

Evaluating the Impact of a Mindfulness Intervention on Mindful Attention and Awareness,
Resilience to Stress, and Perceived Stress in Newly Licensed Nurses in a
Nurse Residency Program

by

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Dedication

I would like to dedicate this Doctor of Nursing Practice scholarly project to my precious grandsons, Kai Phillip and Kaleb Richard, my children Carmen and Charles, Jr., my husband Charles Sr., and my parents Jim and Evelyn. Their continued love, support, and encouragement motivated me in the timely and successful completion of this scholarly endeavor.

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Abstract

Background: A career in the healthcare profession of nursing provokes significant stress in newly licensed nurses. Previous studies suggested that mindful practice enhanced well-being by bringing awareness to thinking and living in the present moment (being mindful), decreased stress, and enhanced resilience to stress.

Purpose: The purpose of this study was to evaluate the impact of a mindfulness intervention on mindful attention and awareness, resilience to stress, perceived stress, and health status in newly licensed nurses in a nurse residency program (NRP).

Methods and Procedure: This mixed-methods quasi-experimental study used a pretest-posttest design with an intervention and comparison group. Surveys were taken at baseline and after the third monthly meeting for both groups. Mindfulness intervention sessions were presented via WebEx during three scheduled monthly meetings.

Results: While no significant differences were found from pre- to posttest in the total sample and paired sample groups, the intervention group showed improvement in the hypothesized directions with resilience and self-reported health scores, and no change in perceived stress with a slight decline in mindful attention and awareness. On the contrary, the comparison group showed decreased resilience, mindful attention and awareness, and self-rated health, and increased perceived stress.

Implications/Conclusion: The mindfulness intervention neutralized the level of perceived stress in the intervention group. Mindful practice activities should be utilized during the monthly NRP meetings throughout the program to help mitigate the effects of stress.

Keywords: healthcare, mindfulness, mindfulness-based interventions, nurse residency program or nurse residency, resilience or resiliency, stress, well-being

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Introduction and Background

A career in the nursing profession is highly challenging and physically, emotionally, and intellectually demanding. The transition from student nurse to newly licensed practicing nurse is also met with these same challenges and more. For this study, a new nurse or nurse resident (NR) is defined as a nurse that has graduated and has been licensed to practice within the past 365 days. New nurses are in unfamiliar territory and lack the experiential component needed to make critical decisions in the provision of patient care (Benner, 2001). This lack of experience coupled with the responsibility of caring for real-life patients provokes significant stress in the new nurses (Hezaveh et al., 2014). Unmitigated stress affects the well-being of new nurses and is carried into the work setting, directly affecting patient care and clinical outcomes (Melnyk et al., 2018). These stressors may result in compassion fatigue and burnout, contributing to poorer quality patient outcomes and new nurses leaving the workforce. Nurse residents would benefit from strategies aimed at reducing stress, fostering resilience to stress, and improving coping skills that reduce stress and burnout. One such strategy that has gained momentum in healthcare and in nursing is the use of mindfulness-based intervention strategies that promote mindfulness practice, decreased stress, and increased resilience to stress (Botha et al., 2015; Penque, 2019).

The most stressful and challenging time for a new nurse is within the first year of practice (Al-Dossery et al., 2013; Hezaveh et al., 2014; Shapiro et al., 2015; Van Camp & Chappy, 2017). New nurses are considered novice (Benner, 2001), and not prepared to hit the ground running, in need of experiential learning necessary to develop confidence in skills and improve critical decision-making. This early empirical learning in new nurses has a direct

impact on job satisfaction, development of role identity, and job retention (Feng & Tsai, 2012).

The negative outcomes of stress can impact the quality of patient care and clinical outcomes (Melnyk et al., 2018). Ongoing stress affects the well-being of new nurses, and this continued stress may result in compassion fatigue and burnout, contributing to poorer quality patient outcomes as well as new nurses leaving the workforce (Maslach & Leiter, 2016; Kelly, 2020). Newly licensed nurses may demonstrate burnout that is comprised of emotional exhaustion, depersonalization, and reduced personal accomplishments, characterized by a host of symptoms that include fatigue, tension, impaired memory, moral distress, substance abuse/use, and thoughts of quitting work (Maslach & Leiter, 2016). Moreover, newly licensed nurses may develop compassion fatigue, a combination of both burnout and secondary trauma which is stress while caring for the trauma/event (Kelly, 2020). According to Peters (2018), secondary trauma is an occupational hazard and simply being in the profession places nurses at risk of compassion fatigue. Additionally, unmanaged stress placed nurses at a much higher risk for ongoing mental health problems that included risk of suicide (Alderson et al., 2015; Davidson et al., 2018; Hoying et al., 2020).

Mindfulness

Mindfulness is defined as “what arises when you pay attention, on purpose, in the present moment, and non-judgmentally, and as if your life depended on it” (Kabat-Zinn, 2012, p. 17). Mindfulness enhances well-being by bringing awareness to thinking and living in the present moment, a means of sensory detachment. *Mindfulness* is “fundamentally a quality of consciousness” (Brown et al., 2007, p. 211). The concept of mindfulness is deeply rooted in Buddhist psychological traditions and the fundamental activities of consciousness

are both attention and awareness (Brown et al., 2007). Mindfulness interventions have proven successful in the aid of managing stress, depression, and anxiety; have promoted well-being; and have increased levels of mindfulness (Foureur et al., 2013; Gauthier et al., 2015; Spadaro & Hunker, 2016; van der Riet et al., 2015). The practice of mindfulness increased awareness, improved focus, and ultimately yielded positive outcomes evidenced by quality patient care (Spadaro & Hunker, 2016; van der Riet et al., 2015). Mindfulness training has also improved cognitive processes responsible for problem solving and decision-making (Howland & Bauer-Wu, 2015). New nurses supported by nurse residency programs (NRP) would benefit from the integration of mindfulness-based education and activities as coping strategies to decrease stress, increase resilience to stress, and promote the ongoing practice of mindfulness. The negative impact of work-related stressors on newly licensed nurses can be combated by building resilience to stress, clearly communicating information, and fostering a safe and supporting learning environment provided in an NRP (Cochran, 2017).

Resilience

The American Psychological Association (APA, 2012) described resilience as a process whereby people adapt well in the face of adversity, trauma, tragedy, threats, or significant sources of stress, e.g., family and relationship problems, serious health problems, or workplace and financial problems. Resilience is the ability to “bounce back” from stress provoking situations and remain hopeful for the future. According to Kester and Wei (2018), resilience is a survival skill that nurses can learn to thrive in the face of adversities experienced in the workplace.

Stress

Stress is generally defined as a state of mental or emotional strain or tension resulting from adverse or very demanding circumstances. Stress is the feeling of being overwhelmed or unable to cope because of pressures that are unmanageable (Mental Health Foundation, 2021). Melnyk et al. (2018) reported that stress affects the mental and physical health of nurses and, as a result, directly impacts patient care and clinical outcomes.

Nurse Turnover Rates

Unmitigated stress in new nurses during the first year of transition to practice is evidenced by a 25% attrition (National Council of State Boards of Nursing, 2020). Overall nursing turnover rates were reviewed for cost and impact on healthcare organizations and were found to have decreased from 17.2% in 2015 to 14.6% in 2016 (Nursing Solutions, Inc. [NSI], 2017). However, for the first year of new nurse employment, turnover rates remained high at 25%, and in the second year of new nurse employment, turnover rates continued to remain high at 23% (NSI, 2017). According to Penque (2019), work-related stress was the primary cause for leaving employment during the first year.

The *2019 National Healthcare Retention & RN Staffing Report* indicated nurse turnover not only affects safety, quality, and patient outcomes, nurse turnover is also very costly to the healthcare organizations (NSI, 2019). The financial cost related to the loss of a new nurse within their first year of practice is upwards of three times the nurse's annual salary (Unruh & Shang, 2014). Hospitals not only have a vested interest in retention of new graduate nurses but a vested interest in promoting the mental and physical health of the new nurses by fostering resilience to stress.

Nurse Residency Programs

To promote job satisfaction, improve patient outcomes, and reduce nurse turnover, the Institute of Medicine's (IOM, 2010) "The Future of Nursing" called for the implementation of NRPs to help support new nurses in the transition to practicing nursing. The primary goal of NRPs is to engage new nurses in the culture of the organization in hopes of reducing high nurse turnover rates (Wolford et al., 2019) and are intended to increase job satisfaction (Blevins, 2016) and decrease stress and burnout in new nurses. Other features of NRPs aim to foster evidence-based practice, leadership skills, and professional role development (American Association of Colleges of Nursing [AACN], 2019).

Nurse residency programs are widespread across the United States (U.S.) with thousands of employment opportunities that provide transitional support to new nurses. The American Academy of Nursing (AAN), the American Nursing Credentialing Center (ANCC), and the American Association of Colleges of Nursing (AACN) all support a policy that encourages all new nurses to participate in a nurse residency program during their first year of practice (Goode et al., 2018). While most hospitals offer new nurse orientation, NRPs offer more formal, longer-term programs that range in time from 3 months to a year and are found within the acute care setting.

The AACN has partnered with a company called Vizient (Vizient, 2020) and has developed a standardized curriculum and accreditation process for NRPs (AACN, 2019). Also, the ANCC built the Practice Transition Accreditation Program (PTAP) that aligns with the Magnet Designation requirements that many hospitals work towards. Generally, both the AACN/Vizient and the ANCC PTAP ensure that the content in these nurse residency programs focuses on the following: quality and safety, patient and family-centered care,

management of patient care delivery, management of changing patient conditions, communication and conflict management, information and technology, professional role and leadership skills, ethical decision making, stress management, and the business of healthcare. The AACN/Vizient NRPs can be found in hundreds of healthcare systems in 47 states; the state of Michigan has 15 hospitals that utilize the AACN/Vizient NRP model (AACN, 2019).

Nurse residency programs vary depending on length of time in the program, the number of hours per month spent in the didactic classroom, whether the new nurses have a reduced clinical workload, and whether there is a preceptor or mentor for the new nurse (Anderson et al., 2012). Didactic content delivered in the programs also varies and there is limited information as to how the different NRPs incorporate strategies, if any, to help promote resilience to stress for new nurses. One such strategy that could be incorporated into the NRPs is teaching and modeling mindfulness to promote resilience to stress.

Problem Statement

New nurses are under a significant amount of stress and have high levels of psychological distress related to their work environment (Amin et al., 2018; Foureur et al., 2013). The results of unmanaged stress are known to contribute to psychological distress (anxiety and depression), diminished feelings of well-being, eventual burnout, and results in high nurse turnover rates (Hall et al., 2016). Newly licensed nurses in a nurse residency program might benefit from a mindfulness intervention that promotes mindful attention and awareness and resilience to stress and decreases perceived stress.

Purpose, Objectives, Aims

The purpose of this study was to evaluate the impact of a mindfulness intervention on mindful attention and awareness, resilience to stress, and perceived stress in newly licensed nurses in a Nurse Residency Program.

Goal: The goal of this study was to educate new nurses in an NRP on the use of mindful practice as an intervention to promote mindful attention and awareness, increase resilience to stress, and to decrease perceived stress. Three 30-minute mindfulness intervention sessions were delivered to new nurses in each of the four NRP intervention cohorts, from 8:00 a.m. to 12:00 p.m. during the scheduled NRP monthly program in April, May, and June 2021.

Objectives: The objectives of this study were to deliver three mindfulness intervention sessions over a 3-month period. Ultimately, the objective of the mindfulness practice intervention would result in new nurses' increased mindful attention and awareness, improved resiliency to stress, and decreased perceived stress.

Outcomes: This practice intervention study measured the outcomes of mindfulness, resilience to stress, perceived stress, and self-rated health (S-RH) status. The outcome measures for this project were the Brief Resilience Scale (BRS), the Mindful Attention Awareness Scale (MAAS), the Perceived Stress Scale (PSS), and S-RH scores; these surveys were distributed pre- and post-intervention.

Research Question

The driving research question behind this study was as follows: Will a mindfulness intervention increase mindful attention and awareness, increase resilience to stress, increase

self-rated health scores, and decrease perceived stress in newly licensed nurses in a nurse residency program?

Review of the Literature

A literature search was conducted and utilized electronic databases that included Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, and PsycINFO. These databases were used and considered to be excellent sources for obtaining research studies specifically related to healthcare. The keywords and key phrases used for this literature review search included *healthcare, mindfulness, mindfulness-based interventions, nurse residency programs or nurse residency, resilience or resiliency or resilient, stress, and well-being*. Delimiters included publications in the English language and limited publication dates to within the last 10 years. Additional delimiters included scholarly peer-reviewed journals and excluded abstracts and dissertations. Duplicated literature that resulted from the search in three different databases was eliminated. Hand searches were conducted from the available literature. As a result, more than 200 articles were initially reviewed resulting in a total of 24 articles selected for use in this project. Of these 24 articles, there was a scant amount of research specific to mindfulness-based interventions and resilience to stress: the aim of this study. A total of nine research articles were identified as specific to mindfulness interventions and resilience to stress; these articles included four on mindfulness self-care and resilience in nurses and five on mindfulness-based strategies and resilience in new graduate nurses in an NRP. Full-text versions of the literature were obtained and reviewed for critical appraisal and relevance to inclusion in this project.

Mindfulness in Healthcare

Healthcare Providers

The effectiveness of brief mindfulness interventions resulted in significant improvements in provider well-being in several of the studies (Chesak et al., 2015; Gauthier et al., 2015; Kemper, 2017; Kemper & Khirallah, 2015; Sood et al., 2011; Sood et al., 2014; Taylor et al., 2016). In addition to provider well-being, healthcare providers (physicians, nurses, students, and faculty) in several of these studies were assessed for stress, anxiety, mindfulness, and resilience. Brief mindfulness interventions demonstrated improved stress scores (Gauthier et al., 2015; Sood et al., 2011; Sood et al., 2014), and decreased levels of anxiety (Sood et al., 2011; Sood et al., 2014). Increased resilience to stress was shown (Kemper & Khirallah, 2015; Sood et al., 2011), and increased levels of mindfulness scores were reported post-intervention (Kemper & Khirallah, (2015); Sood et al., 2014; Kemper, 2017).

Healthcare Students

Four studies in the literature identified the use of mindfulness-based stress reduction interventions in healthcare students. Of these studies, different mindfulness-based interventions were utilized, and different measures were evaluated. The effects of mindfulness-based interventions decreased anxiety (Barbosa et al., 2013; Spadaro & Hunker, 2016) and increased empathy (Barbosa et al., 2013; Beddoe & Murphy, 2004). In a qualitative study by van der Riet et al. (2015), participants reported an enhanced sense of well-being because of the mindfulness-based stress reduction intervention.

Nursing

The foundational practice of mindfulness is to pay attention in the present moment. Several studies demonstrated that mindfulness-based interventions used by nurses increased the ability to pay attention and enhanced awareness (Howland & Bauer-Wu, 2015; Penque, 2019; Pipe et al., 2016; White, 2013). The increased mindful attention and awareness enhanced problem-solving skills and thoughtful, intentional actions by the nurses. Nurses were more likely to be less distracted and catch and prevent medical errors, and more likely to pick up on signs of status changes in patient conditions (Howland & Bauer-Wu, 2015; Pipe et al., 2016). Brass (2016) and Penque (2019) found that mindfulness-based interventions promoted mindfulness, increased self-compassion, and increased self-care and well-being in nurses. Furthermore, in the qualitative analysis by Penprase et al. (2019), participants described how mindfulness practice decreased reactions to stressors, improved focus, decreased anxiety and restlessness, and led to a feeling of calm.

Mindfulness, Stress, and Resilience in Nurses

Mindfulness-based interventions were utilized in four studies to specifically evaluate the effectiveness of the work-place interventions on resilience to stress (Craigie et al., 2016; Foureur et al., 2013; Halm, 2017; Slatyer et al., 2018). The mindfulness interventions varied from a one-day workshop followed by daily 20-minute, audio-recorded mindfulness practice sessions that nurses listened to daily for an 8-week period, to a brief 1-day workshop followed by three weekly mindfulness practice sessions. The researchers utilized a variety of different tools to measure depression, anxiety, sense of coherence, burnout, resilience, passion for work, mindfulness, and more. Results of these four studies were generally consistent of and indicated that nurses who engaged in mindfulness interventions and

mindful practice demonstrated decreased stress and decreased symptoms of burnout (Craigie et al., 2016; Foureur et al., 2013; Halm, 2017; Slatyer et al., 2018), improved work-life/job satisfaction (Foureur et al. 2013; Halm 2017) and improved mindful awareness and resilience (Craigie et al., 2016; Foureur et al., 2013; Halm, 2017; Slatyer et al., 2018). Craigie et al. (2016) also concluded that brief mindfulness interventions improved emotional well-being in nurses. Interestingly, Craigie et al. (2016) reported a general lack of improvement in resilience yet noted that the nurses may have already had resilience in place.

There were several limitations to these studies. First, interventions in the studies were different and difficult to compare. Sample sizes were small and were underpowered to detect outcomes (Craigie et al., 2016; Foureur et al., 2013; Slatyer et al., 2018). Only one of the studies was experimental where participants were randomized to an intervention or control group (Slatyer et al, 2018); the intervention group ($n = 65$) outnumbered the control group ($n = 26$). Additional limitations included a single-study setting in these studies. Across the board, the researchers identified the need for future research to include experimental randomized control trials with mindfulness-based interventions over a longer study period.

Mindfulness, Stress, and Resilience in New Graduate Nurses

There was a paucity of research identified that evaluated the use of mindfulness-based stress reduction interventions in new nurses in an NRP. Five studies were identified through the review of the literature: one qualitative study (Chesak et al., 2019) and four quantitative studies (Bruette et al., 2020; Chesak et al., 2015; Chesak et al., 2021; Kulka et al., 2018). Chesak et al. (2019) assessed the lived experience of nurse residents in a mindfulness-based stress management program. In this study, several themes emerged through analysis of the data: enhanced personal and professional development, sensitivity to nurses' needs, and

cultivating the principles of mindfulness (Chesak et al., 2019). Four quantitative studies (Bruette et al., 2020; Chesak et al., 2015; Chesak et al., 2021; Kulka et al., 2018) evaluated the use of mindfulness-based stress reduction strategies in their research. The study interventions varied as did the measurement tools, yet all these studies measured mindful attention and awareness (Bruette et al., 2020; Chesak et al., 2015; Chesak et al., 2021; Kulka et al., 2018). In addition to measuring mindful attention and awareness, Chesak et al. (2015) and Chesak et al. (2021) measured resilience, perceived stress, and generalized anxiety, while Kulka et al. (2018) measured perceived stress. The researchers concluded that mindfulness-based interventions resulted in increased mindfulness attention and awareness, and decreased stress (Chesak et al., 2015; Chesak et al., 2021; Kulka et al., 2018). Two of the studies demonstrated decreased anxiety and increased resilience (Chesak et al., 2015; Chesak et al., 2021). Additionally, the researchers identified that to support the new graduate nurses, enhanced delivery of mindfulness-based interventions over a sustained period provided opportunity to improve mindfulness outcomes in the new graduate nurses.

Overall, the findings from the literature review indicated that mindfulness-based interventions decreased the levels of psychological distress (anxiety, stress, and depression) and burnout, and increased the tendency for nurses to be more mindful. Yet, there is little research on new nurses in NRPs and the effects of mindfulness-based interventions that promote resilience to stress. Furthermore, limitations of the studies included non-experimental designs and small sample sizes. Kulka et al. (2018) demonstrated that less than 50% of the population of new graduate nurses participated in the study. These studies were conducted in a single site and therefore cannot be generalized.

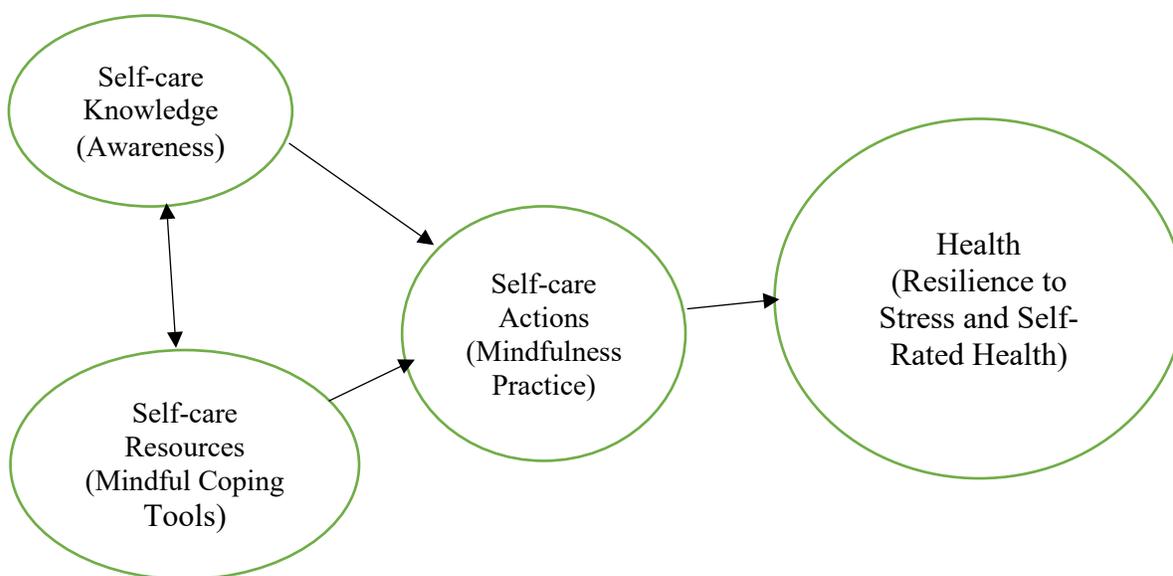
Theoretical Model/Framework

Erickson's Theory of Modelling and Role Modelling

Helen Erickson's (1983) theory of modeling and role-modeling (MRM) was used to guide this study (see Figure 1). Major concepts of MRM theory include health, adaptation, holism, affiliated individuation, self-care, nurturance, unconditional acceptance, and facilitation. One of the important concepts in MRM theory is self-care (Erickson et al., 1983); this concept of self-care drove this study. Self-care is the ability to care for oneself, manage stressors, and is unique to everyone. Mindfulness practice is also unique to each individual as one draws attention and awareness to a unique situation(s).

Figure 1

Self-Care Model



Note. From "Modeling and Role-Modeling: A Theory and Paradigm for Nursing," by H. C. Erickson, E. M. Tomlin, and M. A. P. Swain, 1983, *Booksurge*. Copyright 1983 by Prentice-Hall, Inc.

The availability of coping strategies to adapt to new stressors affects an individual's ability to activate needed resources. The concept of self-care is comprised of three categories: self-care knowledge (knowing what promotes or disrupts an individual's own health and growth), self-care resources (internal and external resources for coping with stressors), and self-care actions (use of self-care knowledge and self-care resources to promote health; Erickson, 2006). For self-care knowledge, awareness is necessary to know what is needed to care for oneself and promote well-being. The practice of mindfulness aids in awareness to the present moment. Mindfulness is seen as an internal self-care resource that can be activated to meet present needs and promote well-being; mindfulness practice must be recognized as a meaningful resource. Self-care actions can be demonstrated using mindfulness practice (knowledge and resources) in the care of one's unique self. The desired outcome of health can be demonstrated by increased resilience to stress and increased self-rated health. Therefore, modeling and role-modeling concepts were applied to the mindfulness intervention for new nurses to increase mindful attention and awareness, promote resilience to stress, decrease perceived stress, and improve overall health and well-being.

Methods

This mixed-methods quasi-experimental study used a pretest-posttest design with a comparison group.

Sample

The sample population for this study included newly licensed nurses in a nurse residency program at a large Midwestern healthcare organization. There were six different cohorts of newly licensed nurses; these cohorts started at different times throughout the year.

Four of the cohorts comprised the intervention group ($n = 125$) and received the mindfulness intervention and two of the cohorts comprised the comparison group ($n = 131$) as follows:

Mindfulness Intervention Group Cohorts

2020 July Cohort 21 ($n = 36$)

2020 September Cohort MICU ($n = 8$)

2020 October Cohort 22 ($n = 47$)

2021 January Cohort 23 ($n = 34$)

Comparison Group Cohorts

2021 April Cohort 24 ($n = 64$)

2021 July Cohort 25 ($n = 67$)

Inclusion/Exclusion Criteria

All newly licensed nurses in the nurse residency program were included in this study. Nurses not in the nurse residency program were excluded from this study.

Intervention

Interactive, 30-minute mindfulness intervention sessions were presented to participants, via WebEx, during three scheduled monthly meetings in the NRP. The mindfulness intervention consisted of a didactic component related to mindfulness practices (20 to 25 minutes) followed by immersion in a mindfulness practice exercise in 5 minutes or less. The four intervention cohorts received three mindfulness intervention sessions as follows: Introduction to Mindfulness, which included a three-step mindfulness exercise and 4-4-4 breathing; Mindfulness at Work, which included a belly-breathing exercise; and Mindful Listening, which was a group participation exercise. The researcher delivered the didactic portion of the interventions and then led the demonstration of the mindfulness

exercises. Participants actively engaged in the brief mindfulness exercise that followed the didactic portion of the interventions.

Introduction to Mindfulness

The Introduction to Mindfulness intervention presented mindfulness as an evidence-based strategy to promote resilience by bringing calm to the present moment. The evidence related to the benefits of mindfulness practice and the five essential elements for developing mindfulness were presented. Several different ways of how to be mindful were presented and then followed by the mindfulness exercise.

3-Step Mindfulness Exercise. The 3-Step Mindfulness exercise tool from PositivePsychology.com (Ackerman, 2020) was utilized in the *Introduction to Mindfulness* intervention and is as follows:

1. Step out of autopilot: In this moment, try to bring your awareness to what you are doing, thinking, and sensing.
2. Become aware of your breath: Right now, your only goal is to become aware of your breath.
3. Expand your awareness outward: Let your awareness spread outward. First to your body, then to your surroundings.

Participants were provided a 3-Step Mindfulness Worksheet that could be carried throughout the day to guide mindfulness practice and bring awareness to the present moment, to cultivate a mindful state.

4-4-4 Breathing or 1-Minute Breathing. This anxiety reducer was introduced as an exercise that could be done anywhere and anytime, standing up or sitting down. The script for the 4-4-4 breathing or 1-minute breathing exercise was as follows:

- Start by breathing in and out slowly.
- After a few seconds, practice the 4-4-4 breathing method.
- Inhale for a count of four, hold your breath for a count of four, and then exhale for a count of four.
- Let the breath flow in and out effortlessly; repeat four times (Esposito, 2015).

Mindfulness at Work

The mindfulness at work intervention addressed how to become more mindful in the context of a busy workday. Information was presented on how newly licensed nurses could apply the principles of mindfulness so that they could feel more present. Additionally, information was provided regarding how the principles of mindful practice might assist the new nurses in being more productive and was followed by the mindfulness exercise.

Belly-Breathing. Belly-breathing can aid in calming the body through slow, intentional breathing. Belly-breathing is free, can be done anywhere, and was easy to implement. Belly-breathing implemented at the onset of the day can support being in the present moment (Esposito, 2017). The script for the belly breathing exercise is as follows:

- Sit with your eyes closed and turn your attention to your breathing. Breathe naturally, preferably through the nostrils, without attempting to control your breath.
- Be aware of the sensation of the breath as it enters and leaves the nostrils. Place one hand on your belly, and the other on your chest. Take a deep breath for a count of four. Hold your breath for a count of four. Exhale for a count of four. The hand on your belly should go in as you inhale and move out as you exhale.

- Concentrate on your breath and forget everything else. Your mind will be very busy, and you may even feel that the meditation is making your mind busier, but the reality is you are just becoming more aware of how busy your mind is.
- Resist the temptation to follow the different thoughts as they arise and focus on the sensation of the breath. If you discover that your mind has wandered and is following your thoughts, immediately return it to the breath.
- Repeat this as many times as necessary until your mind settles on the breath. Do not wait to begin belly-breathing. The sooner you make this a daily habit, the quicker you will feel relaxed (Esposito, 2017).

Mindful Listening

A mindful listening exercise from the PositivePsychology.com tool kit (Ackerman, 2020) was utilized in the intervention part of this study. Mindful listening was a group exercise that helps to foster feelings of being seen and heard in individuals. Mindful listening can create an inner stillness and reduce biases and judgments. Additionally, mindful listening can enhance positive communication skills. The *Mindful Listening* exercise/script was as follows:

1. Invite each participant to think of one thing they are stressed about and one thing they look forward to.
2. Once each participant is finished, each participant takes a turn in sharing their story with the group.
3. Encourage each participant to direct attention to how it feels to speak, how it feels to talk about something stressful, and how it feels to share something positive.
4. Participants are then instructed to observe their own thoughts, feelings, and body

sensations both when talking and when listening.

5. After each participant has shared, the following debrief questions are addressed:
 - a. Did you notice any mind-wandering?
 - b. What helped you to bring your attention back to the present?
 - c. How would it feel if you set the intention to pay attention with curiosity, kindness, and acceptance to everything you said and everything you listened to? (Ackerman, 2020).

Measurement Instruments

Brief Resilience Scale (BRS)

The BRS instrument is a six-item scale designed to assess resilience or the ability to cope with difficulties (see Appendix A). Items on the BRS were selected to best represent the ability of an adult to “bounce back” or recover from stress (Smith et al., 2008). Respondents indicated how strongly they agree or disagree to each of the items on a 5-point Likert scale with 1 indicating *strongly disagree* and reflecting low resilience to 5 indicating *strongly agree* and reflecting higher resilience to stress. The BRS has strong psychometric properties and has been validated in two student samples; the tool demonstrates “good internal consistency and test-retest reliability” (Smith et al., 2008, p. 199). The BRS measures resilience and the ability to “bounce back” or recover from stress (Smith et al., 2008).

Mindful Attention Awareness Scale (MAAS)

The MAAS instrument is a 15-item scale designed to assess the awareness of and attention to the present moment (see Appendix B). Items on the MAAS inventory were selected to best represent the everyday life situations of an adult as it relates to awareness and attention to thoughts and feelings. This degree of attention and awareness reflected the

experience of mindfulness or mindlessness (Brown & Ryan, 2003). The frequency of determined mindful states is measured using a 6-point Likert scale. Respondents indicated what reflected their experience in the present moment by indicating 1 *almost always* to 6 *almost never*. The MAAS has strong psychometric properties and has been validated in samples of college students, in cancer patients, and in the community (Brown & Ryan, 2003).

Perceived Stress Scale (PSS)

The PSS is the most extensively used instrument for measuring perceived stress (see Appendix C). The PSS instrument is a 10-item scale and “is a measure of the degree to which situations in one’s life are appraised as stressful,” and items were designed to seek out “how unpredictable, uncontrollable, and overloaded respondents find their lives,” (Cohen, 1994, p. 1). The instrument also includes several items that directly inquire about current levels of experienced stress. The PSS has strong psychometric properties and

was designed for use in community samples with at least a junior high school education. The items are easy to understand, and the response alternatives are simple to grasp. Moreover, the questions are of a general nature and hence are relatively free of content specific to any subpopulation group. The questions in the PSS ask about feelings and thoughts during the last month. In each case, respondents are asked how often they felt a certain way. (Cohen, 1994, p. 1)

Demographic Questionnaire

Pretest Survey

The pretest survey included a demographic questionnaire to capture eight demographic items from each participant. These items included age range in years (18-24, 25-34, 35-44, 45-54, 55-64, and 65+), gender, nursing (Associate Degree in Nursing [ADN]

or Bachelor of Science in Nursing [BSN]), and indication of which nurse residency cohort they were enrolled in.

Health Related Questions. Additionally, the following questions were asked:

- Do you currently practice mindfulness? If so, how often? If so, what mindfulness practice?
- How would you rate your physical and mental health status? (self-reported that used a 0-100 scale range with 0 = *Worst your physical and mental health could be* to 100 = *Best your physical and mental health could be*).

Posttest Survey

The posttest survey included a questionnaire to capture five health-related question items from each participant. These items included the following:

- How would you rate your physical and mental health status? (self-reported that used a 0-100 scale range with 0 = *Worst your physical and mental health could be* to 100 = *Best your physical and mental health could be*).
- How often during the month of April do you recall practicing mindfulness?
- How often during the month of May do you recall practicing mindfulness?
- How often during the month of June do you recall practicing mindfulness?
- Do you perceive any barriers to mindfulness practice? If so, what barriers?

Procedure

Institutional Review Board (IRB)

This study was approved by the IRB at the study site (see Appendix D) as well as the Reliant IRB at the academic institution (see Appendix E). Once approved, an email was sent

by the NRP nurse manager to the nurse residents in each of the six NRP cohorts. This email contained the link to the consent and pre-survey in SurveyMonkey.

Data Collection

Consenting participants from the four intervention cohorts and one of two comparison cohorts received the pre-survey 1-2 weeks prior to the scheduled April 2021 NRP monthly meeting. The 2021 July cohort received the pre-survey 1-2 weeks prior to the scheduled July 2021 NRP monthly meeting. Once informed consent was obtained, participants created a unique, anonymous individual identification code (IIC) as follows: first two letters of their eldest parent's FIRST name (if N/A, enter XX), last two digits of their phone number, first to letters of their youngest parent's FIRST name (if N/A, enter XX), and first two digits of their address. This IIC was created to facilitate pairing of data and data analysis following the study. The pre- and post-survey measurements included the BRS, MAAS, PSS, and demographic questionnaires.

The mindfulness interventions were scheduled and delivered according to the new nurses' NRP monthly meeting schedules over a 3-month timeframe (April = first month, May = second month, and June = third month). Each of the four NRP intervention cohorts received the 30-minute mindfulness didactic session that included a mindfulness practice exercise/activity. Immediately following the NRP third monthly cohort meetings, the post-survey link was distributed to participants in each of five NRP cohorts (all intervention group cohorts and one comparison group cohort) via work email. Then, immediately following the September 2021 NRP monthly meeting, the post-survey link was distributed to the 2021 July comparison cohort via work email.

Data Analysis

Pre- and post-survey responses were collected in SurveyMonkey, and then exported to International Business Machines (IBM) Corporation Statistical Package for the Social Sciences (SPSS) Statistics for Windows version 27.0 (Armonk, NY) for analysis of the study data. Descriptive statistics were generated to describe the sample including frequency distribution of the demographic data. Post-survey paired sample responses ($n = 40$) to the demographic question regarding perceived barriers to mindfulness were analyzed for common themes. Descriptive statistics examined mean scale scores by total sample and paired sample for the BRS, MAAS, PSS, and S-RH scores in the intervention and comparison cohort groups. An independent samples t -test was used to compare the differences in BRS, MAAS, PSS, and S-RH scores among intervention versus comparison groups. Pearson's correlation coefficient between BRS, MAAS, PSS, and S-RH were generated to describe the strength of the relationships between the variables. In addition, and because of the small sample size, the non-parametric Mann-Whitney U test was used to compare change in the intervention and comparison group sample means for the BRS, MAAS, PSS, and S-RH. Lastly, Cronbach's Alpha was conducted to measure the internal consistency and reliability of the BRS, MAAS, and PSS tools used in this study.

Results

Nurse residents from six different NRP cohorts, four cohorts ($n = 125$) for the intervention group and two cohorts ($n = 131$) for the comparison group were invited to participate in this study. A total of 77 nurse residents from the four cohorts for the intervention group consented to the study and completed the pre-survey, and a total of 43 nurse residents from the intervention group completed the post-survey. A total of 66 nurse

residents from the two cohorts for the comparison group consented and completed the pre-survey, and a total of 40 nurse residents from the comparison group completed the post-survey. A total of 40 nurse residents completed the matched pre- and post-surveys, 19 nurse residents from the intervention group and 21 nurse residents from the comparison group. Demographics from the paired sample indicated participants primarily identified as the female gender (92.5%), with an age range of 18-24 years (45%), 25-34 years (40%), 35-44 years (7.5%), and 45-54 years (7.5%). One-third (32.5%) of the nurse residents had an Associate Degree in Nursing (ADN), and 67.5% of the nurse residents were Bachelor of Science in Nursing degree prepared. From the pre-survey, 53% of the intervention group and 62% of the comparison group nurse residents indicated participation in mindful practice. From the post survey, 68% of the intervention group and 43% of the comparison group identified barriers to mindful practice (see Table 1).

Table 1*Demographics of the Paired Mindfulness Intervention and Comparison Groups*

Variable	Intervention (<i>n</i> = 19)		Comparison (<i>n</i> = 21)	
	<i>n</i>	%	<i>n</i>	%
NRP Cohort				
2020 July	7	36.8		
2020 September MICU	1	5.3		
2020 October	7	36.8		
2021 January	4	21.1		
2021 April			15	71.4
2021 July			6	28.6
Age (years)				
18-24	8	42.1	10	47.6
25-34	9	47.4	7	33.3
35-44	1	5.3	2	9.5
45-54	1	5.3	2	9.5
55-64	0	0.0	0	0.0
65+	0	0.0	0	0.0
Gender				
Female	19	100.0	18	85.7
Male			3	14.3
Nursing Degree				
ADN	4	21.1	9	42.9
BSN	15	78.9	12	57.1
Mindful Practice				
Yes	10	52.6	13	61.9
No	9	47.4	8	38.1
Perceived Barriers to Mindful Practice				
Yes	13	68.4	9	42.9
No	6	47.4	12	57.1

Note. NRP = Nurse Residency Program; ADN = Associate Degree in Nursing; BSN = Bachelor of Science in Nursing.

Responses to the two open-ended questions in the pre-survey questionnaire regarding the use of mindful practice, “How often?” and “What mindfulness practice?” were examined. Slightly more than 44% of the respondents from the intervention group indicated mindful practice at least daily, slightly more than 44% at least weekly, and 11% at least monthly. Eighty-two percent of the respondents from the comparison group indicated mindful practice at least daily, 9% at least weekly, and 9% at least monthly. The participants identified the use of a variety of mindful practices that included focused breathing, meditation, guided meditation, listening to music, journaling, yoga, positive affirmations, and the use of *Headspace* and *Calm* mobile applications.

Responses to one open-ended question from the post-survey questionnaire regarding perceived barriers to mindful practice, “What barriers?” in both the paired intervention and comparison groups were examined. Several themes were consistent in both groups as follows: work/life imbalance, workload/work hours, lack of time, lack of motivation, stress, and distractions.

Mean scale scores and standard deviations by total sample and paired sample groups were calculated for pre-survey and post-survey BRS, MAAS, PSS, and S-RH. The total sample group and paired sample group means were not significantly different at baseline, and there were no significant differences from pre- to post-survey by total sample or by paired sample groups. Although not significant, the paired sample intervention group ($n = 19$) demonstrated improvement in mean scale scores from pre- to post-survey by increased resilience ($M = 3.36$ to $M = 3.47$) and increased self-rated health scores ($M = 66.26$ to $M = 72.95$), showed slightly lower mean scale scores from pre- to post-survey for mindful attention and awareness ($M = 3.71$ to $M = 3.57$), and demonstrated no change in mean scale

scores for perceived stress ($M = 1.81$ to $M = 1.81$). In contrast, the paired sample comparison group ($n = 21$) demonstrated a decline in mean scale scores from pre- to post-survey by decreased resilience ($M = 3.48$ to $M = 3.44$), decreased mindful attention and awareness ($M = 3.85$ to $M = 3.77$), decreased S-RH scores ($M = 67.33$ to $M = 65.38$), and increased perceived stress ($M = 1.76$ to $M = 1.86$; see Table 2).

The total sample intervention group ($n = 77$) demonstrated improvement in mean scale scores from pre- to post-survey by increased resilience ($M = 3.33$ to $M = 3.51$), increased mindful attention and awareness ($M = 3.81$ to $M = 3.85$), decreased perceived stress ($M = 1.87$ to $M = 1.71$), and increased self-rated health ($M = 66.17$ to $M = 71.70$). In contrast, the total sample comparison group ($n = 66$) demonstrated slightly increased resilience ($M = 3.55$ to $M = 3.58$), decreased mindful attention and awareness ($M = 4.03$ to $M = 4.01$), decreased self-rated health ($M = 70.11$ to $M = 70.05$), and increased perceived stress ($M = 1.66$ to $M = 1.69$; see Table 2).

Table 2*Mean Scale Scores by Total Sample and Paired Sample Groups*

	BRS Pre <i>M (SD)</i>	BRS Post <i>M (SD)</i>	MAAS Pre <i>M (SD)</i>	MAAS Post <i>M (SD)</i>	PSS Pre <i>M (SD)</i>	PSS Post <i>M (SD)</i>	S-RH Pre <i>M (SD)</i>	S-RH Post <i>M (SD)</i>
Paired Sample								
Intervention (<i>n</i> = 19)	3.36 (0.59)	3.47 (0.50)	3.70 (0.78)	3.57 (0.90)	1.81 (0.61)	1.81 (0.59)	66.26 (14.94)	72.95 (15.53)
Comparison (<i>n</i> = 21)	3.48 (0.60)	3.44 (0.60)	3.85 (0.93)	3.77 (0.78)	1.76 (0.61)	1.86 (0.65)	67.33 (18.39)	65.38 (18.50)
Total Sample								
Intervention	3.33 (0.65) (<i>n</i> = 77)	3.51 (0.63) (<i>n</i> = 43)	3.81 (0.86) (<i>n</i> = 76)	3.85 (0.99) (<i>n</i> = 42)	1.87 (0.59) (<i>n</i> = 76)	1.71 (0.61) (<i>n</i> = 41)	66.17 (18.11) (<i>n</i> = 77)	71.70 (17.45) (<i>n</i> = 43)
Comparison	3.55 (0.51) (<i>n</i> = 66)	3.58 (0.59) (<i>n</i> = 40)	4.03 (0.94) (<i>n</i> = 66)	4.01 (0.77) (<i>n</i> = 40)	1.66 (0.55) (<i>n</i> = 66)	1.69 (0.68) (<i>n</i> = 40)	70.11 (16.74) (<i>n</i> = 66)	70.05 (20.51) (<i>n</i> = 40)

Note. BRS = Brief Resilience Scale; MAAS = Mindful Attention Awareness Scale; PSS = Perceived Stress Scale; S-RH = Self-Rated Health.

Cronbach's alpha values were generated to evaluate the internal consistency (reliability) of the BRS, MAAS, and PSS tools used in this study. The BRS inventory was found to be highly reliable (6 items, $\alpha = .82$). The MAAS was found to be highly reliable (15 items, $\alpha = .92$), and the PSS was found to be highly reliable (10 items, $\alpha = .88$). Pearson's r correlation coefficient statistics were generated and indicated the strength and direction of the relationships between resilience, mindful attention and awareness, perceived stress, and self-rated health. The relationship between resilience and mindful attention awareness was positively correlated $r(38) = .65, p < .01$; between resilience and perceived stress was negatively correlated $r(38) = -.57, p < .01$; and the relationship between resilience and self-rated health was positively correlated $r(38) = .42, p < .01$. The relationship between mindful attention awareness and perceived stress was negatively correlated $r(38) = -.57, p < .01$; between mindful attention awareness and self-rated health was positively correlated $r(38) = .32, p < .05$; and between perceived stress and self-rated health was negatively correlated $r(38) = -.50, p = .01$ (see Table 3).

Table 3*Pearson's r Correlations Between BRS, MAAS, PSS, and S-RH*

		Pre- Intervention BRS	Pre- Intervention MAAS	Pre- Intervention PSS	Pre- Intervention S-RH
Pre- Intervention BRS	Pearson Correlation	1	.65**	-.57**	.42**
	Sig. (2-tailed)		.00	.00	.01
	N	40	40	40	40
Pre- Intervention MAAS	Pearson Correlation	.65**	1	-.57**	.32*
	Sig. (2-tailed)	.00		.00	.04
	N	40	40	40	40
Pre- Intervention PSS	Pearson Correlation	-.57**	-.57*	1	-.50*
	Sig. (2-tailed)	.00	.00		.00
	N	40	40	40	40
Pre- Intervention S-RH	Pearson Correlation	.42**	.32*	-.50**	1
	Sig. (2-tailed)	.01	.04	.00	
	N	40	40	40	40

Note. BRS = Brief Resilience Scale; MAAS = Mindful Attention Awareness Scale; PSS = Perceived Stress Scale; S-RH = Self-Rated Health.

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

There was no significant difference in the change in the paired intervention group compared to the paired comparison group using independent samples *t*-test for the BRS scores, $t(38) = 1.01, p = .317$; MAAS scores, $t(38) = -0.25, p = .807$; PSS scores, $t(38) = -0.59, p = .563$; and S-RH scores, $t(38) = 1.72, p = .094$. Although not significant, the S-RH score differences demonstrated the greatest change in the intervention group compared to the comparison group (see Table 4). Also, a Mann-Whitney U test (Wilcoxon rank-sum test) was conducted for a smaller sample size and unknown normalcy of distribution and demonstrated no significant

difference in change in the BRS $U = 40, p = .651$; MAAS $U = 40, p = .786$; PSS $U = 40, p = .903$; and S-RH $U = 40, p = .192$.

Table 4

Differences in BRS, MAAS, PSS, and S-RH Scores Among Intervention vs. Comparison Group With Independent Samples t-Test

Variable	Group	Pretest <i>M (SD)</i>	Posttest <i>M (SD)</i>	Difference of Pre- to Post- test <i>M (SD)</i>	<i>t (df)</i>	<i>p</i>
BRS	Intervention	3.36 (0.59)	3.47 (0.50)	0.11 (0.10)	1.01(38)	.317
	Comparison	3.48 (0.60)	3.44 (0.60)	-0.04 (0.00)		
MAAS	Intervention	3.70 (0.78)	3.58 (0.90)	-0.13 (0.12)	-0.25 (38)	.807
	Comparison	3.85 (0.93)	3.77 (0.78)	-0.09 (0.15)		
PSS	Intervention	1.80 (0.61)	1.81 (0.60)	0.01 (0.02)	-0.59 (38)	.563
	Comparison	1.76 (0.61)	1.86 (0.65)	0.10 (0.04)		
S-RH	Intervention	66.26 (14.94)	72.95 (15.53)	6.69 (0.59)	1.72 (38)	.094
	Comparison	67.33 (18.39)	65.38 (18.50)	-1.95 (0.10)		

Note. BRS = Brief Resilience Scale; MAAS = Mindful Attention Awareness Scale; PSS = Perceived Stress Scale; S-RH = Self-Rated Health.

Discussion

The study hypothesis was based on the anticipation that the mindfulness intervention would increase mindful attention and awareness, increase resilience to stress, decrease perceived stress, and improve overall nurse well-being (self-rated physical/mental health). The paired intervention group ($n = 19$) demonstrated improvement in mean scale scores from pre- to post-survey by increased resilience and increased self-reported health scores, and decreased mindful

attention and awareness, with slightly increased perceived stress. In contrast, the comparison group ($n = 21$) demonstrated worse outcomes in mean scale scores from pre- to post-survey by decreased resilience, decreased mindful attention and awareness, decreased self-rated health scores, and increased perceived stress (see Table 2). Although the differences in BRS, MAAS, PSS, and S-RH scores among the intervention versus comparison group were not statistically significant, the paired sample intervention group demonstrated the improvement in the direction of the study variables for resilience and self-rated health (see Table 2).

The total sample intervention group ($n = 77$) demonstrated improvement in mean scale scores from pre- to post-survey by increased resilience, increased mindful attention and awareness, increased self-rated health, and decreased perceived stress. The total sample comparison group demonstrated inferior results with a miniscule change in increased resilience, decreased mindful attention and awareness, increased perceived stress, and decreased self-rated health scores, (see Table 2). Although not statistically significant, the findings in the total sample intervention group are promising, given the clinical significance. The existing literature showed that there is a link between mindfulness, stress, and burnout. Gauthier et al. (2015) found that a mindfulness intervention was negatively correlated with emotional exhaustion and stress. Hilcove et al. (2021) concluded that mindfulness-based interventions were an effective self-care practice that can be utilized to mitigate the negative effects of stress and burnout.

Although previous research has examined the impact of the use of a mindfulness intervention program on newly licensed nurses in a nurse residency program, this study was unique in the delivery and timing of the mindfulness intervention. The previous research implemented in-person, face-to-face, mindfulness intervention programs (Brulette et al., 2020; Chesak et al., 2019; Chesak et al., 2021; Kulka et al., 2018). This intervention was different from

previous interventions because the intervention was delivered virtually and was conducted via the use of WebEx technology. This technology proved to be beneficial to use during a worldwide pandemic to promote safety. In addition, a virtual program could help make mindfulness instruction more accessible, less time consuming, and more feasible for nurses working long shifts. Future research would benefit from exploring the benefits of virtual mindfulness interventions for newly licensed nurses in a nurse residency program.

The non-significant finding in this study may have been impacted by several factors. First and foremost, the intervention began amid a wave in the COVID-19 pandemic and participant attendance at the onset of the study was marginal. Also, at baseline, more than half of the participants in the intervention cohort reported the use of mindful practices on a regular basis. Given these factors, the improvements seen in mindful attention and awareness, resilience, and self-rated health, and decreased perceived stress suggest promise for the future.

The COVID-19 pandemic appeared to have a negative impact on participation of intervention modalities at the beginning whereas the attendance rate was low at the start of the intervention (58% attendance in April), attendance improved as the intervention progressed (65% attendance in May and 77% attendance in June). This pattern in nurse resident attendance at the monthly meetings directly coincided with the wave in the COVID-19 pandemic; this wave began late February and peaked the second week of April during the first NRP monthly meetings with the implementation of the mindfulness intervention. As the wave of the pandemic ebbed, the attendance at the second and third NRP monthly meetings increased. The nurse residents' responses to the perceived barriers to mindful practice may have also represented the reasons for the low attendance. Work/life imbalance, a heavy workload and long work hours, lack of time, lack of motivation, stress, and too many distractions were common themes reported as perceived

barriers to mindful practice. Also, during the timeframe from the beginning of the mindfulness intervention in April to the conclusion of the study intervention in June (about 90 days), the nurse resident attrition rate from the intervention cohort was 13% ($n = 16$).

COVID-19 could have directly impacted the participants' identified barriers to mindfulness practice (work/life imbalance, heavy workload, long work hours, lack of time, lack of motivation, stress, and distractions), and the attrition rate from the NRP, given the links between high levels of stress in healthcare professionals during the pandemic (Huffman et al., 2021). Despite the newly licensed nurses' stress levels experienced during the height of the third wave of the COVID-19 pandemic, the mindfulness intervention neutralized the level of perceived stress in the intervention group while the comparison group reported worse stress in this current study. Therefore, this information sheds further light on the benefit of the mindfulness intervention in this study, given that the participants were working through a pandemic that had a detrimental effect on participants' well-being. Future research would benefit from examining the impact of this intervention when participants are not working amidst a worldwide pandemic.

The results of this study were comparable to other studies in the literature that investigated mindful attention and awareness, resilience to stress, and perceived stress in newly graduated registered nurses in a nurse residency program. Like this study, most of the other studies that used a mindfulness intervention did not produce statistically significant results for mindful attention and awareness, resilience to stress, and perceived stress, yet still enhanced mindful attention and awareness (Bruette et al., 2020; Chesak et al., 2015; Kulka et al., 2018) and decreased perceived stress (Chesak et al., 2015). However, one of the more recent studies reported that the mindfulness intervention group had statistically significant improvements in

stress, resilience, and mindfulness as well as significant differences between the intervention and comparison groups for resilience, mindful attention and awareness, and perceived stress (Chesak et al., 2021). Of importance, Chesak et al. (2021) discussed that the intervention and study design were changed from a prior study (this change included more mindfulness sessions, schedule changes to accommodate attendance, and longer-term outcome measures). Compared to the design of this study, consideration needs to be given to an increased dose of the mindfulness intervention over a longer time frame as well as creative scheduling to maximize attendance.

Limitations

The question in the pre- and post-surveys that asked participants to self-rate physical and mental health by providing a score on a 0-100 scale range (0 = *Worst your physical and mental health could be* to 100 = *Best your physical and mental health could be*) was not a validated or tested measure. In the pre-survey participants were instructed to create their own unique II Code. Then, in the post-survey participants were provided the same instructions to enter the same unique II Code as entered in the pre-survey. The use of this II Code process to pair participants pre- to post-surveys proved to be a flaw in this study and resulted in a very small, paired intervention group ($n = 19$) and paired comparison group ($n = 21$).

Nurse residents' marginal attendance and participation in the monthly NPR meetings was directly influenced by the wave in the COVID-19 pandemic and competing demands. During the month of March, prior to the first NRP monthly meeting with the implementation of the mindfulness intervention, leadership from the organization (research education and development director and the NRP nurse manager) shared their concerns over the possibility of the nurse residency program being placed on "pause" due to the current wave in the COVID-19 pandemic. The alarming surge in COVID-19 cases and increased COVID-19 hospitalizations throughout

the month of March 2021 threatened discontinuation of the NRP monthly meetings. However, organizational leadership did not “pause” NRP monthly meetings in support of the nurse residents’ participation in the mindfulness intervention. In a compromise, the NPR meeting time was cut from four hours in length to about an hour, which allowed for a few announcements and the delivery of the mindfulness intervention.

Additional limitations of this study included participants were not randomly assigned to the intervention or comparison group. This study focused on the population of newly licensed nurses in a nurse residency program from one large, Midwestern healthcare organization. Therefore, the results cannot be generalized to other organizations with different populations or situations.

Implications

Attendance at the NPR mindfulness interventions was marginal yet improved over time as shown by a 58% attendance rate in the first month, a 65% attendance rate in the second month, and a 77% attendance rate in the third month. Strategies regarding future delivery of NRP interventions as “hybrid” might be considered to reach all nurse residents in the program. A video-conferencing platform, such as WebEx, could be used to record the NRP meetings. Then a link to the virtual recording could be provided to all nurse residents to allow viewing at a later time.

Future studies should utilize an increased dose of the mindfulness intervention over a longer span of time. The mindfulness intervention time was very short, limited to one 30- to 60-minute meeting per month for three months. Yet the mindfulness intervention showed promise toward building mindful attention and awareness, increasing resilience, decreasing perceived stress, and promoting well-being in the nurse residents. Mindfulness practice activities might be

threaded throughout the nurse residency program and offered as part of each monthly NPR meeting. Ideally, organizational leadership could invest in finding ways to support mindful practice for all nurses to improve the overall well-being of the nursing workforce. In turn, this investment would align with the *Healthy Nurse Healthy Nation Grand Challenge* “designed to transform the health of the nation by improving the health of the nation’s 4 million registered nurses” (Healthy Nurse Healthy Nation [HNHN], n.d.). Ultimately, mindful practice may result in a healthier nurse workforce, decreased nurse turnover, increased quality patient-centered care, and decreased overall cost of healthcare in general.

Future studies should employ a larger sample size to detect a difference in the means more effectively between the intervention and comparison group. Also, a different way to pair pre- to post-test data should be identified and utilized. This study was limited to one nurse residency program from one large Midwestern healthcare organization. Future studies might seek to include nurse residency programs from multiple sites and organizations.

Conclusion

This study demonstrated success in the delivery of a mindfulness intervention to newly licensed nurses in a nurse residency program during the height of the COVID-19 pandemic. The video-conferencing platform allowed for the researcher to deliver the mindfulness intervention to the nurse residents virtually, instead of not at all. Although the results of this study did not show a statistically significant effect on increased mindful attention and awareness, increased resilience to stress, decreased perceived stress, or increased self-rated health, the paired sample intervention group and total sample intervention group showed promise. The finding that the mindfulness intervention neutralized the levels of perceived stress in the intervention group was clinically significant. Use mindfulness strategies/interventions during the nurse residency

monthly meetings could have a positive impact on nurses' mindful attention and awareness, build resilience, decrease perceived stress, and affect an overall improvement in nurses' well-being (physical and mental health). In turn, these gains might promote nurse retention, improve quality patient-centered outcomes, and ultimately, contribute to the overall health of the nation.

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Appendix A: Brief Resilience Scale (BRS)

Respond to each statement below <u>by circling one answer per row.</u>						
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
BRS 1	I tend to bounce back quickly after hard times.	1	2	3	4	5
BRS 2	I have a hard time making it through stressful events.	5	4	3	2	1
BRS 3	It does not take me long to recover from a stressful event.	1	2	3	4	5
BRS 4	It is hard for me to snap back when something bad happens.	5	4	3	2	1
BRS 5	I usually come through difficult times with little trouble.	1	2	3	4	5
BRS 6	I tend to take a long time to get over setbacks in my life.	5	4	3	2	1

Scoring: Add the value (1-5) of your responses for all six items, creating a range from 6-30.

Divide the sum by the total number of questions answered (6) for your final score.

Total score: _____ / 6

My score: _____ (average)

BRS Score	Interpretation
1.00 - 2.99	Low resilience
3.00 - 4.30	Normal resilience
4.31 - 5.00	High resilience

Note. From “The Brief Resilience Scale: Assessing the Ability to Bounce Back” by B.W. Smith, J. Dalen, K. Wiggins, E. Tooley, P. Christopher, and J. Bernard, 2008, *International Journal of Behavioral Medicine*, 15, p. 196 (<https://doi.org/10.1080/10705500802222972>). Copyright © Taylor & Francis Group, LLC.

Appendix B: Mindful Attention Awareness Scale (MAAS)

Day-to-Day Experiences

Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently you currently have each experience. Please answer according to what *really reflects* your experience rather than what you think your experience should be. Please treat each item separately from every other item.

1	2	3	4	5	6
Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never

I could be experiencing some emotion and not be conscious of it until sometime later.	1	2	3	4	5	6
I break or spill things because of carelessness, not paying attention, or thinking of something else.	1	2	3	4	5	6
I find it difficult to stay focused on what's happening in the present.	1	2	3	4	5	6
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	1	2	3	4	5	6
I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	1	2	3	4	5	6
I forgot a person's name almost as soon as I've been told it for the first time.	1	2	3	4	5	6
It seems I am "running on automatic," without much awareness of what I'm doing.	1	2	3	4	5	6
I rush through activities without being really attentive to them.	1	2	3	4	5	6
I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.	1	2	3	4	5	6
I do jobs or tasks automatically, without being aware of what I'm doing.	1	2	3	4	5	6
I find myself listening to someone with one ear, doing something else at the same time.	1	2	3	4	5	6
I drive places on "automatic pilot" and then wonder why I went there.	1	2	3	4	5	6
I find myself preoccupied with the future or the past.	1	2	3	4	5	6

I find myself doing things without paying attention.	1	2	3	4	5	6
I snack without being aware that I'm eating.	1	2	3	4	5	6

Note. Scoring information: To score the scale, simply compute a mean of the 15 items. Higher scores reflect higher levels of dispositional mindfulness. From “The Benefits of Being Present: Mindfulness and its Role in Psychological Well-Being,” by K. W. Brown, and R. M. Ryan, 2003, *Journal of Personality and Social Psychology*, 84, 822-848, p. 826 (<https://doi.org/10.1037/0022-3514.84.4.822>).

Appendix C: Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way.

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly?..... **0 1 2 3 4**
2. In the last month, how often have you felt that you were unable to control the important things in your life?.....**0 1 2 3 4**
3. In the last month, how often have you felt nervous and “stressed”?**0 1 2 3 4**
4. In the last month, how often have you felt confident about your ability to handle your Personal problems?**0 1 2 3 4**
5. In the last month, how often have you felt that things were going your way?.....**0 1 2 3 4**
6. In the last month, how often have you found that you could not cope with all the things that you had to do?**0 1 2 3 4**
7. In the last month, how often have you been able to control irritations in your life?.....**0 1 2 3 4**
8. In the last month, how often have you felt that you were on top of things? **0 1 2 3 4**
9. In the last month, how often have you been angered because of things that were outside of your control?.....**0 1 2 3 4**
10. In the last month, how often have you felt difficulties were piling up so high that you Could not overcome them?**0 1 2 3 4**

Note. Please feel free to use the Perceived Stress Scale for your research. From “A Global Measure of Perceived Stress,” by S. Cohen, T. Kamarck, and R. Mermelstein, 1983, *Journal of Health and Social Behavior*, 24(4), p. 394 (<https://doi-org.ezproxy.emich.edu/10.2307/2136404>).

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Appendix D: Study Site IRB



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Phone: 734-712-3456
stjoeshealth.org

March 19, 2021

Vicki Washington, MNS, RN, APRN, ACNS-BC, DNP Eastern Michigan University
School of Nursing, Ypsilanti, MI 48197

Dear Ms. Washington:

On behalf of the SJMHS Institutional Review Board #1 (IRB#1), review via the expedited method was conducted on **03/18/2021** for the following study entitled: **Evaluating the Impact of Mindfulness Interventions on the Promotion of Mindfulness and the Resilience to Stress in Newly Licensed Nurses in a Nurse Residency Program E-21-947** was assigned for IRB tracking purposes.

Your study was approved under the exempt category below that the IRB determined met all the specified criteria.

- Category **##3(i)(c)** Research involving benign behavioral interventions in conjunction with the collection of information from an adult participant through verbal or written responses (including data entry) if the participant prospectively agrees to the intervention and information collection and the following criteria is met; information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects.

Please note, if a change is made which renders the project to no longer meet the criteria for exemption noted above, or if the study objective changes so that a new hypotheses or aim is being investigated, submit the applicable form to the IRB for a new study determination.

The SJMHS IRB operates in accordance with Good Clinical Practice Guidelines and applicable laws and regulations. If there is any aspect of the policies and procedures about which you would like further information please visit the SJMHS IRB website at

<https://www.stjoeshealth.org/about-us/institutional-review-board/st-joseph-mercy-ann-arbor/>.

Failure to comply with SJMH policy is in violation of federal regulations and could result in withdrawal of approval and/or funding for your project.

Sincerely,

Liz LeMay, MBA
IRB#1
Administrator
SJMHS Research Compliance
Department(734) 712-2305

Appendix E: Reliant IRB

IN WITNESS WHEREOF, each Party accepts the terms herein and deems this Agreement effective as of the date above.

**Trinity Health-Michigan d/b/a
Saint Joseph Mercy Health System**
"IRB of Record"

 3/22/2021
(Authorized Signature)

Name: David Vandenberg, MD, SFHM

Title: Vice President and
Chief Medical Officer

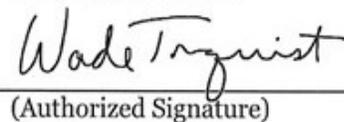
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Eastern Michigan University
"Relying Institution"

 03-19-21
(Authorized Signature)

Name: Wade Tornquist, Ph.D.

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