, and well-being. Future studies including MD outcome measures would help to establish relationships between these findings and their impact on mitigating the negative effects of MD and add to a paucity of research in this area.

APPENDICES

Appendix A: The Continuum of Clinician Work Stress and Moral Distress

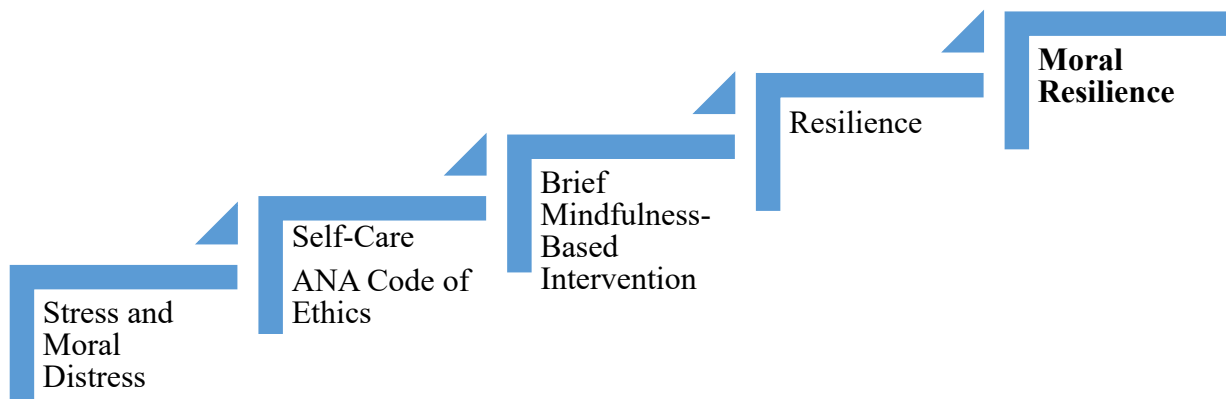


Burnout: Chronic work-related stress leads to syndrome characterized by exhaustion, depersonalization, diminished efficacy

(Donkers et al., 2021; Hines et al., 2020; Jameton, 1984; Maslach, 1998; Penacoba et al., 2021; Rushton et al., 2015; Scanlan & Still, 2019; Ulrich et al., 2019).

Appendix B: The Continuum of Self-care and Clinician Resilience

Resilience: Ability to bounce back or effectively cope in the setting of adversity



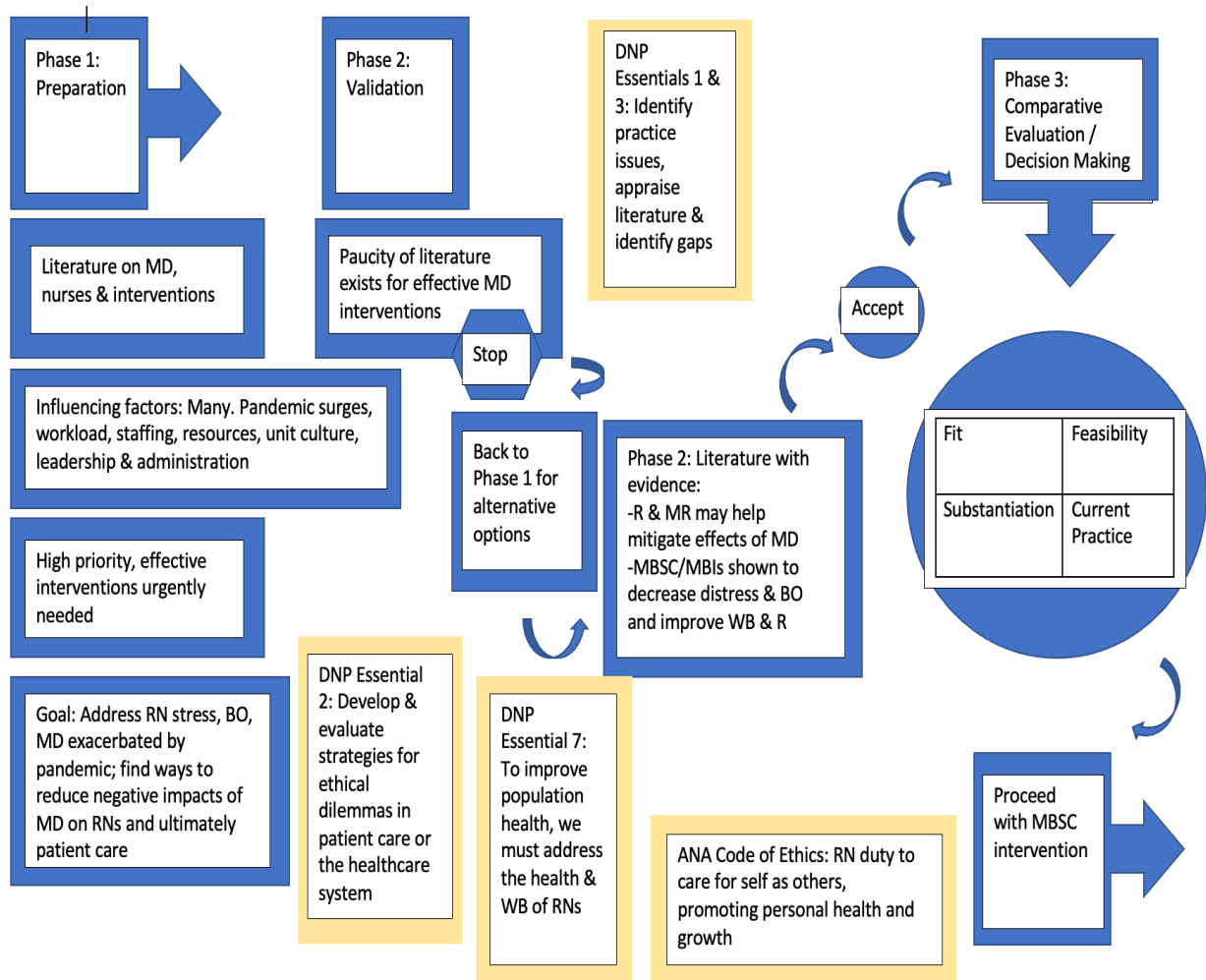
Moral Resilience: Capacity to navigate moral adversity; ability to preserve or restore integrity in response to morally complex or distressing situations

(Ameli et al., 2020; ANA, 2015; Burton et al., 2016; Duarte & Pinto-Gouveia, 2016; Gilmartin, et al., 2017; Holtz, Heinze & Rushton, 2018; Kabat-Zinn, 2009; Kemper & Khirallah, 2015; Lachman, 2016; Rushton et al., 2015; Rushton, 2018)

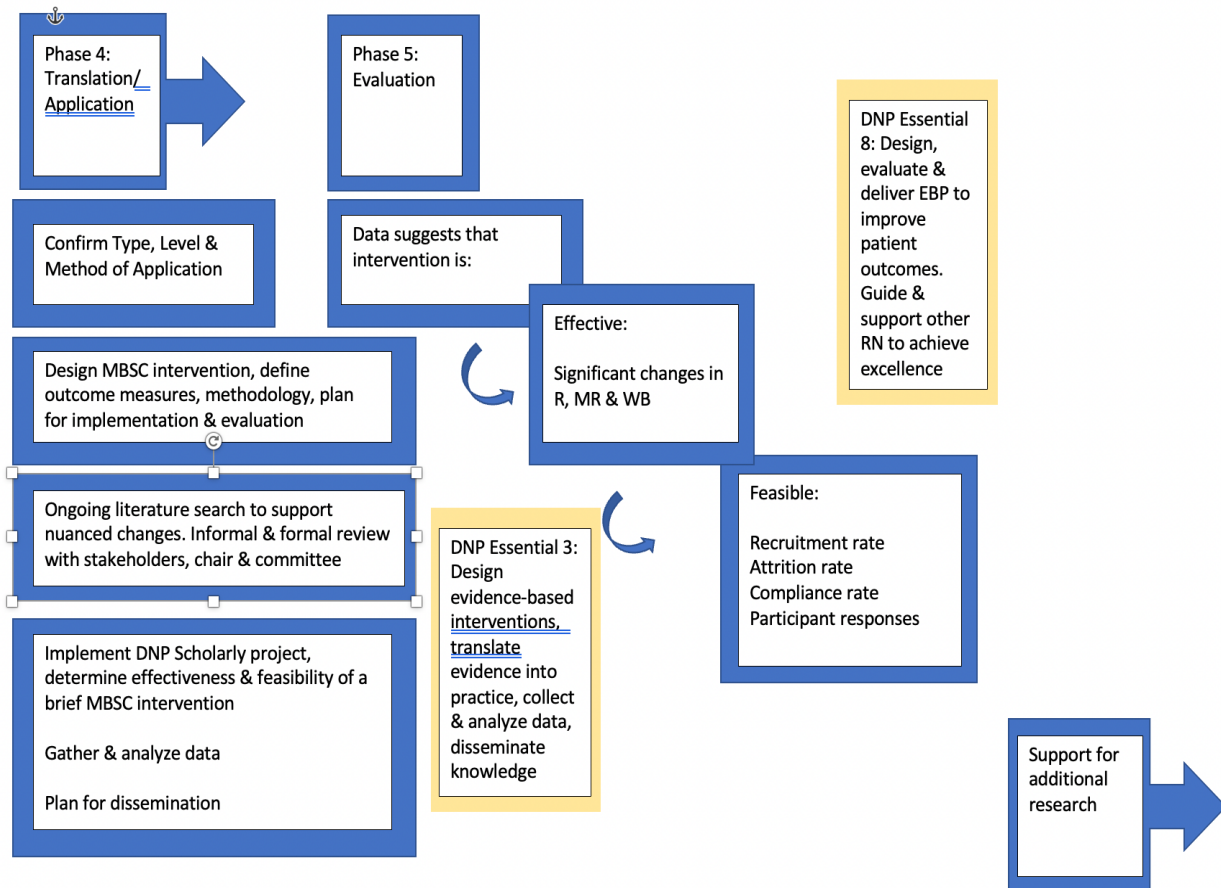
Appendix C: Watson’s Theory of Human Caring Science

Carative Processes:	10 Caritas Processes:	Examples (Ex) / Relation to MBSC:
The formation of a humanistic-altruistic system of values	Sustaining humanistic-altruistic values by the practice of loving-kindness, <u>compassion</u> and equanimity with self/others	MBSC may help RNs to develop/strengthen loving-kindness, compassion for self, others. Honoring personal values Ex: Loving-kindness meditation
The instillation of faith-hope	Being authentically present, enabling faith/hope/belief system; honoring subjective inner, <u>life-world</u> of self/others	Ex: Mindfulness practices – focus on being present in the moment, coming from a place of nonjudgement
The cultivation of sensitivity to oneself and to others	Being sensitive to self and others by cultivating personal spiritual practices; beyond ego-self to transpersonal presence	Ex: self-care, meditation
The development of a helping-trust relationship	Developing and sustaining loving, trusting-caring relationships	Ex: Learning to trust self, evaluate reactions and responses, vulnerability
The promotion and acceptance of the expression of positive and negative feelings	Allowing for expression of positive and negative feelings – authentically listening to another person’s story	Ex: practicing detachment
The systematic use of the scientific problem-solving method for decision making	Creatively problem-solving-‘solution-seeking’ through caring process; full use of self and artistry of caring-healing practices via use of all ways of knowing/being/doing/becoming	The art of nursing; Healing arts Ex: Individualized care, openness to non-traditional healing
The promotion of interpersonal teaching-learning	Engaging in transpersonal teaching and learning within context of caring relationships; staying within other’s frame of reference-shift toward coaching model for expanded health/wellness	Ex: Patient-tailored education
The provision for a supportive, protective, and (or) corrective mental, physical, <u>soçiocultural</u> and spiritual environment	Creating a healing environment at all levels; subtle environment for energetic authentic caring presence	Ex: Creating healthy and healing environments; Healthy Work Environments (HWE)
Assistance with the gratification of human needs	Reverentially assisting with basic needs as sacred acts, touching mind-body-spirit of other; sustaining human dignity	Sustaining human dignity in interactions with the mind-body-spirit of self or other -Ex: intentional consciousness/caring
The allowance for existential-phenomenological forces	Opening to spiritual, mystery, unknowns – allowing for miracles	involves remaining open to the unknown and leaving possibility for miracles Finding meaning, purpose Ex: Addressing spiritual needs/higher consciousness/states of being

Appendix D: Stetler Model and DNP Essentials, Part A



Appendix D: Stetler Model and DNP Essentials, Part B



Attention

ICU Nursing Team Members

You're invited to participate in a nurse-led clinical inquiry project exploring the relationship between mindfulness, well-being, and resilience during the COVID-19 pandemic.

Who can join?

- Nurses & care partners working in the ICU
- Working at UCLA for at least 3 months

What is involved?

- Participation in brief mindfulness sessions
- Requires less than 30 minutes per week, over 4 weeks
- Complete 3 short online surveys, 5 minutes each
- No identifying data is requested
- Access content when it's convenient for you, from any device

Participants entered to win
MESSAGE GIFT CARDS!



Interested?

Laura Quigg, MSN, ACNP, DNPc
Department of Nursing, University
of California, Los Angeles

- l.quigg@med.usc.edu
- 612-554-3608



Appendix F: Recruitment Email

Attention ICU nursing team members:

You're invited to participate in a clinical inquiry project exploring the relationship between mindfulness, well-being, and resilience during the COVID-19 pandemic

Who can join?

UCLA nursing team members working in the ICU

Have been working at UCLA for at least 3 months / Completed orientation

Sorry, no travel or registry RNs

What is involved?

Participate in brief mindfulness sessions

Access content when it's convenient for you from your phone, tablet, or computer

Requires less than 30 minutes per week, over 4 weeks

Complete 3 short online surveys, 5 minutes each

No identifying data is requested

Nurse lead research, for nurses

Interested?

Laura Quigg, ACNP, DNPc

Department of Nursing at the University of California, Los Angeles

l.quigg@med.usc.edu

612-554-3608

Appendix G: Intervention Content Outline

Week 1: Introduction & General Mindfulness Practices	Week 2: Stress Reduction	Week 3: Loving- kindness Meditation	Week 4: Resilience
Mindful meditation	Stress reduction	Compose yourself towards equanimity	Letting go, begin again
Mindful body scan	Allow stress to melt away: Muscle relaxation	5-minute lovingkindness meditation	Let go: Brief resilience boost during coronavirus
5-minute mindful pause	Decompressing your system – Perfect for stress & anxiety	Five minutes of self-compassion	Fostering courage & resilience
Mindful checking	Less than 5 minutes to reduce stress & breathe	The ABCs of self-compassion: A quick self-compassion practice	Meditation for inner strength
Mindful arrival	Guided meditation on relaxation & stress relief	Self-compassion	Hope & wholeness meditation

Appendix H: Demographic Survey

1. Please select your age:

18-24 25-34 35-44 45-54 55-64 65 and over

2. To which do you most identify:

Female Male Non-conforming/Gender-variant Prefer not to say

3. Which best describes you:

Asian or Pacific Islander

Black or African American

Hispanic or Latino

Native American or Alaskan Native

White or Caucasian

Biracial or Multiracial

Other, not listed here

4. How long have you been a nurse?

0-2 years 3-10 years 11-20 years 20-30 years More than 30

5. Have you had experience with mindfulness practices before?

Yes No

Appendix I: Feasibility Measures

Please answer a few quick questions about your experience

1. I found the mindfulness practices helpful

1	2	3	4	5
Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree

2. I plan to continue some form of mindfulness practice

1	2	3	4	5
Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree

3. The application was easy to use

1	2	3	4	5
Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree

4. Please feel free to comment on any ways this intervention could be improved

Appendix K: Rushton Moral Resilience Scale™ (RMRS) © 2021

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Instructions: In answering the following questions, please consider how you **have** responded to challenging ethical situations in the last three months in your professional role.

Please rate the following using the following scale:

1=disagree 2= somewhat disagree 3=somewhat agree 4= agree

1. In my professional role, my choices and behaviors consistently reflect my values.
2. Difficult ethical situations leave me feeling powerless. (R)
3. I voice my ethical concerns in a way that others take seriously.
4. I am overwhelmed by persistent ethical conflicts. (R)
5. After facing a challenging ethical situation, lingering distress weighs me down. (R)
6. I find it challenging to implement the decisions of others when it threatens my values. (R)
7. When I am confronted with an ethical challenge, I am able to articulate the ethical conflict.
8. When a challenging ethical situation can't be resolved, I find myself "going through the motions" in my job. (R)
9. I can think clearly when confronting an ethical challenge, even when I feel pressured.
10. When others criticize my opinions, I compromise my values. (R)
11. When faced with a difficult ethical challenge, I find myself doing or saying things that I later regret. (R)
12. I am confident in my ability to reason through ethical challenges in my professional role.
13. I would rather avoid conflict with those who have more authority than I do than act in accordance with my values. (R)
14. When confronted with an ethical challenge, I push myself beyond what is healthy for me. (R)
15. I tend to be distracted by others strong emotions when ethical conflicts occur. (R)
16. My fear can cause me to act in a way that compromises my values. (R)
17. No matter the situation I do what is consistent with my values.

Appendix L: Nurse Well-being Index

Updated 2020

During the past month...

1. have you felt burned out from your work? Y/N
2. have you worried that your work is hardening you emotionally? Y/N
3. have you often been bothered by feeling down, depressed, or hopeless? Y/N
4. have you fallen asleep while sitting inactive in a public place? Y/N
5. have you felt that all the things you had to do were piling up so high that you could not overcome them? Y/N
6. have you been bothered by emotional problems (such as feeling anxious, depressed, or irritable)? Y/N
7. has your physical health interfered with your ability to do your daily work at home and/or away from home? Y/N

Please rate how much you agree with the following statements:

8. The work I do is meaningful to me

1	2	3	4	5	6	7
Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree

9. My work schedule leaves me enough time for my personal/family life

1	2	3	4	5
Strongly agree	Agree	Neutral	Disagree	Strongly disagree

TABLE OF EVIDENCE

CITATION	PURPOSE	SAMPLE/ SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
<p>Ameli, R., Sinaii, N., West, C.P., Luna, M.J., Panahi, S., Zoosman, M., Rusch, H.L., Berger, A. (2020). Effect of a brief mindfulness-based program on stress in health care professionals at a US biomedical research hospital. <i>JAMA Network Open</i>, 3(8), e2013424. doi:10.1001/jamanetworkopen.2020.13424</p>	<p>Test efficacy & feasibility of a brief mindfulness-based self-care program in reducing stress among health care professionals</p>	<p>HCPs at the Clinical Center at the National Institutes of Health in Bethesda, MD</p> <p>82 randomized participants, 78 completed the study (43 intv' group, 35 control)</p> <p>Msmt: (baseline, post-intv' week 5, follow-up week 13)</p>	<p>Intent-to-treat RCT on campus during work hours</p> <p>5 weekly 1.5 hour in-class mindfulness practice sessions. Each week different theme</p> <p>Msmt: -PSS-10, VAS-A, MBI-2, PANAS, MAAS-T; MAAS-S; MSCS-G</p>	<p>MBSC group with improved levels of:</p> <p>Stress (mean [SD] score, 17.29 [5.84] vs 18.54 [6.30]; $P = .02$); Anxiety (mean [SD] score, 2.58 [1.52] vs 4.23 [1.73]; $P < .001$); positive affect (mean [SD] score, 35.69 [7.12] vs 31.42 [7.27]; $P < .001$); state mindfulness (mean [SD] score, 3.74 [1.18] vs 2.78 [1.16]; $P < .001$); mindful self-care (mean [SD] score, 7.29 [2.44] vs 5.54 [2.77]; $P < .001$)</p> <p>No difference for BO</p> <p>Maintenance effect for: stress, anxiety, trait mindfulness, state mindfulness</p>	<p><u>Discussion / Interpretation:</u> This RCT found that the brief MBSC intervention was an effective and feasible way to reduce stress in HCPs</p> <p><u>Limitation:</u> Limited conclusions as to clinical significance of the findings were able to be drawn as the PSS-10 has no established MID</p> <p>Study completed in a research hospital, participants predominantly women (83%) with high level of education</p> <p>Possible expectancy bias w/ self-motivated, research driven participants, or possible desirability bias w/ self-report measures</p>

Abbreviations: HCPs = Healthcare providers; Intv = Intervention, MAAS-S = Mindful Attention Awareness Scale State; MAAS-T = Mindful Attention Awareness Scale Trait; MBI-2 = Maslach Burnout Inventory (two items); MID = Minimal important difference; Msmt = measurement; MSCS-G: Mindful Self-care Scale-General; PANAS = Positive and Negative Affect Schedule; PSS-10 = Perceived Stress Scale 10-item version; VAS-A = Visual Analog Scale-Anxiety;

CITATION	PURPOSE	SAMPLE/ SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
<p>Babanataj, R., Mazdarani, S., Hesamzadeh, A., Gorji, M.H., Cherati, J.Y. (2018). Resilience training: Effects on occupational stress and resilience of critical care nurses. <i>International Journal of Nursing Practice</i>, 25(1): e12697. doi: 10.1111/ijn.12697</p>	<p>Determine the effect of resilience training on the ICU RNs' occupational stress & resilience level</p>	<p>ICU RNs in a university/ tertiary care hospital in Iran n = 30</p>	<p>Quasi-experimental, single group pre-and post-test design. Convenience sample</p> <p>Intervention: 5 training sessions: 90-120 minutes each. Consisted of lectures, group discussion, Q&A</p> <p>Msmt: CD-RISC (* full scale) and ENSS</p> <p>Completed before and 2 weeks post-intervention</p>	<p>The mean ENSS scores significantly decreased, as did the mean CD-RISC scores (both p = 0.001)</p>	<p><u>Discussion / Interpretation:</u> Resilience training can be feasible and acceptable to ICU RNs</p> <p>Resilience training led to significant decreases in work-related stress levels while increasing resilience scores</p> <p><u>Limitation:</u> Training was done by 'trained researcher' who was under the supervision of a psychiatrist</p> <p>No control group</p> <p>Study completed in a tertiary care/academic setting and in Iran, may limit generalizability in other types of settings or other countries</p> <p>Additional information as to the structure and content of the sessions would be helpful for attempts at replication</p>

Abbreviations: CD-RISC = Connor-Davidson Resilience Scale; ENSS = Expanded Nursing Stress Scale; ICU = Intensive care/critical care unit, Msmt = measurement; RN = registered nurse

CITATION	PURPOSE	SAMPLE/ SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
Duarte, J., Pinto-Gouveia, J. (2016). Effectiveness of a mindfulness-based intervention on oncology nurses' burnout and compassion fatigue symptoms: A non-randomized study. <i>International Journal of Nursing Studies</i> , 64(2016): 98-107. http://dx.doi.org/10.1016/j.ijnurstu.2016.10.002	Evaluate the effectiveness of an on-site mindfulness-based intervention (MBI) on a variety of oncology nurses' psychological outcomes	Oncology RNs (n = 94, 45 in the intv group) - 2 major oncology hospitals in Portugal, Spain Pre-and post-intv data collection, a 3-mt f/u was attempted but only 6 responded so data not analyzed	Non-randomized, wait-list comparison design Abbreviated MBSR 6-week course, 2-hr sessions (in person) Weekly themes Also encouraged 15" daily practice at home Msmt: ProQUAL-5 DASS-21 AAQ-II RRS FFMQ SCS SWL	Decreased: compassion fatigue (p < .001), BO (p = .002), stress (p = .008), & experiential avoidance (p < .001) Increased: satisfaction in life (p = .026), mindfulness (p = .026), & self-compassion (p = .020) Interaction for those reporting increased practice time: BO (p = .038), depression (p = .007) & self-compassion (p = .0012) (although limited due to self-report)	<u>Discussion:</u> Findings support effectiveness and acceptability of the <u>Interpretation:</u> MBIs may be effective in reducing oncology RNs' BO, CF, stress levels and increasing quality of life <u>Limitation:</u> Small sample size, primarily women Non-random sample Self-selection / bias Self-report / response bias

Abbreviations: AAQ-II = Acceptance and Action Questionnaire-II; BO = Burnout; CF = Compassion fatigue; DASS-21 = Depression, Anxiety & Stress Scale; FFMQ = Five Facet Mindfulness Questionnaire; Intv = intervention; MBIntv = Mindfulness Based Intervention; MBSR = Mindfulness-based Stress Reduction; Msmt = measurement; ProQOL-5 = Professional Quality of Life Scale, version 5; RRS = Ruminative Responses Scale-Short; SCS = Self-Compassion Scale; SWL =

CITATION	PURPOSE	SAMPLE/ SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
<p>Duchemin, A.-M., Steinberg, B.A., Marks, D.R., Vanover, K., Klatt, M. (2015). A small randomized pilot study of a workplace mindfulness-based intervention for surgical intensive care unit personnel: Effects on salivary α-amylase levels. <i>Journal of Occupational and Environmental Medicine</i>, 57(4): 393-399. doi: 10.1097/JOM.0000000000000371</p>	<p>Determine if a workplace stress-reduction intervention decreases reactivity to stress for personnel in a high stress occupational environment, the SICU</p> <p>8-week blended intervention</p>	<p>SICU personnel in a large academic medical center</p> <p>n = 32, 69% were SICU RNs</p>	<p>RCT, pilot study</p> <p>8 weeks of workplace mindfulness-based interventions (MBIntv), an abbreviated MBSR</p> <p>Stress reduction intervention vs wait-list group</p> <p><u>Msmt:</u> Psychological and biological markers of stress measures 1 week pre- & 1-week post-intervention</p> <p><u>Biologic:</u> -Levels of salivary α-amylase = an index of sympathetic activation.</p> <p><u>Psychological:</u> PSS, DASS-21, MBI, ProQOL</p>	<p>Levels of α-amylase significantly decreased (by 40%, $p = 0.026$) in the MBIntv group 1-week post-intervention</p> <p>Positive correlation between α-amylase salivary levels and burnout scores on ProQoL ($r = 0.349$; $p = 0.0058$). Positive correlations also noted with both DASS and MBI emotional exhaustion scores but neither were significant</p> <p>Those in MBIntv grp had: 25% decrease in DASS scores ($p = 0.04$) & the number of participants w/ DASS stress scores > 14 (14 is cutoff value for stress) decreased by 66%</p>	<p><u>Discussion:</u> Mindfulness-based interventions can help to decrease biological markers of stress</p> <p><u>Interpretation:</u> A MBIntv that is adapted for the workplace can be helpful in decreasing reactivity</p> <p><u>Limitation:</u> Small sample size, although authors felt this was a representative sample c/w other studies and characteristics</p> <p>Could have been sample bias in sampling of participants, those interested in or open to mindfulness may have self-selected in</p> <p>Most participants were F and RNs, may also limit generalizability</p>

Abbreviations: Asmts = Assessments; DASS-21 = Depression, Anxiety & Stress Scale; FFMQ = Five Facet Mindfulness Questionnaire; MBI = Maslach Burnout Inventory; MBIntv = Mindfulness based intervention; MBSR = mindfulness-based stress reduction; Msmt = measurement; ProQOL = Professional Quality of Life Scale; PSS = Perceived Stress Scale; SICU = surgical intensive care unit

CITATION	PURPOSE	SAMPLE/ SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
<p>Gauthier, T., Meyer, R.M.L., Greife, D., Gold, J.I. (2015). An on-the-job mindfulness-based intervention for pediatric ICU nurses: A pilot. <i>Journal of Pediatric Nursing</i>, 30(2): 402-409. https://doi:10.1016/j.pedn.2014.10.005</p>	<p>Explore the feasibility of a brief, PICU-specific mindfulness-based intv' on: (1) participation, adherence, completion of questionnaire. (2) Change in RNs' stress, BO, self-compassion, mindfulness, job satisfaction (3) whether there were trait & state MF group differences in stress & burnout over time</p>	<p>PICU RNs in an urban pediatric academic hospital</p>	<p>Pilot study</p> <p>Based on an abbreviated MBSR, a 5-minute mindfulness meditation was designed & offered on the unit before each work shift</p> <p>Took place in PICU huddle room as a group. An ordained Zen Buddhist priest led the sessions twice daily (morning/evening shift changes)</p> <p>Outcome measures: Pre-, post-intervention and 1 month later -MBI, NSS, MAAS, SCS, job satisfaction (using Likert scale, 1-7)</p>	<p>Sig' (+) corr b/t MF and self-compassion at all 3 time points: (T1: $r = .52$, $p < .001$; T2: $r = .69$, $p < .001$; T3: $r = .67$, $p < .001$)</p> <p>Sig' (-) corr b/t stress and MF at all 3 time points (T1: $r = -.47$, $p < .001$; T2: $r = -.58$, $p < .001$; T3: $r = -.34$, $p < .05$); And b/t stress and self-compassion: (T1: $r = -.45$, $p < .01$; T2: $r = -.50$, $p < .001$; T3: $r = -.39$, $p < .05$).</p> <p>-High levels of stress at baseline w/ significant decrease postintv' ($p = .006$) & remained so at 1 month --High levels EE & depersonalization at baseline for BO. EE was (-) correlated w/ MF at all 3 time points whereas PA was (+) correlated w/ MF</p>	<p>Intervention was feasible & effective for PICU RNs: - 95% completing post-study survey & 84% completing it at 1-month follow-up</p> <p>Stress decreased regardless of how many minutes participants meditated. Future research may look at quantity vs quality</p> <p>Overall, a brief on-site MBIntv can provide benefits for busy RNs in high-stress environments.</p> <p>Unlike most of the MBSR intvs, no introduction, didactic, group sessions</p> <p>Limitations: no control group, urban academic single-site setting, self-report, and self-selection</p>

Abbreviations: (+) positively; (-) = negatively; BO = burnout; corr = correlation; EE = emotional exhaustion; Intv = intervention; MAAS = Mindful Attention Awareness Scale; MF = mindfulness; MBI = Maslach Burnout Inventory; MBIntv = mindfulness-based intervention; Msmt = measurement

CITATION	PURPOSE	SAMPLE/ SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
<p>Kemper, K.J. & Khirallah, M. (2015). Acute effects of online mind-body skills training on resilience, mindfulness, and empathy. <i>Journal of Evidence-Based Complementary & Alternative Medicine</i>, 20(4): 247-253. doi: 10.1177/2156587215575816</p>	<p>Evaluated effects of online, elective mind-body skills training for healthcare professionals that focused on mindfulness, resilience and empathy</p>	<p>Large Midwestern academic health center</p> <p>Healthcare professionals including RNs</p> <p>n = 513</p>	<p>prospective cohort study</p> <p>12 1-hour sessions</p> <p>Msmt: On introductory module: 3 items on VAS for relaxation, stress, resilience. Also the MBI (initial, not repeated post)</p> <p>Other modules, multiple other scores pre/post module</p>	<p>On initial exercise, most reported moderate to high levels of stress and > 50% met criteria for burnout</p> <p>Post module reductions in: stress (p < .001), empathy (p = .01), resilience (p < .01) and mindfulness (p < .001)</p>	<p><u>Discussion:</u> Completing brief, online 1-hour modules individually was associated with significant improvements in stress, empathy, resilience and mindfulness</p> <p>More study participants with online offerings compared to other studies requiring in person participation</p> <p><u>Interpretation:</u> Brief online mindfulness-based training can be beneficial for healthcare providers who are experiencing stress, burnout</p> <p><u>Limitation:</u> Single site. No control group. Possibility of self-selection bias & may also limit generalizability</p> <p>Did not account for how many of the sessions each participant took</p>

Abbreviations: MBI = Maslach Burnout Inventory; Msmt = measurement; RN = registered nurse; VAS = visual analog scale

CITATION	PURPOSE	SAMPLE/ SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
<p>Magtibay, D.L., Chesak, S.S., Coughlin, K., Sood, A. (2017). Decreasing stress and burnout in nurses: Efficacy of blended learning with stress management and resilience training program. <i>The Journal of Nursing Administration</i>, 47(7-8): 391-395. doi: 10.1097/NNA.0000000000000501</p>	<p>Assess effectiveness of a blending learning training program to decrease stress and burnout among RNs</p> <p>Program: SMART: Stress Management and Resiliency Training</p>	<p>Mayo Clinic (large academic tertiary medical center in MN)</p> <p>Convenience sample of RNs who had self-selected to participate n = 50</p>	<p>Single group, pre-and post-intervention, quasi-experimental design</p> <p>Blended learning: participants chose their own format from web-based, independent reading, facilitated discussions or a combination. Modules also provided exercises</p> <p>Msmt: SHS, PSS, GAD, MAAS, CD-RISC, CBI *used CD-RISC 2 Measured at baseline (week 0), weeks 8, 12, 24</p>	<p>At week 8 following completion of learning modules, marked improvements in all categories.</p> <p>Interval from weeks 8-12 showed greatest improvement.</p> <p>Final survey (week 24): Significant decreases in anxiety (largest decrease of 45.2% reduction, $p < .001$), stress (29.8% reduction, $p < .001$), work-related BO (33.6% reduction, $p < .001$), client-related BO (38.5% reduction, $p < .001$) at same time increases in happiness ($p < .001$) and mindfulness ($p < .001$). -Resilience scores also improved each period: 8 weeks ($p = .31$), 12 weeks ($p = .048$), 24 weeks ($p = .004$)</p>	<p><u>Discussion:</u> Blended learning program (SMART) can help to improve resiliency, mindfulness, happiness, anxiety, stress and BO. Blended option can increase access to the program/resiliency training for RNs</p> <p><u>Limitation:</u> No control group with relatively small convenience sample & self-selection, possibility of bias. Site is Mayo Clinic, limits generalizability to other institutions.</p> <p>Greatest improvements from the 8–12-week period and continued into week 24. Length of study is unlikely feasible for the DNP project.</p>

Abbreviations: CBI = Copenhagen burnout inventory; CD-RISC = Connor-Davidson resilience scale; GAD = generalized anxiety score; MAAS = mindfulness attention awareness scale; Msmt = measurement; PSS = Perceived stress scale; RN = registered nurse; SHS = subjective happiness scale

CITATION	PURPOSE	SAMPLE/ SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
<p>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. <i>American Journal of Critical Care</i>, 23(6): e97-105. https://doi.org/10.4037/ajcc2014747</p>	<p>Determine if a multimodal resilience training program for ICU RNs would be feasible & acceptable</p>	<p>Academic institution (single center)</p> <p>ICU RNs, n = 33</p>	<p>RCT, 12-week pilot intervention study</p> <p><u>Msmt:</u> CD-RISC (<i>full</i>) PDS MBI HADS</p> <p>Both groups completed pre- and post-intervention</p> <p>CSQ-8 * (intervention group only)</p>	<p>100% of the ICU RNs + for sx of anxiety, 77% + for sx of depression; high rate of BO: 81% + for EE, 77% + for DP, 77% + for decrease in PA</p> <p>44% ICU RNs met diagnostic criteria for PTSD</p> <p>Intv group: sig reduction in sx of depression (p = .03)</p> <p>Intv & control groups had sig reduction in PTSD sx (p = .01, p = .02), & Improved resilience (p = .05, p = .03) (latter 2 were not sig d/t small sample size)</p>	<p><u>Discussion:</u> Improvements in PTSD & resilience scores in control group maybe r/t 'lack of treatment fidelity, intervention contamination', assessment reactivity</p> <p><u>Interpretation:</u> The resilience program was feasible and acceptable for ICU RNs</p> <p><u>Limitation:</u> Older (2014). Small sample size, did not allow for statistical significance in resilience scores or reductions in psychological sx. Some self-report.</p> <p>Involved, complex, 12 weeks: may be feasible within time frame of project</p>

Abbreviations: (+) = positive; CSQ-8 = Client/Patient Satisfaction Questionnaire-8; CD-RISC = Connor-Davidson Resilience Scale; DP = depersonalization; EE = emotional exhaustion; HADS = Hospital Anxiety and Depression Scale; ICU = Intensive care/critical care unit; Intv = intervention; MBI = Maslach Burnout Inventory; MBSR = mindfulness-based stress reduction; Msmt = measurement; PA = personal accomplishments; PDS = Posttraumatic Diagnostic Scale; RN = registered nurse; sig = significant; sx = symptoms

CITATION	PURPOSE	SAMPLE/ SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
<p>Resnicoff, M. & Julliard, K. (2018). Brief mindfulness meditation with night nursing unit staff: A qualitative study. <i>Holistic Nursing Practice</i>, 32(6): 307-315. doi: 10.1097/HNP.0000000000000293</p>	<p>Determine staff attitudes toward a brief, group mindfulness practice</p>	<p>30-bed inpatient, acute-care rehabilitation unit</p> <p>Part of hospital-wide initiative to bring MF meditation to staff</p> <p>Night shift RNs & CNAs</p> <p>On site, during work hours w/ 1 person assigned to answer call lights for uninterrupted time</p>	<p>Qualitative study, semi-structured interviews 6-months after sessions ended</p> <p>Intv: A brief, group MF practice held partway into the night shift for more than 8 months, usually 3 times a week. Sessions were short, two-to-five-minute guided MF meditation.</p>	<p>90% stated that the Intv helped decrease their stress or found it relaxing -some felt the effects for the rest of the shift or remembered to use the techniques throughout the shift</p> <p>Most (80%) felt the Intv helped them to better care for their patients, although in varied ways</p> <p>Most of the RNs felt calmer or more relaxed while participating</p> <p>Some noted increased teamwork or improved team communications</p> <p>All said they wanted the practice to continue</p>	<p>In a qualitative analysis of a brief, guided group MF meditations offered at work, participants viewed the intervention positively and wished to continue the practice</p> <p>Limitations: A small number of participants opted to do qualitative part of study for a small sample size</p> <p>Charge RN who led the intv was also the interviewer, so concern for bias. -also, having more than 1 person to lead the intv would allow for more participation, as the only nights this was available when this 1 charge RN was on duty</p> <p>Pre- and post-test measures & a larger sample size would help</p>

Abbreviations: CAN = certified nursing assistant; Intv = intervention; MF = mindfulness; MBIntv = mindfulness based intervention; Msmt = measurement; RN = registered nurse

CITATION	PURPOSE	SAMPLE/ SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
<p>Rushton, C.H., Swoboda, S.M., Reller, N., Skarupski, K.A., Prizzi, M., Young, P.D., Hanson, G.C. (2021). Mindful ethical practice and resilience academy: Equipping nurses to address ethical challenges. <i>American Journal of Critical Care</i>, 30(1): e1-11. https://doi.org/10.4037/ajcc2021359</p>	<p>Evaluate impact of a “longitudinal, experiential educational curriculum to enhance RNs’ skills in mindfulness, resilience, confidence and competence to confront ethical challenges in clinical practice”</p> <p>Intervention: Mindful Ethical Practice & Resilience Academy (MEPRA)</p>	<p>Convenience sample, 2 hospitals within a large academic medical system</p> <p>Intervention group n = 192 + comparison group n = 223</p> <p>Msmt: PECS, MCQ, MSQ, BRS, MDEES, UWES, MBI (2 items), MDT, Iifeld PSI, MAAS</p>	<p>Prospective, repeated measures design</p> <p>6 sessions, in person (total 24 hours). Included combination of didactic, role play, videos, mindfulness practices, group activities and 1 session w/ ‘high fidelity’ simulation w/ trained actors, then a facilitated debriefing session</p> <p>Also, 10 minutes of daily guided mindfulness practices (home)</p>	<p>Significant increases in mindfulness (p = .03) ethical confidence (p < .001) & ethical competence (p < .001), engagement in work (p < .001) and resilience (p < .001) post-intervention</p> <p>Burnout and ‘turnover intentions’ decreased as resilience and mindfulness improved</p> <p>RNs reported significant improvements in depression and anger symptoms</p>	<p><u>Discussion / Interpretation:</u> Intv = feasible & effective for enhancing RNs’ skills to address morally distressing situations by cultivating MR</p> <p><u>Limitation:</u> -Fairly involved process using curriculum specifically designed for this intv & required significant time commitment → Too involved in terms of time and resources for the scope of a DNP project -Sample from a large academic medical system, may limit generalizability; non-random convenience sample w/ risk of bias</p> <p>-No data collected on independent mindfulness practice</p>

Abbreviations: BRS = Brief Resilience Scale; Iifeld PSI = Iifeld Psychiatric Symptom Index; MAAS = Mindful Attention Awareness Scale; MBI = Maslach Burnout Inventory; MDEES = Multidimensional Emotional Empathy Scale; MDT = Moral Distress Thermometer; MR = moral resilience; Msmt = measurement; MCQ = Moral Competence Questionnaire; MSQ = Moral Sensitivity Questionnaire; PECS = Perceived Ethical Climate Scale; RN = registered nurse; UWES = Utrecht Work Engagement Scale

CITATION	PURPOSE	SAMPLE/ SETTING	METHODS (Design, Interventions, Measures)	RESULTS	DISCUSSION, INTERPRETATION, LIMITATIONS
<p>Slatyer, S., Craigie, M., Heritage, B., Davis, S., Rees, C. (2018). Evaluating the effectiveness of a brief mindful self-care and resiliency (MSCR) intervention for nurses: A controlled trial. <i>Mindfulness</i>, 9(2): 534-546. doi:10.1007/s12671-017-0795-x</p>	<p>Evaluate the effectiveness of a brief mindful self-care & resiliency (MSCR) intv for RNs in reducing levels of BO, secondary traumatic stress (contributing to compassion fatigue), and general psychological distress symptoms. Secondary aims: evaluate protective factors for occupation-related stress including self-compassion, compassion satisfaction, & resilience</p>	<p>RNs in a large academic tertiary hospital in Australia n = 91</p>	<p>RCT</p> <p>Full-day educational workshop w/ content on compassion fatigue & MF practices, followed by 3 weekly follow-up sessions w/ MF practices</p> <p>Outcome measures obtained pre- and post-intervention and at 6 months follow up</p> <p><u>Msmt:</u> ProQoL5 DASS21 CD-RISC 10 GSES SCS-SF WHO Five</p>	<p>Significantly reduced BO scores ($p < .001$) & remained sig at follow-up ($p = .009$)</p> <p>Sig improvement in self-compassion ($p = .001$), compassion satisfaction ($p = .026$) and subjective QoL ($p = .033$)</p> <p>No sig changes were found for resilience.</p>	<p><u>Discussion:</u> Brief MSCR intv found effective in reducing BO & maintained at 6 months. Also effective in improving self-compassion, compassion satisfaction and subjective QoL, which can contribute to work-related stress and BO.</p> <p><u>Interpretation:</u> MSCR intv feasible and acceptable for RNs</p> <p><u>Limitation:</u> Tertiary care, magnet center, may limit generalizability; attrition rate</p>

Abbreviations: BO = burnout; CD-RISC 10 = 10 item Connor-Davidson Resilience Scale; DASS-21 = Depression, Anxiety & Stress Scale; GSES = General Self-Efficacy Scale; intv = intervention; MF = mindfulness; MSCR = mindful self-care and resiliency; ProQoL5 = Professional Quality of Life Scale version 5; QoL = quality of life; RN = registered nurse; SCS-SF = Self-Compassion Scale-short form; sig = significant; WHO Five – WHO (Five) Well-being Index

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