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Impact of Mindfulness-based Interventions on Nursing Burnout: An Integrative

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Burnout is characterized by feelings of energy depletion or exhaustion, feelings of negativism or increased mental distance related to the job, and reduced professional efficacy (World Health Organization, 2019). Burnout is considered by the World Health Organization as an occupational phenomena specifically resulting from chronic workplace stress that has not been successfully managed, and is not related to other life events. Adverse job characteristics and unique demands of the nursing occupation negatively contribute to burnout amongst nurses (Dall'Ora et al., 2020; Nolte et al., 2017). The American Psychological Association describes mindfulness as the practice of cultivating moment to moment awareness of sensations, thoughts, and feelings without judging or reacting to them. Mindfulness has been linked to enhancing protective factors against burnout (Ahmed & Amit., 2024). Given the mental distance and energy depletion that burnout can cause in the workplace, this manuscript provides an integrative review and synthesis of studies in the literature about the usefulness of mindfulness-based interventions in addressing burnout in the nursing profession.

Background

Burnout in the Nursing Profession

Burnout in the nursing profession is described as 3 specific components of emotional exhaustion, depersonalization, and reduced personal accomplishment (Gómez-Urquiza et al., 2020). A meta-analysis studying the prevalence of burnout in 1600 pediatric nurses found 31% to be experiencing emotional exhaustion, 21% experiencing depersonalization, and 39% experiencing decreased personal accomplishment (Pradas-Hernández et al., 2018). Adverse job characteristics such as staffing shortages, high workload, working long shifts, low schedule flexibility, time pressure, negative nurse-physician relationship, low autonomy, poor supervisor or leadership support, and negative team relationship were all associated with burnout in the nursing profession (Dall'Ora et al., 2020).

In a profession already prone to burnout, the recent COVID-19 pandemic only exacerbated the difficulties nurses face in caring for the sick (Ge et al., 2023). Nursing burnout, particularly inpatient settings, has been associated with significant increases in organizational turnover rate with financial consequences (Kelly et al., 2021). A loss of one nurse is estimated to cost an organization $11,000 to $90,000 and this does not include associated costs related to unfilled vacancies or training new staff (Halter et al., 2017). Other areas of negative impact are patient safety events such as increased medication errors and patient falls and quality care concerns such as increasing infection rates (Dall'Ora et al., 2020). The consequences of inaction in addressing burnout in the nursing profession are multifold - significantly impacting the mental health of nurses, patient care, and the healthcare system as a whole (Jun et al., 2021).

Mindfulness-based Interventions

While systematic changes to the healthcare system should be heavily considered in addressing burnout, it can also be valuable to look into interventions supporting the psychological wellbeing in nurses so that intrinsic qualities can be strengthened to mitigate the impact of stress on the nursing profession. Increased mindfulness and resilience in individuals has been linked to decreased feelings of burnout and it can be valuable to look into bolstering these protective factors (Ahmed & Amit., 2024). Mindfulness practices, which can enhance resilience and mindfulness, can be exercised in various activities (Oh et al., 2022). Jon Kabat-Zinn, pioneer of the 8-week Mindfulness Based Stress Reduction (MBSR) program, describes mindfulness as the awareness that arises "through paying attention, on purpose, in the present moment, non-judgmentally" (Kabat-Zinn, 2013, p. 599). Mindfulness based intervention programs such as MBSR have been shown to help with stress reduction in healthcare professionals, however little is known about the successful implementation of MBI programs specifically for nurses and how MBIs contribute to burnout reduction in the nursing profession (Knudsen et al., 2023).

PICO(T) Question

Given the need for support among registered nurses in reducing consequences of burnout and the emerging data about mindfulness based practices as a tool to enhance resilience, this integrated review seeks to understand if education on mindfulness based interventions can improve self-reported burnout symptoms, promote well-being and therefore improve resiliency in registered nurses.

Review of the Literature

Literature search strategy

A thorough search of the literature was done to review evidence on the topic of mindfulness education for nurses and its effect on wellbeing and burnout in the nursing profession. The search terms used on databases were: Nurs* AND (Wellbeing OR Burnout OR Resilienc*) AND Mindfulness. Articles were searched in the following databases at the University of San Francisco Library: CINAHL, Pubmed, APA PsychInfo, and SCOPUS. The collective search yielded a total of 1007 articles with 266 articles from CINAHL, 113 articles from PubMed, 161 articles from APA PsychInfo, and 467 articles from SCOPUS. A university librarian was consulted during the literature search process to support an extensive search and additional literature was explored through bibliography reviews.

Study Selection

Abstracts of articles were reviewed for relevance to the PICO question and selected through inclusion and exclusion criteria. Inclusion criteria consisted of peer reviewed journals within the past 9 years (2015-2024), articles pertaining to the topics of wellbeing or burnout in the population of nurses and mindfulness interventions, and articles with English and full text availability. Excluded were articles that were duplicates, not pertaining to the topic of mindfulness or nurses, or studies that included other types of healthcare professionals. After exclusion and inclusion criteria were applied, 20 articles were evaluated for this integrative review.

Summary of the Evidence

Articles were appraised and evaluated using the John Hopkins Nurse Evidence-Based Practice appraisal tools and can be found in Appendix A (Dang et al., 2022). All articles included in this review were found to be of good quality. Six articles were evaluated as Level I evidence, five were Level II, six were Level III, and three were Level V. Pertinent data was organized in an evaluation table and a synthesis matrix was used to analyze, compare, and contrast the 20 articles (Dang et al., 2022). The data was then presented in a narrative format. In reviewing the literature, the following themes emerged: transforming perspectives through mindfulness training, mindfulness based intervention (MBI) on stress and burnout, the role of MBI in influencing resilience factors, and MBI effects on relationships.

Transforming Perspectives through Mindfulness Training

Mindfulness training teaches nurses to accept their own feelings and thoughts and skillfully contextualize stressful experiences in more manageable ways. Wu et al. (2021), a meta synthesis of seven qualitative studies, revealed mindfulness practice to be an overall enjoyable experience for nurses that help with stress conceptualization. Nurses attribute mindfulness interventions to helping them recognize when they need to focus on self-care, reflect, and take a step back from clinical situations (Wu et al., 2021). In addition, nurses describe mindfulness as a tool to skillfully manage harmful or negative emotions that arise within themselves, helping them calm down and emotionally regulate through stressful, complex situations (Guillaumie et al., 2016; Penque and Rosen 2024; Wu et al., 2021).

Mindfulness based interventions help nurses enhance self-care awareness. A qualitative descriptive study of nurses participating in a Mindfulness Pledge Project reveals mindful self-acceptance helps foster self-awareness and compassion in difficult situations (Horton‑Deutsch et al., 2020). Mindfulness based interventions help nurses be aware of their self-care needs and reframe situations with a more optimistic perspective (Horton‑Deutsch et

al., 2020). Penque and Rosen (2024) report the theme of registered nurses prioritizing loving themselves after MBI intervention, that it's okay to appreciate oneself and give something of value such as developing healthy self-care habits and making changes to unhealthy habits.

Mindfulness Based Interventions on Stress and Burnout

Perceived stress in the workplace has been positively correlated with burnout in healthcare professionals (Abdollahi et al., 2020; Devebakan, 2019). There is statistically significant evidence of MBIs reducing symptoms of self-reported perceived stress amongst inpatient nurses across the globe in multiple RCTs and meta-analysis (Chi et al., 2023; Ghawadra et al., 2020, Kang & Myung, 2021; Lin et al., 2018; Ramachandran et al., 2022; Wang et al., 2023). Similarly, a month-long quality improvement study implementing a 5-minute mindfulness meditation for pediatric intensive care unit nurses found MBIs to decrease reports of stress on the nursing stress scale compared to pre-intervention levels (Gauthier et al., 2015). A study by McNulty and colleagues (2022) introduced mindfulness training to nurses during their new graduate residency program. This study described a mindfulness training curriculum that covered topics such as Introduction to Mindfulness, Compassion and Self-Compassion, Resilience, and Emotional Self-regulation. After six months, there were statistically significant reductions in perceived stress that led authors to conclude that mindfulness classes taught to new graduate nurses were effective (McNulty et al., 2022). Collectively, these perceived stress studies involved nurse participants with a range of experience levels and took place in various inpatient specialties.

Burnout can be a manifestation of feelings of frustration, depressed mood, and exhaustion arising as negative aspects of caring. Burnout symptoms in nurses amongst articles in this integrated review were measured via self-reported scales. The literature supports significant reductions in burnout symptoms amongst nurses after MBIs. A quasi-experimental study of a brief mindful self-care and resilience training reported significant reductions in burnout symptoms of depression via the Depression, Anxiety, and Stress Scale (Slatyer et al., 2017).

The brief MSCR training for nurses consisted of a full day education workshop on compassion fatigue and mindfulness practices along with three weekly 1.5 hour follow-up sessions (Slatyer et al., 2017). Similarly, McNulty et. al. (2022) reported MBIs to reduce burnout symptoms on the Oldenburg Burnout Inventory and Wang et. al. (2023) reported MBIs to reduce burnout symptoms immediately after intervention although this was not shown long term. When looking at subscales of burnout, Sulosaari et al. (2022) and Bianchini & Copeland (2020) reported reductions in emotional exhaustion and depersonalization, however two other articles, Gauthier et al. (2015) and Ramachandran et al. (2022), reported no observable trend or statistical difference.

The Role of MBI in Influencing Self-Protective Factors of Wellbeing

Understanding the role of MBIs on influencing self-protective factors of resilience such as self-compassion and mindfulness helps investigate how MBIs could actively support nurses. Self-compassion as defined by Neff (2024) includes the 3 components of: 1) *self-kindness*, the ability to be friendly and understanding toward the self during stress and failure as opposed to being self-criticizing, 2) *common humanity*, the ability to recognize one's suffering as part of the common, shared human experience in which failure and imperfections form part of normality as opposed to viewing suffering as personal and isolated, and (3) *mindfulness*, the ability to take an open, accepting, and nonjudgmental stance toward the self and suffering, as opposed to overidentification and fusion with the self. In a quasi-experimental study of mindfulness and self-compassion training for registered nurses, Mahon et al. (2017) found MBIs to increase compassion subscales of kindness and mindfulness in nurses after both a six week and an eight week intervention. McNulty et al. (2022) and Ficarra (2023) also reported increases in mindfulness scores for in-patient nurses, new graduate nurses, and advanced practice registered nurses after MBI intervention. Lastly, brief mindful self-care and resilience training showed increases in the protective factors of compassion satisfaction, self-compassion, and quality of life in nurses (Penque, 2019; Slatyer et al., 2017). Compassion satisfaction indicates

an individual's positive adjustment to work derived from the pleasure of caring for others and the sense of performing well. Nurses are by no means short of compassion for others, however mindfulness training has the potential to increase a nurse's self-compassion and help them mindfully navigate through complex experiences of caring for others (Guillaumie et al., 2016; Penque, 2019).

MBI Effects on Relationships

Mindfulness training, often viewed as individually beneficial, can also impact relationships and the broader community beyond the individual nurse. After undertaking MBIs, nurses expressed a sense of gratitude for others, valuing mindfulness facilitators and organizational acknowledgment for work-related stress within their occupation, feeling more connected with others, and being able to be more supportive when colleagues were experiencing difficult situations (Guillaumie et al., 2016; Rosen & Penque, 2022; Penque, 2019; Wu et al., 2021). Mindfulness increased awareness of the self as well as the environment and others which contributed to these feelings of gratitude when reflected upon post intervention (Penque & Rosen, 2024). With the introduction of the Mindfulness Pledge Project, nurses reported being able to expand on the qualities of self-awareness and nurturing self-compassion, radiating those same attributes in their interactions with others (Horton‑Deutsch et al., 2020). Nurses attributed the pledge to creating a shift in the unit's culture to one with better teamwork and a healthier work environment (Horton‑Deutsch et al., 2020).

Synthesis of Evidence

All articles were of good quality and the majority were level I, II, and III pieces of evidence. This indicates that studies were mostly research based and represented a diverse range of quantitative, qualitative, and mixed methodologies. All 7 systematic reviews and meta synthesis analyzed involved a robust search through at least 4 online databases in their methodologies. One criticism is the range in sample sizes in single studies, which were as low as 9 participants in 2 studies, Horton‑Deutsch et al. (2020) and Penque & Rosen and (2022), and as high as 200

participants in McNutly et al. (2022). The smaller sample sizes may be explained by the fact that qualitative and mixed methodology studies are types of studies that tend to focus on data saturation and depth of experiences, allowing smaller sample sizes. Outcomes variables in qualitative studies were measured via validated self-reported scales which give insight into a person's own experience but can be limited by self-reporting biases.

The literature supports the efficacy of MBIs in reducing perceived stress and burnout, while also increasing the protective factors of self-compassion, mindfulness, and compassion satisfaction to enhance resilience among nurses. In addition, MBIs are effective in improving gratitude, attitudes toward self care, emotional regulation, and fostering connections with others. Effective components of mindfulness training include: 1) having a skilled mindfulness instructor, 2) incorporating practices of mindfulness exercises, 3) including an educational component explaining philosophies of mindfulness, and 4) including a team component to foster connection. Based on these themes, the literature supports educating nurses about MBIs to proactively mitigate burnout symptoms and enhance resilience.

Limitations

Differences in MBI implementation should be considered when discussing limitations to intervention recommendations. Varying intervention lengths in studies, ranging from a 1 hour online module to 8 week in-person training, hinder specific recommendations on the optimal duration of mindfulness education to produce beneficial outcomes. Four weeks and eight weeks were the most frequent lengths of intervention duration in this review. Lack of consistent attendance and attrition rates for weeks-long mindfulness programs were common issues in multiple studies. Both online and in-person modalities of MBIs were included in this review, however there were no studies comparing the two.

This review also came across articles that reported mixed or inconclusive outcomes of MBIs in two areas. First, there was largely mixed evidence of MBI programs having significant effects on specific outcomes of anxiety, depression, and job satisfaction scales in nurses, with only two

studies mentioning reduction of these outcomes. Secondly, two studies in this review revealed inconclusive statistical effects for MBI effects on supporting resilience factors. A RCT incorporating mindful self-care and resilience into the traditional MSBR program found no statistically significant difference in resilience scores immediately after intervention nor at the subsequent 3-month follow up (Lin et al., 2018). However, this same study also reported that positive affect, which is an individual's propensity to experience positive emotions and interact with others and with life's challenges in a positive way, showed statistically significant improvement post intervention and at 3 months (Lin et al., 2018). In another, Gauthier et al. (2015) reported non-significant increases in the self-compassion scale and mindful attention awareness scale after MBI intervention. A reported limitation of this study was that nurses received no education on the principles behind mindfulness meditation during the MBI program, impacting understanding and performance of the 5-minute mindfulness meditation practices.

Discussion

Other studies in mindfulness literature have shown MBIs and MBSR programs to effectively reduce anxiety and depression symptoms and increase job satisfaction in other populations (Hofmann & Gómez, 2017; Kriakous et al., 2020; Vonderlin et al., 2020); however this literature review of MBIs for nurses could not confidently make similar conclusions. This gap could be attributed to variations in implementation of MBIs, intrinsic qualities in specific populations, or even intricacies within the problem of burnout in the nursing profession. Cultivating mindfulness requires consistency in practice and time and the traditional MBSR is an 8-week program; however, this review included MBI formats shorter than 8-weeks and long-term follow-up was at most 6 months post-intervention. When exploring the complexity of burnout within the nursing profession, adverse job characteristics such as unsafe staffing ratios, long shift hours, lack of support, and workplace violence were extrinsic factors contributing to burnout (Dall'Ora et al., 2020). Although this integrative review seeks to assess the benefits of MBIs in reducing nursing burnout and supporting resilience, the weight of these extrinsic factors in the

workplace should not be overlooked when considering holistic changes needed to address the dynamics of burnout.

Overall, the results of this review supports the use of MBIs to reduce perceived stress and burnout symptoms and bolster protective factors of wellbeing and resilience for nurses. The value this integrative literature review brings to existing literature on MBI for nursing burnout, is its attempt to provide a comprehensive understanding of both the reduction of negative outcomes in burnout as well as the support of positive, protective variables in nurse wellbeing. Effective components of MBI programs and education for nurses were identified. Future research on MBI programs for reducing nursing burnout should look into understanding and addressing the lack of consistent participation and attrition rates in these programs. MBI programs that are more widely available and proactively consider the schedule of nurses could be supportive in increasing participation and engagement.

Clinical Implications

Since the COVID-19 pandemic, burnout in the nursing profession has accelerated, jeopardizing not only the future of nursing but also the future of healthcare (Ge et al., 2023). Nurses are indispensable agents of the healthcare system and their well-being is vital to ensuring patient safety and delivering quality care (Jun et al., 2021). With the World Health Organization describing burnout as an occupational phenomena resulting from chronic workplace stress that has not been successfully managed, healthcare organizations have a responsibility to address nursing burnout as a collective phenomenon rather than an individual issue.

This integrative review investigated multiple articles in the literature to identify recommendations and gaps in MBIs education for nurses to bolster resilience and reduce burnout symptoms in the nursing profession. Positive outcomes of mindfulness training and education for nurses were reported as well as limitations of an individual intervention on

addressing nursing burnout. While MBIs have shown promise in bolstering resilience and reducing burnout symptoms, relying solely on individual-level interventions may be insufficient to address the root causes of nursing burnout. Healthcare organizations have a responsibility to enact comprehensive strategies that include both MBIs and systemic reforms to support nurse well-being, ultimately leading to improved patient outcomes and a more resilient healthcare workforce.

Acknowledging the interconnectedness of individual wellness and the workplace environment is essential for a holistic understanding of burnout within the nursing profession. In clinical practice, healthcare leaders should consider implementing MBIs as part of a broader, multifaceted strategy addressing nursing burnout that also involves systemic changes in the workplace to foster a supportive environment in caring for patients. Such a strategy could include organizational policies aimed at reducing workplace stress, promoting a supportive environment, and ensuring that nurses have the resources they need to provide high-quality care.

Summary

In these current times when burnout symptoms are frequently reported in the nursing profession, considerable changes are called for to help the caring profession. This integrative literature review revealed the significant potential of MBIs in reducing burnout symptoms and improving resilience. Synthesis of studies indicated that MBIs significantly decreased perceived stress and burnout symptoms while enhancing protective factors supporting resilience. Based on this review, healthcare organizations can consider providing mindfulness education and training for nurses as an effective approach in addressing aspects of nursing burnout. A comprehensive approach that includes interventions such as MBIs that support intrinsic qualities of wellbeing and systemic changes that address extrinsic factors in the workplace can help address the complexity of nursing burnout. In supporting both individual and systemic

approaches to nurse well-being, healthcare organizations can contribute to a more resilient

healthcare system that sustains a healthier workforce and better serves patients.

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Appendix A

John Hopkins Nursing Evidence-Based Practice Appraisal Tools

Table A1.

John Hopkins Appraisal Tool Appendix G/Evaluation Table

EBP Question: In registered nurses, how can education on mindfulness interventions for nurses improve self-reported burnout symptoms and resiliency?									
Artic le num ber	**Author, date, and title**	**Type of evidence**	**Population, size, and setting**	**Intervention**	**Findings that help answer the EBP question**	**Measures used**	**Limitations**	**Evide nce level and qualit y**	**Notes to team**
1.	Gauthier et al. (2015) *An on-the-job Mindfulne ss-based interventio n for pediatric ICU Nurses: A pilot.*	Quasi-experimen tal: Pilot pre & post design	**Setting:** On PICU in urban academic pediatric hospital in LA (CHLA) **Sample size:** N= 45 **Sample characteristic s:** -42 female & 3 males -age 26-70 -full-time & part time nurses on PICU -married, unmarried, divorced, widowed -Length of nursing experience [less than 5 years to more than 20 years]	Daily 5 minute MBSR intervention of moment to moment awareness with 4 primary foci of: 1) breath, 2) sounds, 30 body, 4) mind	Positive correlations: • Mindfulness & self-compassion (T1 r=.52, p<.001; T2: r=.69, p<.001; T3: r= .67, p< .001 • Job satisfaction with stress & burnout ($r = -.47, p < .001$) Negative correlations • Stress & self compassion (T1: $r = -.45, p < .01$; T2: $r = -.50, p < .001$; T3: $r = -.39, p < .05$) • Job satisfaction with mindfulness and self-compassion (*T1: r = -.541 p < .01; T2: r = -.35, p < .05; T3: r = -.37, p < .05*)	Feasibility measured by percentage of participation, adherence, and completion of self-reported questionnaires Burnout measured via MBI scale. Stress measured via NSS. Mindfulness & Trait Mindfulness measured via MAAS. Self-compassion measured via SCS. Job Satisfaction measured via single item on Likert scale of 1-7 State mindfulness measured by total minutes meditated	Lack of control group Self-reporte d questionnair es Measure of Job Satisfaction was single Likert Scale was not a valid or reliable measure . Confidentiali ty concerns may of effect nurse rating on job satisfaction Study reported that some nurses may not have fully understood philosophy and function behind mindfulness	Level II of good qualit y	Feasibility: 58% of nurses working PICU participated; 45% of nurses participants completed pre-survey, 95% for post-survey, 42% for 1 month follow up survey

| 2. | Kang, M.-J., & Myung, S.-K. (2021) *Effects of mindfulness-based interventions on mental health in nurses: A meta-analysis of randomized controlled trials.* | Meta-analysis of RCTs | **Sample size:** Nine studies included a total 572 participants, N of studies ranged 23 to 115. **Setting:** Databases: Pubmed, EMBASE, Cochrane Library, CINAHL **Selection criteria of sample:** -RCTs investigating effects of MBIs on mental health (i.g. Depression, anxiety, stress, or burnout), psychological well being (i.g. resilience, wellbeing, or quality of life), and job related outcomes in nurses. **Study characteristics: -**Published 2009-2019 | Mindfulness-based interventions that help individuals recognize their present emotion, attention to present task, and promotion of inner peace and happiness. | MBIs had beneficial effects in the nursing profession on psychological distress & wellbeing but no significant beneficial effect on job-related measures. | Psychological distress measured via PSS, SAS, GAD-7, POMS-TA, STAI, SCL-90, SDS, PHQ-9, NSS, Irritation scale, Maslach Burnout Inventory), & PANAS Psychological wellbeing measured via PANAS, CD-RISC, WHO-5, WHOQOL-BREF, MAAS, & FMI Job-related measures via MMSS, TAA, WAI, Neal, Friffin and Hart's measure of workplace, & CES | Studying included were limited to only those written in English only 1/9 studies had high quality based on Cochrane Risk of Bias tool Small number of studies had long-term follow-up assessments Did not mention publication bias or adjustments of it. | Level I of good quality | MBIs had beneficial effects in the nursing profession on psychological distress & wellbeing but no significant beneficial effect on job-related measures. Small number of studies had long-term follow-up assessments |

| 3. | Horton-Deutsch, S., Monroe, C., Varney, R., Loresto, F., Eron, K., & Kleiner, C. (2020) *Moving from practice to praxis: A qualitative descriptive study revealing the value of Project7 Mindfulness Pledge©* | Qualitative Descriptive | **Sample size:** 9 participated in interviews **Setting:** Hospital in midwest **Sample characteristic:** -Nurse or CNAs -Currently employed nurses who participated in Project7 over the past 5 years. | Project 7 (Mindfulness Pledge) has 3 components: 1. Tenet board with one of seven pledges 2. Gratitude board to acknowledge kindness and compassion 3. Daily huddles were intervention enforced | 3 emerging themes: 1. Fostering self-awareness and compassion: using mindful acceptance to get through difficult situations by consciously reframing with optimism, noticing self-care needs, & increased self awareness 2. Fostering other-awareness and compassion: expanding self-awareness and nurturing self-compassion radiated same attributes towards other (moving focus from intrinsic to extrinsic) 3. Compelling transformation in unit culture: all participants described feeling they are part of something bigger, many spoke of positive atmosphere and healthier work environment with better teamwork | Experiences of nurses with Project 7 Mindfulness Pledge through conducted interviews | -study did not mention self-reflection and self-scrutiny | Level III of Good Quality | Project 7 or mindfulness interventions like project 7 is feasible with nursing leadership involvement. Study is also reported to be low-cost. Conclusions: The mindfulness pledge project 1) Fostered self-awareness and compassion 2) Fostered other-awareness and compassion 3) Compelling transformation in unit culture with participants describing feelings of being part of something bigger, a positive atmosphere, and healthier work environment with better teamwork. The research contributes to the use of mindfulness interventions for healthcare employees by demonstrating how it can bring forth professional practice directed toward reflexivity, action, and transformation. |

4.	McNulty, D.S, LaMonica-Way, C., & Senneff, J.-A. (2022) *The impact of mindfulness on Stress and burnout of new graduate nurses as a component of a nurse residency program*	Quality Improvement	**Setting:** NRP in an acute care setting with participants from 7 hospitals in Houston, Texas. **Sample size:** Control N = 69 Intervention N= 131 **Sample characteristic:** -All nurses were NGN - Average age of the 2 cohorts were 26 & 27 -Education levels included: BSN, Accelerated BSN, Master, & ADN -13.1 and 17.6 percent were males in the 2 cohorts - 86 and 82 percent were females in the 2 cohorts	Mindfulness training curriculum of 4, 1-hour classes that build on each other to provide knowledge needed to engage in mindfulness; Class 1= Introduction to Mindfulness, Class 2 = Resilience, Class 3 = Compassion and Self-Compassion, Class 4 = Emotional Self-regulation	Mindfulness curriculum successfully contributed to decreased perceived stress and burnout and increased mindfulness amongst new grad resident nurses in their first 6 months of practice.	Stress measured via the PSS, CFNGNES-stress, CFNGNS-Overwhelm Burnout measured via OBI and PWLSSI Mindfulness Measured via MAAS Turnover measured via internal data	Study done on only one organization limits applicability to other settings Turnover rate reported could not explicitly be linked to MBI Project planned before COVID and implemented during COVID. Researchers mentioned some challenges transitioning program to all online	Level V of Good	Demonstrated the fairly feasible mindfulness training curriculum with the help of a nursing professional trained as a mindfulness champion in a new grad residency program. All trainings were done virtually due to Covid-19, which reduces the need for participants to physically be in the same space though they must have an internet connection.

5.	Wang, Q. Wang, F., Zhang, S., Liu, C., Feng, Y., & Chen, J. (2023) Effects of a mindfulness-based interventions on stress, burnout in nurses: A systematic review and meta-analysis	Systematic review and meta-analysis	**Setting:** Search on databases Pubmed, Embase, EBSCO, Web of SCience, PRoQuest, Scopus, and Cochrane Online Library, National Knowledge Infrastructure, SinoMed, WANFANG, VIP **Sample size:** 15 studies included, total 1,165 nurses **Sample characteristic :** - RCT studies from 2015-2022 -Studies N ranged [40, 106] -Studies from China, U.S, Japan, Iran, Portugal, and Turkey -Duration of studies from 6 weeks to 52 weeks - Risk of Bias evaluation for all studies was grade B and literature quality acceptable	Studies used MBIs, MBSR, Mindfulness breathing therapy, 1 study used mindfulness color, and 1 study used yoga	MBI reduced received stress and burnout post intervention and at 3 month up up Decrease in EE, D, PA subscales of burnout but not long term No significant effect for anxiety or depression symptoms	Stress symptoms measured using different instruments with lower scores meaning lower stress symptoms or perceived stress Burnout measured with consistent instruments with lower scores meaning lower burnout symptoms; subcategories of emotional exhaustion, depersonalization, and personal accomplishment Anxiety symptoms measured using different instruments with lower scores meaning lower anxiety symptoms Depression symptoms measured using different instruments with lower scores meaning lower depressive symptoms	Challenges in implementing blinding or study participants and incomplete reporting of blinding Reliability affected by variation in basic treatments of each study and the use of self-rating scales as subjective evaluation indicators by some studies Publication bias -search limited to publicly published Chinese and English literature	Level I of Good Quality	This systematic review and meta-analysis found statistically significant evidence that MBIs can reduce symptoms of perceived stress and burnout amongst nurses.Providing regular MBI can improve emotional regulation abilities, physiological states and help maintain the physical and mental health of nurses. MBIs effect on anxiety and depression was statistically insignificant

| 6. | Wu, X., Hayter, M., Lee, A. J., & Zhang, Y. (2021) *Nurses' experiences of the effects of mindfulness training: A narrative review and qualitative meta-synthesis.* | Qualitative Meta-synthesis | **Setting:** Search on databases Pubmed, Cochrane Library, Science Direct, EBSCO, Web of Science Scopus and PsycINFO **Sample size:** 7 studies **Sample characteristic:** -4 qualitative studies and 3 mixed methods studies -studies were qualitative descriptive, phenomenology, and grounded theory design, and mixed methods adqequate to strong for embedded designs | Mindfulness training, MSBR, Mindfulness; defined as training in paying attention on purpose, being in the present to encourage nonjudgmental and emerging levels of self awareness | • Stress conceptualization & management
• Nurses' valued aspects of mindfulness training strategies: Teaching components, facilitators in the program, sessions format, organizational acknowledgement
• Self-care awareness and strategies: Behavioral change Emotional management
• Challenges of Mindfulness training: taking mindfulness during work days, preference to participate with strangers rather than colleagues b/c showing vulnerability in clinical practice seemed unprofessional/negative, commitment to duration of Mindfulness training (takes time) | Thematic synthesis: Two researchers read and re-read papers and all qualitative data were extracted from the original papers and were grouped by sorting. Then thematic analysis is done for final set of interpretive themes. | Small sample size Potential fro intrinsic bias as all participants had volunteered for interviews in the studies Frequencies and types of studies varied across studies so could not generalize what type of mindfulness intervention is best | Level III of Good Quality | Nurses overall had positive experiences with mindfulness based training and report having some level of effectiveness in managing workplace stress. Nurses valued mindfulness training and it provided a self care tool to manage their own behavior and emotions. The study also provided information on what aspects of the training were valuable to them and what challenges were present. |

| 7. | Lin, L., He, G., Yan, J., Gu, C., & Xie, J. (2018) *The effects of a modified mindfulness-based Stress Reduction Program for Nurses: A randomized controlled trial.* | RCT | **Setting:** Two hospital in Dongguan South China **Sample size:** Effective N 90 (44 intervention & 46 control) due to missed sessions and incomplete questionnaire **Sample characteristic:** -full time nurses (night shift and day shift) at general hospitals in Dongguan China

 • 6 males and 84 females
 • Assistant nurse, nurses, senior nurses, supervisor nurses, associate chief nurses
 • Education level : technical secondary school, junior college, bachelors, masters | Modified MSBR = incorporates MBCT and places greater emphasis on promoting enhanced awareness of one's relationship with thoughts and feelings | **Improvement in following:** Perceived stress scores: immediately after intervention P<.01; 3 month follow up P<.01 compared no statistically significance in control group Negative affect scores: immediately after intervention P<.01; 3 month follow up P<.01 compared no statistically significance in control group Positive affect scores: immediately after intervention P<.05; 3 month follow up P<.05 compared no statistically significance in control group Resilience scores immediately after intervention had no statistical significance and 3 month follow up P<.05; compared no statistically significance in control group **No improvement:** Job satisfaction scores had no statistical significance in control or intervention | Perceived stress measured via PSS Negative affect measured via PANAS Positive affect measured via PANAS Resilience measured via CD-RISC Job satisfaction Measured via MMSS | Study affected by convenience sampling Relatively small sample size (n= 90) Effectiveness of interventions reduced by 20% noncompliance (n= 11) | Level I of Good Quality | Study assessed modified MBSR more adaptable for busy nursing professionals than traditional MBSR Studied combination of MBSR and MBSC, shorter time commitment than traditional MBSR, incorporated communication between instructor and trainees through mobile phone group chats |

| 8. | Ramachandran, H. J., Bin Mahmud, M. S., Rajendran, P., Jiang, Y., Cheng, L., & Wang, W. (2022) *Effectiveness of mindfulness-based interventions on Psychological Well-being, Burnout and post-traumatic stress disorder among nurses: A systematic review and meta-analysis.* | Systematic review and Meta Analysis of RCTs | **Setting:** Databases - PubMed, Scopus, Embase, Cumulative Index of Nursing and Allied Health Literature (CINAHL), PsycINFO and Web of Science **Sample size:** 14 studies (total participants 1077) **Sample characteristic:** Studies from 2005 to 2021 conducted in U.S., China, Canada, Japan, and Malaysia Participant mean age range 24.5 to 49.76 All working nurses in hospitals | MBI define as mindfulness based interventions with elements of mindfulness facilitate by instructors, in groups or individual, home or in facility, structured schedule with online resources, audio visual, or manuals | Psychological distress was statistically lower following MBI compared with passive comparators ($SMD = -0.86$; 95% CI -1.53 to -0.20; $p = 0.01$) and an active comparator ($SMD = -0.96$; 95% CI -1.70 to -0.22; $p = 0.01$) Stress was statistically significantly lower following MBI compared with passive comparators ($SMD = -1.14$; 95% CI -2.20 to -0.08; $p = 0.03$) but not active comparators ($SMD = -0.82$; 95% CI -1.67 to 0.02; $p = 0.36$) Anxiety did not differ between MBI and passive comparators ($SMD = -0.81$; 95% CI -1.68 to -0.06; $p = 0.07$) or active comparators ($SMD = -0.93$; 95% CI -2.86 to 1.00; $p = 0.34$) Depression statistically significantly lower following MBI compared to passive comparator ($SMD = -0.68$; 95% CI -1.09 to -0.26; $p = 0.001$) but not active comparators ($SMD = -0.52$; 95% CI -1.61 to 0.56; $p = 0.34$) Maslach Burnout Inventory EE: no statistically difference between intervention & passive comparators (*pooled MD* $= -2.22$; 95% CI -13.09 to 8.64; $p = 0.69$) or active (*pooled MD* $= 1.55$; 95% CI -3.44 to 6.55; $p = 0.54$) Maslach Burnout Inventory PA: statistical difference in favor of MBI compared to passive comparators (*pooled MD* $= 5.82$; 95% CI 0.27 to 11.37; $p = 0.04$) but not for active | Psychological wellbeing measured via Positive and Negative Affect Schedule, General Health Questionnaire, Positive Symptom Distress Index, Perceived Stress Scale, Nursing Stress Scale, DASS-21-Stress, Brief Job Stress Questionnaire, POMS-TA, HADS-Anxiety, GAD-7, SAS, PHQ-9, SDS Burnout measured via Maslach Burnout Inventory and PCL-C | High rate of attrition in reviewed studies (⅓ of studies included dropout rate of 15%) Small sample size per meta-analysis possibly causing overestimation of true value of MBI Possibility of Type I Error inflation Limited to English only studies High heterogeneity due to variations in outcome measurement instruments and intervention design | Level I of Good Quality | MBI is effective in reducing psychological distress, stress, depression, and burnout More studies needed to help determine the necessary MBI program duration and delivery to support nurses in the most impactful way, studies with larger sample sizes, and with longer follow-up duration. |

| 9. | Mahon, M. A., Mee, L., Brett, D., & Dowling, M. (2017) *Nurses' perceived stress and compassion following a mindfulness meditation and self compassion training.* | Quasi experimental pre-test/post-test | **Setting:** 3 university teaching hospital RN in the west of Ireland **Sample size:** N = 90 **Sample characteristic:** Nurses working in hospitals in west Ireland -89 participants female, 1 male -age ranged from 24 - 62 years old - Included staff nurses, clinical specialist,s nurse managers, and midwives | MBI define as a mindfulness and self compassion training spanning either 8-weeks or 6-weeks | Reduction in the mean scores and a significant difference between pre-test and post-test precieved stress across all three hospitals: hospital 1, t(8) = 5.660, p < .001; hospital 2, t(29) = 7.16, p < .001; and hospital 3, t(24)=7.863, p<.001 Significant CS subscales: Kindness (t(63) = -2.077, p = 0.042), Mindfulness (t(63) = -5.672, p < 0.001), Indifference (t(63) = 3.48, p =0.001), Separation (t(63) = 2.82, p=0.006), Disengagement (t(63) = 4.40, p <0.001) Insignificant SC subscale: Common Humanity (t(63) = 147, p=0.884) No conclusive significant difference between scores of 6-week verse 8-week participants | Perceived Stress measured via PSS. Compassion measured via CS (adaptation of self-compassion scale). | lack of RCT Non-probability, convenience sample brings risk of sampling bias response bias with self-reported scales recruitment and sampling effect by participants having to pay contribution toward subsidized cost of MBI attrition rate 29% | Level II of Good Quality | **Feasibility:** Decent attrition rate due to inability to attend final MBI session (from n= 90 to N=64). Participants in study had to subsidize their own participation (hospital paid some) so cost needs to be considered if considering replication of study. **Conclusions:** MBI effectively reduced perceived stress and supported the nurturing of positive compassion elements of kindness and mindfulness while reducing negative elements of indifference, separation and disengagement. |

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10.	Slatyer (2017) *Evaluating the effectiveness of a brief mindful self-care and resiliency (MSCR) intervention for nurses: A controlled trial*	Quasi-experimental Control Trial	**Setting:** Inpatient nurses in Australian tertiary hospital **Sample size**: 91 nurses (N = 65 for intervention, N= 26 for control) **Sample characteristic**: Nurses working full-time or part-time in nursing management, direct care, or education	MSCR intervention was full day educational workshop (4 sessions, 1.5 hr each) and 3 follow-up sessions 1.75 hr held weekly	Statistically significant finding that MSCR reduces burnout scores and increases protective factors such as compassion satisfaction, self-compassion, & quality of life.	Burnout measured via *BO* ProQo15, a 10 item subscale. Compassion satisfaction measured via *CS* ProQo15, a 10 item subscale. Secondary traumatic stress measured via *STS* ProQo15, a 10 item subscale. Self-compassion measured via SCS-SF, a 12 item scale. Resilience measured via CD-RISC10, a 10 item short form scale. Self-efficacy measured via GSES, a 10-item scale. Stress, anxiety, and depression measured via DASS21, a 21-item instrument.	Participants not randomly allocated to condition but self-select treatment group more convenient to participate in based on schedule, introducing selection and performance bias Single setting may cause underpowering for some outcomes and increasing risk for type II error No control at 6 month follow-up do to ethical reasons, limits ability to draw conclusions about long term impact of intervention.	Level II of good quality	Worth replicating moderate length mindfulness practices/interventions with education on resiliency for the nursing profession. Similar mindfulness interventions can serve as preventative programs, improving well-being before burnout worsens. Controlled trial allows for a comparison of intervention to lack of intervention
11.	Looper et al. (2023) *Feasibility of a mindfulness education module for nurses: An evidence-based practice project.*	Pre & post quasi-experimental study	Nurse at 2 COVID units: Pulmonary medicine unit and medical ICU **Sample size**: 26 nurses (10 acute care, 16 ICU)	Educational Mindfulness Module (1 hour) with topics of mental health resources, signs of stress overload, self compassion, mindfulness meditation, mindful communication, and role of nurse leaders in helping staff mental well-being	64% ICU & 75% acute care agreed mindfulness education would help manage burnout 43% ICU & 88% acute care agreed module made them want to learn more about mindfulness 93% ICU and 100% acute care said module easy to use and access 84% ICU and 100% acute care agreed mindfulness education should become part of regular nursing education at this facility	Copenhagen Burnout Inventory (CBI) Survey with multiple choice answers	MBI purely education focus and no practice of MBI; Its goal did not specifically address burnout, rather introduction of mindfulness as a tool for burnout Participation was 28%, (lower than goal of 30-40% of nurses on units)	Level II of Good Quality	Overall, responses to intervention by nurse managers were positive. Module reportedly easy to use and mindfulness education well received by population Shows feasibility of purely online MBI

12.	Bianchini & Copeland, (2020) *The use of mindfulness-based interventions to mitigate stress and burnout in Nurses*	QI project with pre & post survey	150 inpatient nurses from 3 pilot study units in same hospital	Two 1-hour mindfulness education and training sessions by NP with teaching experience in MBI and nurse professional development practitioners	Reduction in emotional exhaustion and depersonalization in burnout and perceived stress post intervention and at 3 months	Maslach Burnout Inventory Perceived Stress Scale	During study, no standardized method to track consistency & frequency of participation of MBIs Included participants regardless of previous experience with MBI Convenience sample	Level V of good quality	The hospital decided to incorporate this MBI training into general nurse and new grad orientation. Nurses who each MBI technique must be grounded in the practices and techniques
13.	Eda et al. (2022) *Effectiveness of MBI on the psychological Well-being of nurses: A systematic Review*	Systematic Review of RCT and quasi-experimental	11 studies, 1009 nurse participants working in hospital Databases: CINAHL, PUbmed, scopus, PsychINFO Characteristics of studies: Between 2014-2020 From Malaysia, China, Iran, Australia, USA, Ireland, Japan, and Portugal	Mindfulness intervention techniques differed slightly in implementation but all shared a goal to teach participants how to be more conscious of their emotions and views to the relationship of the 2.	Ten studies reported improvements in the well-being of nurses, with only one finding no increase. While the mindfulness intervention techniques differed slightly in terms of procedures, they share the same goal which is to teach participants how to be more conscious of their emotions and views and to change the relationship with the two In all cases, mindfulness training reduced Emotional exhaustion on burnout scales and total reduction of burnout symptoms in most studies	Stress -PSS Depression-DASS-21 Anxiety-DASS-2; GAD-7, ISI Burnout - Maslach Burnout Inventory; Distress tolerance scale Resilience-CD-RISC Quality of Life-SWL Self-compassion- Self compassion scales Happiness-Subjective happiness scale Mindfulness Level- MAAS	Electronic search so gray literature excluded Small number of RCT and homogeneity of outcomes (prevented meta analysis)	Level III good quality	Overall MBI enhanced wellbeing of nurses, no negative effects observed in any studies

14.	Guillaumi e et al. (2016) *A mixed-m ethods systemati c review of the effects of mindfuln ess on nurses*	Mixed method systematic review included qualitative and quantitative data.	32 studies: 17 controlled designs, 11 pre-post designs, 4 qualitative designs Characteristi cs of studies: published in english 1981-2013, 85% studies in United states, most inpatient, N of each study ranged from 5-300	Click or tap here to enter text.	Qualitative and uncontrolled studies shed light on benefits overlooked in RCTs: • improvement in wellbeing of individual (inner state of calmness, awareness, enthusiasm) & improved performance at work (better communication with colleges + patients, clear analysis of complex situations and emotional regulation in stressful context, higher sensitivity to patient experiences) MBIs effective in reducing state anxiety and depression	Qualitative explored benefits of MBI on nurses experience at work and in life Quantitative measured: State anxiety, Trait anxiety, depression, psychological distress, stress, Awareness/min dfulness, self-compassion , empathy, wellbeing, work satisfaction	Small number of RCTs limited ability for meta analysis on many variables Most studies limited to U.S. and not other countries	Level III of good qualit y	Suggested MBI positive effects on anxiety and depression and benefits on inner calmness, skills in communicatio n and stress management.
15.	Chi et al. (2023) *Effect of Online MBSR interventi on on Post Pandemi c Era Nurses' Subjectiv e Well Being, job burnout, and psycholo gical adaptatio n*	RCT	90 nurses at hospital in China in July 2022 (Dalian medical University affiliated) Characteristi cs: Registered nurses with no health issues, at least 1 college degree, more than 1 year clinical nurse experience	Online MBSR 8 week implemented by the psychology team of medical university. WeChat used for communication and discussion	The scores for positive emotion and life satisfaction in the intervention group were significantly higher than those in the control group, and the scores for low personal accomplishment in the intervention group were significantly lower than those in the control group. Post Intervention, nurses' positive emotions and life satisfaction significantly improved. Nurses' psychological adaptation was significantly higher post intervention than pre intervention. Total scores for negative emotion, low personal accomplishment, and job burnout were significantly lower post intervention than pre intervention.	Subjective Well Being (SWB): Positive Affect and Ngative Affect Scale Maslach Job Burnout Inventory Psychological adaptability scale	Long-term effects of intervention not explored Attrition rate of 24%	Level I of Good qualit y	Demonstrate d that online MBSR could effective improve SWB and psychological adaptability while reducing job burnout

| 16. | Ficarra, (2024) *An Asynchronous Evidence based Mindfulness Intervention for Professional Nurses* | Quality Improvement pilot program with pre & post questionnaire | N =12 nurses (Included 8 RNs and 4 APRNs) Intervention done remotely and Asynchronous for RNs in the U.S. | 4-week Asynchronous MBI Course objectives: define and describe mindfulness, discuss holistic effects & benefits, potential drawbacks and strategies to mitigate risks, apply MBI in nursing practice, and identify available resources | Significant improvements were noted in participant mean MAAS scores post-intervention (p = .004). Cumulative PSS scores also decreased post-intervention (p = .009). All respondents indicated plans to continue practicing mindfulness in the future, which suggests the interest in integrating mindfulness in nursing practice is strong. Furthermore, all participants noted they either "agreed" or "strongly agreed" that the teaching strategies used in the intervention were appropriate for the topic. | Mindfulness Attention Awareness Scale (MAAS) Perceived Stress Scale (PSS) | -Some participants reported not receiving weekly materials during week 2 on time, and received late Convenience and snowball sampling Small sample size | Level V of good quality | 100% of participants agreed or strongly agreed they would apply knowledge learned in MBI Showed the effect of abbreviated and Asynchronous intervention |
| 17. | Sue Penque (2019) *Mindfulness to promote Nurses Wellbeing* | Quasi-experimental | N- 61 nurses from tertiary care hospital in upper midwest | Modified 8 Week MBSR with 2 hr weekly class instead of 2.5 hr | All the Self-Compassion Scale subscales were statistically significantly improved after the MBSR inter- vention as compared with the baseline. The Interpersonal Reactivity Index subscales of perspective taking, empathetic concern, and personal distress were statistically significantly improved after the MBSR intervention; A positive, statistically significant correlation was evident between mindfulness and self-compassion Maslach Burnout Inventory. Improvements in each of the sub- scales were statistically significant after the MBSR intervention. | Brief Freiburg Mindfulness Inventory, Self-Compassion Scale, Brief Serenity Scale, Interpersonal Reactivity Index, Index of Work Satisfaction, and Maslach Burnout Inventory | Not a RCT Limited to one setting/geographic area Self-reported scales open to response bias Reported low attrition rate although exact rate not reported | Level II Good Quality | |

| 18. | Penque & Rosen (2022) *How Does Mindfulness Affect Registered Nurse practicing in Acute Care Settings? A study of the Lived Experiences of Nurses After Participating in a Mindfulness Program* | Exploratory mixed method (quantative pilot study and qualitative methods) | Sample of 9 nurses with 2 dropping out (7 nurses completed) from various inpatient units (CC, telemetry, CV, Behavioral Health, NICU) | 2 hour class taught weekly for 4 weeks by doctoral prepared nurse trained in mindfulness therapy | Statistically significant increase in mindfulness 4 Themes: -Using mindfulness to Calm Down ones emotional response in clinical setting -Awareness (of self, environment, of others (colleagues and patients)) adding to sense of gratitude -Sense of Loving yourself: it's okay to take time to appreciate oneself and give something of value like mindfulness to oneself -practice on helping RNs to develop self-care skills (making changes to unhealthy habits and adopting healthy habits of self care) | MAAS For qualitative, a phenomenological approach was used to extract themes | Small homogenous sample of nurses who are well educated No longitudinal follow up beyond 3 months | Level III good quality | Examples study of nurses providing intervention to nurses. Overall nurses perceived positive experiences in their own lives and perceived ability to take better care of patients |
| 19. | Ghawadra et al. (2020) *The effect of mindfulness-based training on stress, anxiety, depression and job satisfaction among ward nurses: A randomized control trial* | RCT | Characteristics: Nurses with mild to moderate levels of stress, anxiety, and depression. Setting: teaching hospital N: Intervention (n=118) Control (n=106) | 2 hour mindfulness based training workshop followed by 4 week of guided self-practice mindfulness-based training website; called MINDFULGym | A significant effect over time on stress, anxiety, depression and mindfulness level Regarding the difference between the groups and inter-action between time and group, there was a significant effect for anxiety, and job satisfaction, respectively, with moderate effect size for anxiety reduction and small for job satisfaction increment . | Depression, Anxiety, & Stress scale (DASS-21) Job satisfaction scale Mindful Attention Awareness Scale | Use of self-reported scales High rate of dropout from training to web portion No monitoring of practice of mindfulness throughout study | Level I good quality | Strength of large sample size |

20.	Ghawadra et al. (2019) Mindfulness-based stress reduction for psychological distress among nurses: A systematic review	Systematic Review	Studies on only registered nurses, from 2006-2018, english published, MBSR or modified N= 9 studies; n=15-16 for intervention & n = 14-17 for control Settings: Canada, USA, Japan, Malaysia, Brazil, Portugal	Studies of mindfulness interventions based on MBSR or MBCT	Reduced stress, anxiety, depression, burnout and better job satisfaction, were reported in these studies	Multiple types of outcome scales for stress, anxiety, depression, job satisfaction including MBI, SWL, PSS, DASS-21, intrinsic job satisfaction, Work Stress Scale	Excluded non-english studies and grey literature- limitations to generalizability Included studies of weak to moderate quality due to design (Only 2 RCTs)	Level III Good Quality	Only used MBSR or adapted forms for MBI

Definitions: MBI = Mindfulness based interventions; MBSR = Mindfulness-based stress reduction; MSCR = Mindfulness self-care and resiliency; RCT = randomized control trial; PRISMA = Preferred Reporting Items for Systematic Reviews & Meta-Analyses; PSS = Perceived stress scale; PANAS =Positive and negative affect schedule; CD-rIsC = Connor–Davidson resilience scale; MMss = McCloskey/Mueller satisfaction scale; SCL-90 = a wide range of psychotic symptomatic contents, such as thinking, emotion, behavior, interpersonal relationship, and lifestyle habits; sDs = Self-rating depression scale; NSS = nursing stress scale; WHO-5 = Well-being, 5 items; WHOQOl-BreF = World Health Organization Quality of life-BreF; PHQ-9 = Patient Health Questionnaire-9; WaI = Workability Index scale; POMs-ta = tension-anxiety subscale of the Profile of Mood states; Maas = Mindfulness attention awareness scale; WCFs = Wallace and Chen's measure of workplace cognitive failure; STAI = state trait anxiety Inventory; GAD-7 = generalized anxiety Disorder; FMI = Freiburg Mindfulness Inventory CES = Caring efficacy scale; *BO* ProQo15 = burnout subscale; CS = Compassion Scale; *CS* ProQo15 = compassion satisfaction subscale; *STS* ProQo15 = secondary traumatic stress subscale; SCS-SF = Self-compassion scale-short form;. CD-RISC10 = Connor-Davidson Resilience Scale; GSES = General Self-Efficacy Scale; DASS21 = The depression, anxiety, and stress scale; OBI= Oldenburg Burnout Inventory; PWLSSI = Physician Work-Life Study Single Item, MAAS = Mindfulness Attention Awareness Scale, CFNGNES = Casey-Fink Graduate Nurse Experience Survey; POMS-TA = Profile of Mood States- Tension-Anxiety subscale, HADS-Anxiety = Hospital depression and anxiety scale, GAD-7 = Generalized Anxiety Disorder Scale, SAS = Self-rating Anxiety Scale; PHQ-9 Personal Health Questionnaire; SDS = self-rating depression scale; PCL-C = PTSD Checklist-Civilian

Table A2.

John Hopkins Appraisal Tool Appendix H

EBP Question: In registered nurses, how can education on mindfulness interventions for nurses improve self-reported burnout symptoms and resiliency?			
Strength		**Number of Sources (Quantity)**	**Synthesized Findings With Article Number(s)** (This is *not* a simple restating of information from each individual evidence summary—see directions)
Level	Overall Quality Rating (Strong, good, or low)		
Level I • Experimental studies	Good Quality	6	MBIs statically reduced stress and aspects of burnout scores consistently across all studies (Chi et al., 2023; Ghawadra et al., 2020; Ramachandran et.al., 2022; Lin et. al., 2018; Wang et.al., 2023; Kang & Myung, 2021). MBIs improved protective factors such as self-compassion, compassion satisfaction, and positive affect in multiple studies. There were varying lengths of mindfulness based interventions/training some as low as 4 months and some as high as 6 months and it is currently inconclusive what the most feasible length of duration is need as mindfulness practices take regular effort and time to cultivate (Ramachandran et. al., 2022; Lin et. al., 2018; Wang et.al., 2023; Kang & Myung, 2021;). There are varying data on the statistical significance of MBI's reducing anxiety and depression symptoms through self reported scales (Ghawadra 2020; Ghawadra et al., 2019; Wang et.al., 2023; Ramachandran et. al., 2022).
Level II • Quasi-experimental studies	Good Quality	5	MBI effectively reduced perceived stress and supported the nurturing of positive compassion elements such as kindness and mindfulness while reducing negative elements of indifference, separation, and disengagement (Mahon et. al., 2017; Penque, 2019; Slatyer et.al., 2017). Mindfulness interventions that took into consideration the work schedule of nurses such as interventions during the 5-minute daily huddle, after evening shifts, or offered multiple time options were more feasible for nurses to participate in (Gauthier et. al., 2015; Slatyer et.al., 2017)
Level III • Nonexperimental, including qualitative studies	Good Quality	6	MBIs helped nurses foster greater self-awareness and awareness of self care needs (Rosen & Penque, 2024; Wu et. al., 2021; Horton-Deutsch et. al., 2020). Nurses attributed MBIs in training them in being able to re-contextualize stressful situations through mindful acceptance, conscious reframing with optimism, and increased skills in emotional regulation and communication (Guillaumie et al., 2016; Wu et. al., 2021; Horton-Deutsch et. al., 2020). MBI helped nurses accept self-care as something of value to give themselves. (Rosen & Penque, 2022).
Level IV • Clinical practice guidelines or consensus panels	N/A	0	N/A
Level V • Literature reviews, QI, case reports,	Good Quality	3	There was clear evidence that MBI's reduce perceived stress in nurses and reduction in emotional exhaustion and depersonalization portion of burnout scale (Bianchini & Copeland, 2020; McNulty et. al., 2020).

expert opinion			