

THE IMPACT OF STRUCTURED EDUCATION ON STRESS REDUCTION AMONG
SWAT NURSES

by

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As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Zachary Alan Crouch, titled The Impact of Structured Education on Stress Reduction Among SWAT Nurses, and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

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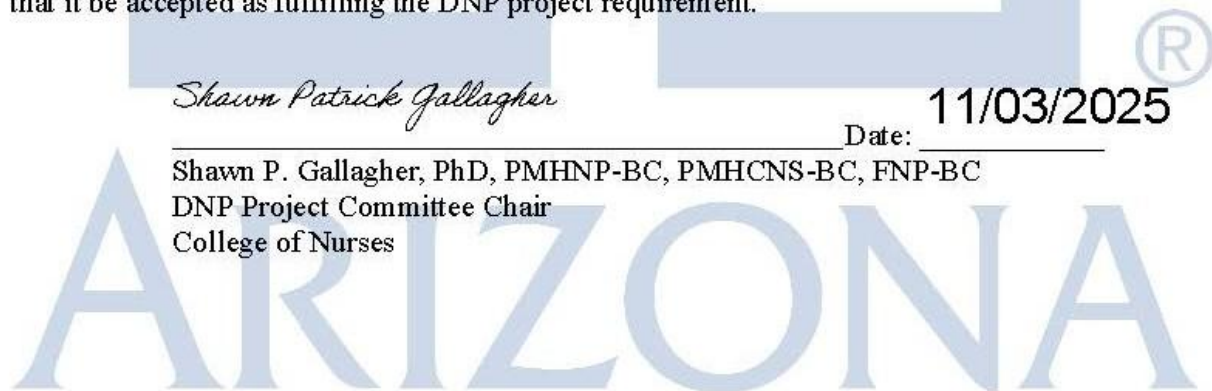
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We respectfully acknowledge the University of Arizona is on the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with Tucson being home to the O'odham and the Yaqui. The University strives to build sustainable relationships with sovereign Native Nations and Indigenous communities through education offerings, partnerships, and community service.

DEDICATION

This project is dedicated to every student who has ever questioned whether they could keep going. To those juggling work, family, and school, running on coffee and sheer determination—you are not alone. I see the late nights, the stress, and the quiet moments of doubt. However, I also see your strength, your heart, and the reason you started this journey in the first place. Keep pushing forward. You are doing something meaningful, and it will be worth it.

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Abstract

Background: SWAT RNs are at the epicenter of critical situations that occur at BDMC. It is an expectation to respond to high-stress situations such as rapid responses and code blues in adults, pediatric, and obstetric patients. While SWAT RNs are known to manage high-intensity situations effectively, they are also expected to provide leadership and mentorship when the time arises. The constant exposure to critical situations and being the go-to person for both RNs and medical providers make the SWAT RN role one that is under constant pressure, leading to increased stress.

Purpose: This project aims to educate the critical care Specialized Workforce for Acute Transport (SWAT) nurses (SWAT RNs) at Banner Desert Medical Center (BDMC) on Mindfulness-Based Stress Reduction and Headspace.

Methods: This quality improvement project utilizes the Plan-Do-Study-Act (PDSA) cycle. On-demand education is provided on stress reduction interventions to reduce symptoms. A pretest and posttest survey was conducted to measure changes in knowledge, familiarity, and intent to use stress reduction interventions among SWAT RNs.

Results: Nine of the SWAT RNs in the Clinical Care Operations (CCO) department participated in the project, with nine completing the pretest and nine completing the posttest.

Conclusions: The on-demand, evidence-based intervention significantly enhanced SWAT nurses' familiarity with and perceived benefits of Mindfulness-Based Stress Reduction, as well as their intention to use Headspace. These findings show that brief, accessible education can boost nurse resilience, support well-being, and potentially improve patient care outcomes.

Introduction

Registered nurses (RNs) are currently navigating a critical juncture. As essential members of the healthcare team, RNs are entrusted with managing interventions crucial for patient care, rather than focusing exclusively on medical management. In recent years, particularly due to the COVID-19 pandemic, the profession has faced significant challenges, leading to a decline in morale among many healthcare workers. Surveys conducted by Berlin et al. (2024) reveal that approximately 62% of RNs currently experience overwhelming stress in the workplace, exhibiting symptoms typical of burnout. Moreover, a 2024 survey conducted by the National Council of State Boards of Nursing (NCSBN) and the National Forum of State Nursing Workforce Centers found that among nurses planning to leave the profession entirely within the next five years, 41.3% cited stress/burnout as the primary reason. These figures are expected to increase due to rising mistrust in hospital organizations, deficiencies in both organizational and nursing leadership, insufficient staffing levels, and growing workload demands (Shah et al., 2021). These factors contribute to an intensifying mental health crisis among RNs, with a concerning 63% of nurses asserting that their employers do not prioritize their mental well-being (Berlin et al, 2024).

The rise in overall stress levels, alarm fatigue, and understaffing has led to heightened concerns regarding patient safety. This situation has necessitated the allocation of additional resources, including the deployment of SWAT RNs to promptly assess and intervene in patients experiencing deterioration. SWAT RNs are positioned at the forefront of critical situations at Banner Desert Medical Center (BDMC), where they are expected to respond to high-stress events, such as rapid responses, trauma calls, and code blues in adult, pediatric, and obstetric

patients. As primary responders at BDMC, SWAT RNs frequently employ their extensive clinical expertise and assessment abilities to effectively identify and rule out potentially life-threatening causes of acute patient deterioration. Furthermore, they provide supportive care in these situations and facilitate bedside procedures, imaging, or any other requests made by the medical provider. While they are expected to manage high-intensity situations skillfully, they must also provide leadership and mentorship when necessary. The increase in stress among nursing staff at the bedside has led to the overutilization of hospital resources that SWAT RNs can offer, thereby contributing to the rise in burnout experienced by these professionals.

Stress reduction is currently paramount. Techniques related to self-care and mindfulness include yoga, meditation, exercise, acupuncture, and various other activities that promote and sustain health. The American Psychological Association (APA) (2019) acknowledges that mindfulness-based stress reduction activities lower overall stress by facilitating beneficial changes in brain chemistry, thereby enhancing both mental and physical health. Consequently, mindfulness-based stress reduction techniques are the primary educational intervention for the critical care SWAT registered nurses at BDMC.

Background Knowledge

In 1974, psychologist Herbert Freudenberger published an article outlining a collection of similar symptoms he and his colleagues encountered, coining the term “burned out” to encapsulate the symptoms being experienced (Heinemann & Heinemann, 2017). Consequently, a new term was established to describe the prevalent feelings of mental and physical fatigue faced by the “helping man,” thereby initiating new research into this phenomenon that Freudenberger and his colleagues witnessed. Freudenberger asserted that individuals in professions dedicated to

the welfare of others, such as nursing and medicine, face a higher risk of developing the symptoms of burnout, as he articulated.

The physiological and psychological manifestations of individuals experiencing burnout are well-documented and substantiated. Such recognition has led to the inclusion of the term “burnout” in the World Health Organization’s (WHO) International Classification of Diseases (ICD) (WHO, 2019). Healthcare organizations must adopt strategies to reduce elevated burnout rates. This effort not only seeks to enhance employee satisfaction and ensure patient safety but also aims to alleviate potential financial implications that may arise. A study conducted by Hassard et al. (2018) revealed that individuals suffering from work-related stress are more likely to exhibit diminished productivity, increased absenteeism rates, a cynical outlook toward work, and higher turnover rates—all of which contribute to financial strain on the employing institution. The expenses associated with these occurrences are estimated to range from approximately \$221 million to \$187 billion, with work-related stress accounting for 70% to 90% of the overall financial burden (Hassard et al., 2018). Furthermore, a 2017 report on stress published by the American Psychological Association (APA) indicated even higher financial ramifications, estimating that illness and costs related to stress, encompassing absenteeism and employee turnover, amount to roughly \$300 billion.

According to the World Health Organization (WHO), in 2019, chronic and unmanaged stress was a significant factor contributing to burnout. Professions at risk, such as nursing, face an elevated likelihood of developing burnout due to sustained exposure to challenging circumstances, including trauma or death. A meta-analysis conducted by Quesada-Puga et al. (2024) and Ramirez-Elvira et al. (2021) found that nurses working in high-acuity settings, such

as critical care, experience burnout at considerably higher rates. Ramirez-Elvira (2021) reported that approximately 31% of critical care nurses experience severe levels of emotional exhaustion, 18% exhibit symptoms of depersonalization, and 46% report a diminished sense of personal accomplishment. These manifestations represent the classic symptoms associated with burnout. The implications of this data may lead to increased instances of moral distress, characterized by post-traumatic stress disorder (PTSD), depression, anxiety, and/or organizational distress, such as elevated turnover rates and diminished quality of patient care provided (Kerlin et al., 2020).

The long-term repercussions of inadequate burnout management have led to an increase in physical symptoms, such as gastrointestinal distress, headaches, hypercholesterolemia, and type 2 diabetes, along with significant adverse effects on mental health, including depression, anxiety, increased alcohol consumption, and potential suicidal ideations (Ramirez-Elvira et al., 2021). Registered Nurses (RNs) working in critical care environments face a considerable risk of experiencing burnout due to frequent encounters with death, trauma, and ethical dilemmas, all while needing to respond quickly to prevent the deterioration of their other patients. Moreover, there is a lack of time available for debriefing, which facilitates emotional processing; instead, the tendency is to compartmentalize, leading to the internalization of deep emotional reactions and consequently heightening the stress levels of critical care nurses.

Specialized Workforce for Acute Transport (SWAT) RNs at BDMC are specialized healthcare professionals who comprise the Rapid Response Team (RRT). They possess extensive expertise in critical care and emergency medicine, having been trained in advanced assessment and clinical techniques designed to identify and intervene with patients who are deteriorating. Like other RRTs in various facilities, SWAT RNs operate under significant stress. Nurses on

RRTs often face challenges due to the complexity of their roles, struggling to clarify their responsibilities toward patients and healthcare staff. Moreover, organizational factors such as insufficient staffing, limited resources, and inadequate training increase their overall stress and clinical duties (Bunkenborg et al., 2022). Additionally, most RNs within RRTs report feeling overworked and undercompensated, and they sometimes experience tension with medical providers due to the growing complexity of their job responsibilities (Loisa et al., 2021). All these factors contribute to the heightened stress levels experienced by RRTs, including SWAT RNs.

Stress serves as the cornerstone of burnout. Individuals' perception of stress, understanding of stress reduction techniques, and preferred coping strategies significantly influence their psychological resilience in stressful situations and environments (Abdollahi et al., 2021). A systematic review by Zabin et al. (2023) revealed a significant correlation between high work-related stress and patient safety. This study emphasizes the need to enhance overall nursing education and understanding of stress management, which aims to mitigate the risk of burnout and ultimately maintain or improve patient safety.

Mindfulness Activities for Stress Reduction

Mindfulness activities have been shown to effectively reduce and manage stress primarily by modulating neuropeptide Y (NPY) and its subsequent effects on the hypothalamic-pituitary-adrenal (HPA) axis. In response to a stressful event, neurochemical processes activated via the HPA axis lead to the secretion of cortisol, recognized as the primary stress hormone. NPY plays a crucial role in modulating the downstream effects of the HPA axis by inhibiting cortisol secretion in the adrenal glands, thereby regulating the level of stress experienced (Østergaard et

al., 2025). Research indicates that individuals with elevated plasma levels of NPY exhibit greater resilience to maladaptive stress responses (Østergaard et al., 2025).

NPY also contributes to structural changes in the brain through neuroplasticity, neuroprotection, and structural adaptations in response to stress (Michaelson et al., 2020). The basolateral amygdala (BLA) plays a crucial role in stress responses, particularly in regulating anxiety and fear. The BLA shows increased activity during stressful states, including chronic stress, which heightens anxiety and fear responses. NPY is associated with dendritic hypotrophy of the BLA, which reduces the excitability of the amygdala and lessens overall anxiety and fear responses (Michaelson et al., 2020). This decrease in amygdala activation promotes greater activation of the prefrontal cortex, thereby improving its ability to carry out executive functions and manage emotions during stressful periods.

Guided meditation encompasses various MBSR techniques, including body scanning and mindful breathing, making it a popular and widely practiced method within MBSR. This practice features a narrator who guides individuals through various stages of meditation, using either in-person sessions or audio/video recordings. Guided meditation provides significant benefits for beginners in MBSR by offering structure and guidance, preventing the mind from wandering, teaching essential techniques, and reducing overthinking by following the narrator's lead. Many guided meditation recordings are available on YouTube, mobile apps, and through in-person classes. Mobile applications have become extremely popular, with platforms like Headspace offering high-quality, evidence-based recordings that enable individuals to conveniently explore MBSR techniques on their mobile devices at any time.

Headspace has been incorporated into multiple randomized controlled trials and has shown a significant reduction in stress, anxiety, and depression among diverse populations, including healthcare professionals (Taylor et al., 2022; Yang et al., 2015). Calm has also been studied in a randomized controlled trial conducted by Huberty et al. in 2019, which revealed significant decreases in perceived stress and improvements in mindfulness and self-compassion. Evidence has supported the effectiveness of these applications in reducing overall stress through evidence-based MBSR techniques, with Headspace being the primary MBSR educational intervention used in this project.

Evidence Search and Appraisal

This literature search aimed to identify evidence-based research on burnout experienced by critical care nurses and the benefits of MBSR and stress management techniques. This synthesis utilized databases such as PubMed, CINAHL, and Google Scholar. Initially, all searches focused on randomized controlled trials, systematic reviews, and meta-analyses. The search scope was later expanded or refined based on the results obtained. Additionally, the literature was searched for evidence-based educational interventions that best apply to the target population of this project.

PubMed was the initial database to collect evidence of burnout among critical care nurses. An initial search using the key terms “burnout” AND “intensive care” AND “nurses” produced 740 publications. At this stage, additional modifiers were introduced, including “within 5 years,” “free full text,” “randomized control trial,” “meta-analysis,” and “systematic review,” narrowing the results to 13 publications. Of these 13 articles, titles were thoroughly examined for the aforementioned key terms, leading to the selection of three appropriate articles. Upon further

evaluation, one of the articles was excluded due to numerous competing conflicts of interest tied to pharmaceutical companies and various firms involved in medical-grade equipment and consulting services. This consideration resulted in 2 suitable articles for inclusion in this literature review.

An additional inquiry conducted on PubMed using the key term “mindfulness-based stress reduction,” initially yielded a total of 2,126 results. Subsequent modifications were made to refine the results. These modifications included the terms “free full text,” “clinical trial,” “meta-analysis,” “randomized controlled trial,” “systematic review,” and “within 10 years.” With these modifiers applied, the results were effectively refined to 370. At this point, an additional component was integrated into the initial key term: “AND healthcare workers.” This refinement resulted in 26 articles being identified in the search. Further criteria comprised “English” and “Adult: 19+ years.” Consequently, this process yielded 15 remaining articles; of these, one article was deemed suitable for the current project. A new search was then initiated using the same modifiers and exclusion criteria as before, with the key term modified to “mindfulness-based stress reduction AND neuropeptide Y.” This search yielded one article, which was selected for incorporation into this paper. The key term underwent another modification, retaining only the modifiers “within 10 years” and “free full text” for “neuropeptide Y AND basolateral amygdala,” resulting in a total of 25 articles. Among these articles, one was identified as appropriate for the objectives of this DNP project.

CINAHL was the next database used. The key phrase “mindfulness-based stress reduction” was utilized with the limiters of “full-text,” published between “2015 and 2025,” and “randomized controlled trials.” Among these, 94 articles met the stated criteria. The key phrase

was then modified to “mindfulness-based stress reduction AND mobile apps.” One article matched but was deemed irrelevant to the project's objective. The modifier “randomized controlled trial” was removed, resulting in two articles, one of which had already been assessed as irrelevant. The second article was also deemed inappropriate for the project’s purpose due to the lack of sufficient evidence.

Google Scholar constitutes the third database used in this research endeavor. The principal term “mindfulness-based stress reduction AND mobile apps” was utilized. A total of 16,503 articles were identified as pertinent to the specified key terms. Exclusion criteria of “-observational,” “-qualitative,” and “-older adult” were implemented. Furthermore, a “2015-2025” publication date range was established. Ultimately, 80 articles were deemed relevant, of which five were considered most suitable for the objectives of this project.

To further enhance the educational intervention, a comprehensive search on PubMed was conducted using the terms “on demand education” or “on demand training.” The search was restricted to publications from the past five years, available as free full texts, and limited to article types including meta-analyses, randomized controlled trials, and systematic reviews. A total of 40,309 articles were presented. The titles of the articles were scanned on the first page, searching for keywords such as “self-instructed” or “on-demand.” Of the front-page articles, two were selected as appropriate for this project. A second search using the articles “self-instructed education” or “video on-demand education” was conducted with the same limitations. A total of 798 articles were found. The front page was scanned for keywords, and one article was identified as suitable for this project.

Appraisal of Evidence

A table summarizing the evidence relevant to this Doctor of Nursing Practice (DNP) project is provided in Appendix G. The strengths of the selected articles for this literature synthesis are supported by their study design. All were randomized controlled trials, pre-clinical research studies, systematic reviews, and meta-analyses. The level of evidence in these articles is considered higher-tier and less susceptible to internal and external vulnerabilities and biases (Al Noman et al., 2024).

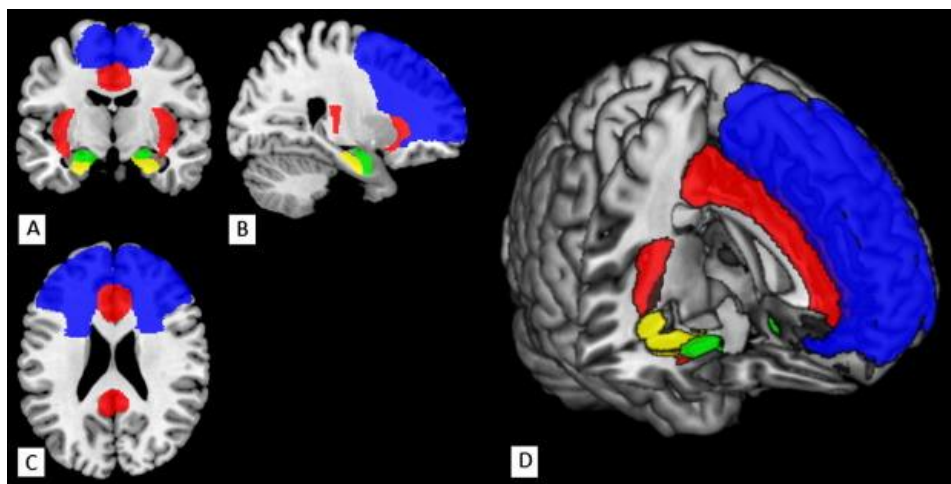
Quesada-Puga et al. (2024) and Ramírez-Elvira et al. (2021) collectively demonstrate that critical care nurses face ongoing threats to their psychological well-being, often manifesting as signs and symptoms of burnout due to diminished stress resilience. Both articles indicate that emotional exhaustion and reduced job satisfaction are key indicators and predictors of burnout among critical care nurses. Furthermore, substances such as tobacco (65.6% prevalence, PR 1.45) and alcohol (100% prevalence, PR 1.84) may be used by these nurses to relieve the symptoms they experience (Quesada-Puga et al., 2024). A recurring theme identified by the authors is that the overall workplace environment is crucial in shaping critical care nurses' ability to build resilience against stress. Until workplace environments can undergo systemic changes that promote resilience development, critical care nurses must begin enhancing their stress resilience independently. Notable limitations in these publications include the relatively low number of articles referenced in each study, specifically 73 (Quesada-Puga et al., 2024) and 15 (Ramírez-Elvira et al., 2021). A significant limitation is that both analyses were conducted across multiple countries with diverse and complex healthcare systems, each facing unique challenges,

as well as inconsistent measurement tools used across the analyzed articles (Quesada-Puga et al., 2024; Ramirez-Elvira et al., 2021).

Numerous studies have demonstrated the efficacy of MBSR techniques in enhancing stress resilience and reducing the signs and symptoms associated with potential burnout. Gotnik et al. (2016) illustrated the brain's beneficial structural and functional changes following engagement in MBSR techniques through neuroimaging, as shown in Figure 1. The findings of Gotnik et al. (2016) indicate that individuals experiencing stress or anxiety exhibited increased activity, connectivity, and volume in the prefrontal cortex, cingulate cortex, insula, and hippocampus. Additionally, a decrease in activity was observed in the amygdala; however, its connectivity with the prefrontal cortex improved, leading to a more rapid deactivation following exposure to emotional stimuli.

Figure 1

Functional Magnetic Resonance Image (fMRI) of the Brain After MBSR

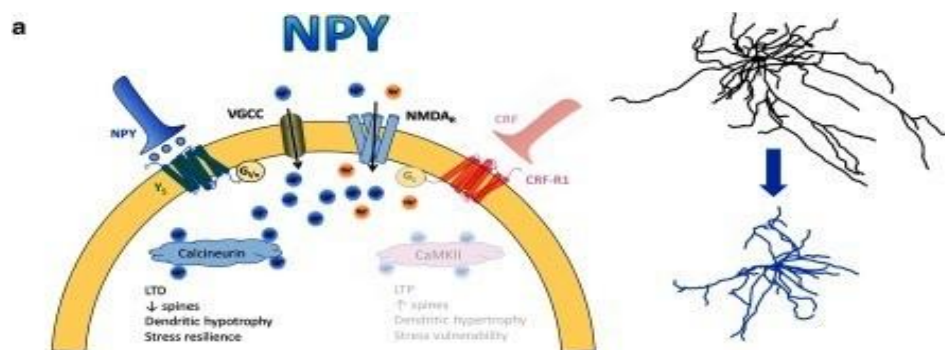


Coronal (A), Sagittal (B), Axial (C) and 3D (D) view of gray matter areas involved in MBSR. Prefrontal cortex (blue) and Hippocampus (yellow) show increased activation, the Amygdala (green) shows decreased activation (Gotnik et al., 2016).

Østergaard et al. (2025) and Michaelson et al. (2020) have established that neuropeptide Y (NPY) plays a significant role in overall stress resilience. NPY has been shown to exert a modulatory effect on stress, likely through the hypothalamic-pituitary-adrenal (HPA) axis (Østergaard et al., 2025). Østergaard et al. (2025) found that individuals who underwent MBSR interventions had higher plasma NPY levels compared to a control group ($t(44) = -2.07, p < .05$). Furthermore, Michaelson et al. (2020) assert that elevated levels of endogenous NPY correlate with a decrease in basolateral amygdala (BLA) activation, which subsequently leads to dendritic hypotrophy ($p < 0.0001$ at 1nM), as illustrated in Figure 2. Reduced BLA activation facilitates greater prefrontal cortex activation during stress, enhancing executive functions and promoting stress resilience. Nevertheless, several limitations accompany these studies; most notably, the study by Michaelson et al. (2020) involved rats. Additionally, Gotnik et al. (2016) utilized results obtained from participants in studies concerning neurodegenerative and neurocognitive disorders, and Østergaard et al. (2025) used a small sample size ($n = 50$).

Figure 2

Visual Representation of NPY Entering the Pyramidal Cell, Decreasing Dendritic Spines Leading to Dendritic Hypotrophy and Increased Stress Resilience



Proposed model for the mechanism of action of NPY leading to dendritic hypotrophy, respectively, in BLA pyramidal cells. *a*, NPY treatment results in net activation of the Y₅R and PP2B (calcineurin), resulting in a reduction in dendritic arborization (right). (Michaelson, S. D., Tapia, A. P. M., McKinty, A., Villarreal, H. S., Mackay, J. P., Urban, J. H., & Colmers, W. F., 2020).

López-Del-Hoyo et al. (2024) conducted a randomized controlled trial with a large sample size ($n = 229$ “completers”) to assess the effectiveness of self-guided MBSR techniques delivered through apps. The researchers, using a 95% CI, showed that participants who finished the self-guided portion improved their scores on the Perceived Stress Scale (PSS) (-1.84 (0.62; -3.04 to -0.63; $p = 0.003$), Patient Health Questionnaire-9 (PHQ-9) (-1.72 (0.24; -2.19 to -1.26; $p < 0.001$), Generalized Anxiety Disorder-7 (GAD-7) (-1.65 (0.17; -1.98 to 1.31; $p < 0.001$), and Brief Symptom Inventory-18 (BSI-18) compared to the control group. While this study highlights the benefits of self-guided MBSR apps, a key limitation is the potential for self-selection bias, as only individuals who were interested in the study and met the inclusion criteria were included (López-Del-Hoyo et al., 2024).

Popular self-guided MBSR applications include platforms such as Headspace and Calm. O’Daffer et al. (2022) provided evidence supporting the efficacy of Headspace, citing a total of 14 randomized controlled trials (RCTs) that used this application, compared to only one RCT involving Calm. Notably, Headspace was identified as a source of conflict of interest in approximately 40% of the RCTs employing this application (O’Daffer et al., 2022). Huberty et al. (2019) utilized Calm in their RCT, demonstrating improvements in participants' overall stress levels and health behaviors. Nevertheless, a limitation of Huberty’s study is using a predominantly homogeneous sample, which may not adequately represent the broader population. Taylor et al. (2022) conducted an RCT comparing Headspace to Moodzone, finding that Headspace was more effective at improving scores for depression, anxiety, well-being, mindfulness, and self-compassion than Moodzone. However, a limitation of this study was that engagement with Headspace was significantly higher than with Moodzone, which may have

influenced the results. Yang et al. (2018) conducted an RCT utilizing Headspace with medical students, demonstrating improvements in their overall stress resilience. However, Yang's study's limitations include selection bias, as only students interested in learning MBSR participated in the study.

On-demand education was also explored within the literature search. Saidu et al. (2023) conducted an RCT to determine if self-instructed education would be comparable to traditional instructor-led education on cardiopulmonary resuscitation (CPR). What was found is that there is no significant difference in the exam results, as well as post-education follow-ups, between the groups after 6 months (AOR=0.518, 95% CI: 0.239, 1.122, $p = 0.095$), leading to the conclusion that self-instruction training can be as efficient as in-person training in terms of learning. Takagi et al. (2023) employed a randomized controlled trial using educational videos and on-demand training to help surgeons prepare for using the Da Vinci surgical robot to perform specific procedures. Takagi et al. (2023) found that the intervention group improved their proficiency in robotic surgical and clinical skills significantly more quickly than the control group (90.8 vs. 72.4; $P < 0.001$). A systematic review conducted by Barranquero-Herbosa et al. (2022) found that voice-over PowerPoint presentations and pre-recorded lectures significantly helped nursing students improve their test scores, while also enhancing their flexibility and autonomy in their educational approach. While these studies show the benefits of on-demand style education, there are some significant limitations. In Barranquero-Herbosa et al.'s 2022 study, there was a lack of standardized criteria for evaluating the interventions, making synthesis and comparison between the articles difficult. Saidu et al. (2023) identified several limitations, including variations in starting skill levels and CPR utilization throughout each evaluation period. Key limitations in

Takagi et al.'s (2023) RCT include a small sample size and a very niche target audience. This may lead to difficulties utilizing this data on a larger scale with different target populations.

Although numerous limitations are associated with the evaluated evidence, literature supports the effectiveness of MBSR techniques, particularly through applications like Headspace, for individuals willing to invest the necessary effort and time. The advantages of convenience, privacy, and comfort significantly favor the use of MBSR applications over engaging a licensed instructor. This consideration is especially beneficial for critical care nurses, who often face long working hours and the demands of night shifts. There is a pressing need for additional research to explore the long-term effects of MBSR applications and the neurochemical and biophysiological processes related to stress, including the neuromodulatory potential of Neuropeptide Y (NPY). Nevertheless, for this project, it is posited that sufficient evidence exists to recommend MBSR applications, such as Headspace, as introductory tools for fostering mindfulness and enhancing stress resilience through NPY modulation.

Evidence-Based Intervention

Based on the level of evidence provided, this author will use Headspace as the primary educational tool to offer to SWAT nurses interested in pursuing MBSR techniques on a self-guided basis. Additionally, this author believes there is sufficient evidence supporting the use of on-demand education, such as voice-over PowerPoint, as the primary instructional method for sharing the information in this project.

Implementation Model

The Model for Improvement and the Plan-Do-Study-Act (PDSA) constituted the frameworks for implementing this quality improvement (QI) project. Initially developed by the

Associates in Process Improvement, the Model for Improvement offers a straightforward framework that is compatible with existing change models used by various organizations (IHI, 2025). It is essential to address three fundamental questions: What objectives are we aiming to achieve? How can we determine that a change has led to an improvement? What alterations can we implement that will lead to enhancement? The second component of this implementation model is the PDSA cycle, designed to determine whether improvement has occurred as a result of the implemented change.

The initial inquiry within the Model for Improvement was addressed by formulating an aims statement (IHI, 2025). This aims statement must possess time-bound and measurable characteristics, clearly delineate a specific population affected by the intended enhancement, and specify the context in which the improvement is anticipated to occur. The subsequent inquiry focuses on establishing measures through feedback, which encompasses both quantitative and qualitative data, to determine whether a particular change results in the desired improvement (IHI, 2025). This process ensures that the individuals who stand to gain the most from the intended enhancement are engaged in identifying measurable improvements from their perspective. The final inquiry within the Model for Improvement facilitates the determination of the change that will be enacted to achieve the objective of the desired improvement (IHI, 2025).

Upon addressing the aforementioned questions, the PDSA cycle may be employed to examine a change on a limited scale within a real-world context. The *Plan* phase entails articulating the objective of the devised test, formulating a hypothesis regarding the anticipated results, and constructing a plan to evaluate the change (IHI, 2025). The *Do* phase involves executing the selected intervention to gather data to ascertain whether the change produced the

intended outcomes. The *Study* phase pertains to the segment of the cycle where the data is analyzed and synthesized to determine if the expected improvements have manifested. The *Act* phase constitutes the final stage of the PDSA cycle, implemented to assess any necessary modifications for future execution and strategize the implementation plan. The outcomes derived from the PDSA cycle are subject to review. They may be used to refine the initial responses to the Model for Improvement inquiries, thereby enhancing the quality of desired improvements.

This Doctor of Nursing Practice (DNP) project aims to enhance the knowledge, perceived benefits, and intention of SWAT Registered Nurses (RNs) to utilize Headspace for stress reduction, with the expectation of improvements in these variables. Quantitative measures will be established through pre-test and post-test surveys to assess any changes and ascertain whether improvement has occurred. The results obtained from the surveys will be analyzed and aggregated to determine if the desired outcome aligns with the predicted results. Unforeseen challenges impacting the outcomes will also be accounted for and documented. The change being implemented comprises an in-service discussion of the advantages of stress reduction and the evidence-based MBSR techniques available for their application.

Intended Improvement

Project Purpose

This QI project aimed to increase the perceived knowledge and perceived benefits of MBSR techniques among BDMC SWAT RNs and their intention to adopt MBSR (i.e., Headspace) into their practice.

Project Question

Will an on-demand in-service education session on the effects of stress and potential benefits of guided meditation as a stress management strategy increase SWAT RNs' perceived knowledge of, familiarity with, and intent to adopt these techniques using MBSR (i.e., Headspace)?

Project Objectives

The objective of this quality improvement project was to increase the perceived knowledge, perceived benefits, and intent to adopt Headspace among SWAT RNs to help manage stress. A pretest and posttest survey will be used to measure the objectives.

1. Pre-survey via QR code, listed on PowerPoint (Appendix E)
2. On-demand in-service PowerPoint Presentation (Appendix E)
 - a. Overview of evidence on burnout and stress
 - b. Neurobiology of MBSR
 - c. Guided meditation and mobile app delivery
 - d. Implications for mental health
 - e. Review of Headspace account setup
3. Post-survey via QR code, listed on PowerPoint (Appendix E)
4. Data analysis of survey results
5. Share findings with relevant key stakeholders (i.e., the Director and Associate Director of CCO)

Methods

Site

Banner Desert Medical Center (BDMC) was the site of the Quality Improvement (QI) project. It is in Maricopa County, in Mesa, Arizona, serving the Phoenix metropolitan area, including the East Valley. BDMC also serves as a transfer hub for numerous hospitals throughout the metropolitan area and the greater Arizona region. As a Level I trauma center and a Level III Neonatal Intensive Care Unit (NICU), BDMC offers approximately 700 beds for adult and pediatric patients, including those in the emergency department. The facility is recognized as a designated stroke and STEMI receiving center with high-risk obstetrical capabilities. BDMC's geographical location and capabilities enable a diverse patient population with a wide range of acuities and comorbidities that are seen daily.

According to the United States Census Bureau, as of 2024, Maricopa County had approximately 4,673,096 residents and a poverty rate of 11.1%. The census also reports a median income of about \$85,518 and a per capita income of roughly \$44,210. Ethnically, the population is about 53.2% White, 31.4% Hispanic or Latino, 6.9% Black or African American, and about 2.9% American Indian and Alaska Native (U.S. Census Bureau, 2024).

Engaging stakeholders is essential for the success of any QI project. At BDMC, specifically within the Clinical Care Operations (CCO) department where SWAT RNs are located, the team is tight-knit and collaborates closely with leadership. Silver et al. (2016) state that a QI project must consist of a team of stakeholders, including the team lead, technical experts, clinical leaders, improvement advisors, and executive sponsors. The team lead is responsible for the day-to-day management of the QI project, as noted by Silver et al. (2016);

this role would be best suited for the author of this project. SWAT RNs would serve as technical experts, given their broad understanding of the quality care problem (Silver et al., 2016). A clinical/systems leader directly understands the implications of the changes on the system and can test the adjustments recommended by the team leader (Silver et al., 2016). The associate director of nursing who directly supervises SWAT RNs would be valuable in this role. The director of the CCO office would fill the roles of improvement advisor and executive sponsor, who oversee SWAT RNs as an entity rather than individually. They would have experience in managing QI processes and be experts in QI methods, possess strong leadership abilities, and be able to address barriers directly (Silver et al., 2016).

Participants and Recruitment

Convenience sampling was employed to recruit participants for this QI project. The pool size consisted of approximately 20 SWAT RNs. Recruitment occurred through emails sent to the SWAT RN staff (Appendix C). The inclusion criteria for participants included being an employee of the BDMC SWAT team, currently working full-time or part-time hours. Exclusion criteria included formal education on MBSR techniques within the past 6 months. The exclusion criteria will be detailed in the disclosure form sent to participants. By agreeing to participate in the study, they acknowledge that they do not meet any exclusion criteria and have provided their consent.

Intervention

Permission to conduct the DNP project was obtained from BDMC's Director of CCO (Appendix A). The entire presentation took approximately 15 minutes to complete. The education presentation took place between September 18, 2025, and September 25, 2025. All

potential candidates received a recruitment email prior to the event, detailing the purpose of the DNP project, what to expect during the event, the voluntary nature of the event, and the disclosure form (Appendices B and C). On the specified date, an email was sent to the willing participants containing the disclosure form, a QR code for the pre-test and post-test surveys, and an audio-recorded PowerPoint presentation. Participants were encouraged to complete the surveys during their review of the material; however, because this initiative was a quality improvement project rather than a research study, participation and survey completion were entirely voluntary and non-research in nature, allowing participants until the end of the project period to do so at their convenience.

The presentation included an audio-recorded PowerPoint that all SWAT RNs can access via BDMC. A QR code for the pretest and posttest was provided, allowing completion on a mobile device. The presentation covered data demonstrating the rising stress levels among critical care nurses and the adverse effects of stress. It also discussed the relationship between NPY and stress, and the benefits of MBSR techniques, including recommendations for Headspace and a guide on how to set up an account with Headspace. The PowerPoint presentation and its script can be found in Appendix E. At the end of the presentation, a QR code will be available for scanning, allowing participants to complete the posttest survey immediately.

Evaluation Measures

Google Forms was used to create a Likert-style survey to assess participants' knowledge before and after completing the intervention, as well as their intention to adopt Headspace into practice. QR codes were available to scan before and after the presentation, allowing participants to complete the survey immediately if they chose to do so. The DNP Chair reviewed the survey

questions before their use in this intervention and confirmed their appropriateness for this project.

Analysis

Data from the surveys were stored in a password-protected Google Sheets document. Bar charts were used to compare variations in score frequencies, means, medians, minimums, and maximums. A summary of the data, along with p-scores, is presented in a table. A p-value of <0.05 was considered for data analysis. Changes in mean scores will be shown with bar charts. The Wilcoxon signed-rank test was selected over a paired t-test to analyze pre- and post-intervention survey responses because the data were ordinal (Likert-scale) and the sample size was small ($n = 9$). Paired t-tests assume interval data and normally distributed differences, which are unlikely to be valid assumptions given the small sample and ordinal responses (Goldstein-Greenwood, 2022). In contrast, the Wilcoxon signed-rank test is a nonparametric method that does not assume normality and examines whether the median difference between paired observations significantly differs from zero; therefore, it was the most suitable choice for this analysis study (Goldstein-Greenwood, 2022). A freely accessible Wilcoxon Signed-Rank Test calculator provided by Social Science Statistics (2025) was used. All data was securely stored on a password-protected computer within a secure Google Forms and Google Sheets environment. No personally identifiable information was collected or stored.

Ethical Considerations

This Doctor of Nursing Practice (DNP) project was conducted in accordance with the policies and procedures established by the University of Arizona and through Banner Health regarding informed consent, autonomy, and privacy. Data from the surveys were treated as

ordinal data and were extracted into Google Sheets, where descriptive and inferential statistics were calculated. This author was the only one to have access to this data and other information from the surveys. Before they participated in the study, all participants were presented with voluntary consent and disclosure forms (Appendix B). All communication emails included the consent form, and consent was deemed implied when participants proceeded with the intervention, as indicated in the disclosure form. To honor autonomy, participants had the option to withdraw voluntarily for any reason and without prior notice. To uphold privacy, all personally identifiable information was excluded, and no participant names will be linked to either the pre-test or post-test. Moreover, the author did not have access to personally identifiable information derived from the survey results. The classification of human subjects was approved by the Banner Research Determination Committee (RDC) and/or Institutional Review Board (IRB) before any implementation.

IRB Review and Approval

The University of Arizona, due to its partnership with Banner, delegated approval authority to Banner's RDC and IRB for this project. The first requirement for approval to conduct this DNP project at BDMC is to be a full-time employee of Banner. After that, the proposal development process can begin, with the DNP Committee Chair/Faculty Advisor collaborating with the DNP Student to identify a suitable project. The use of resources from Banner Health Evidence-Based Practice (EBP) Nursing Research (NR) leads can also help identify specific projects or ideas for development. Once a suitable project is selected, the DNP Student should work closely with their faculty Chair/Advisor until the proposal is prepared for

presentation at the NR EBP Committee Meeting, where nursing leaders will assess its feasibility and relevance to the facility's nursing staff.

Once feasibility and relevance are confirmed, the DNP student should collaborate with their facility's EBP Director on Banner's RDC application. This application includes the site approval/authorization from the director of the applicable unit (Appendix A), the invitation to participate (Appendix B), and the recruitment email (Appendix C). All documents must be prepared using Banner RDC's templates. The RDC application should include all materials needed for the project, including data collection tools (Appendices D & E). It must be submitted at least three weeks before the next scheduled RDC Committee meeting. During this period, the RDC may contact the DNP student to request revisions, both in a "track changes" version with redline edits and a finalized "clean" version. After the RDC/IRB determination is made, an email will be sent to the DNP student, providing them with the official notice of approval to proceed with the DNP Project.

This DNP project was submitted for Banner RDC approval on August 12, 2025. The lead time for Banner RDC approval is three weeks, during which the Banner RDC can request revisions to parts of the project before a determination is made at the next committee meeting. This meeting took place on September 9, 2025, where the review board would decide whether the project constitutes research and, therefore, would be approved by the RDC and IRB, or if it does not constitute research and requires further investigation through Banner's IRB.

Additionally, BDMC's NR EBP Committee assessed the feasibility and applicability on August 13, 2025, and verbally approved the project's submission to the Banner RDC. The Banner RDC determined that this DNP project did not require research approval from the Banner

IRB on September 9, 2025, with final approval given on September 17, 2025, which approved the completion of this project at BDMC (Appendix H)

Results

This DNP QI project, “The Impact of Structured Education and Stress Reduction Among SWAT Nurses,” was conducted at BDMC from September 18, 2025, to September 25, 2025. Participants received all required documentation via email, including the On-Demand PowerPoint Presentation with the pre- and post-evaluation QR codes. A total of nine SWAT nurses at BDMC completed the pre- and post-survey questions within the designated data collection period. By choosing to participate, all nine SWAT nurses provided consent and met the inclusion criteria for the study. No demographic or other personally identifiable information was collected to ensure participant anonymity and confidentiality.

This QI project aimed to assess familiarity with perceived benefits of, and the intent to adopt MBSR techniques into personal practice utilizing the Headspace app. Likert-style questions were used to gather data, and participants selected numbers ranging from ‘1’ (strongly disagree) to ‘5’ (strongly agree). A total of six questions were used for data collection in the pre- and post-surveys, with an additional seventh question included in the post-survey to determine if participants would use a resource other than Headspace for their stress reduction practices. Table 1 outlines the data collected, along with p-value and R-value scores for each dataset. Question 7 on the posttest was not used for statistical analysis and was intended solely to guide future quality improvement processes or student projects.

Table 1

Summary of Data Collected, Including p-value for Each Dataset

Survey Questions	Pre (n=9)		Post (n=9)		P-Value (p < .05)
	Mean (s.d.)	Median (min, max)	Mean (s.d.)	Median (min, max)	
I am familiar with what Mindfulness-Based Stress Reduction is.	1.78 (0.44)	2 (1, 2)	4.33 (0.70)	4 (3, 5)	.003
I am familiar with the benefits related to Mindfulness-Based Stress Reduction.	1.88 (0.92)	2 (1, 4)	4.34 (0.5)	4 (4,5)	.005
I would better understand Mindfulness-Based Stress Reduction if I were formally educated on its use.	3.66 (1.22)	4 (2, 5)	4.33 (0.86)	5 (3, 5)	.046
One benefit of Mindfulness-Based Stress Reduction is that it has been proven to be effective.	2.88 (0.78)	3 (2, 4)	4.66 (0.5)	5 (4, 5)	.005
Mobile apps, such as Headspace, can be used to utilize Mindfulness-Based Stress Reduction techniques effectively and conveniently.	3.11 (0.92)	3 (2, 5)	4.55 (0.52)	5 (4, 5)	.01
I intend to use Headspace as a tool to aid in my stress reduction.	2.88 (0.78)	3 (2, 4)	4.11 (0.6)	4 (3, 5)	.008

Familiarity

To test for familiarity, three questions were developed: *I am familiar with what Mindfulness-Based Stress Reduction is*; *I am familiar with the benefits related to Mindfulness-Based Stress Reduction*; and *I would better understand Mindfulness-Based Stress Reduction if I were formally educated on its use*.

I am familiar with what Mindfulness-Based Stress Reduction is

Figure 3 offers a visual overview of the data collected from the pretests and posttests. In the pre-test, two participants chose '1,' while seven selected '2.' The average pretest score was 1.78 with a standard deviation of 0.44. The median score was '2,' with minimum and maximum values of '1' and '2.' The posttest average rose to 4.33 with a standard deviation of 0.70, and the median was '4,' with minimum and maximum values of '3' and '5.' A p-value of 0.003 shows these results are statistically significant.

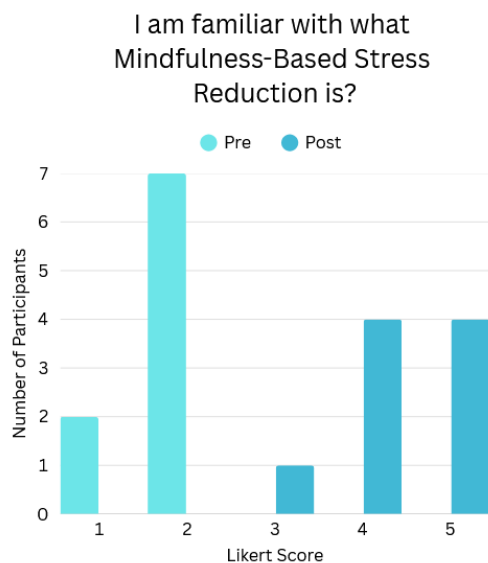
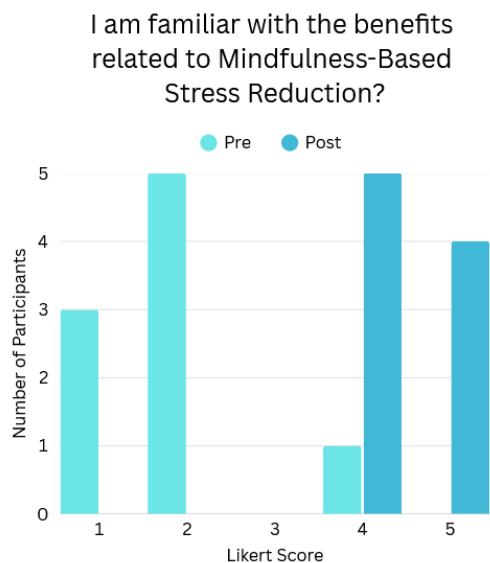
Figure 3*Frequencies for Familiarity with MBSR**I am familiar with the benefits related to Mindfulness-Based Stress Reduction*

Figure 4 shows a graph of participants' responses to question 2 in both the pretest and posttest. In the pretest, three participants selected '3,' five selected '2,' and one selected '4.' The pretest average was 1.88, with a standard deviation of 0.92. The median score was '2,' with scores ranging from '1' to '4.' In the posttest, five participants chose '4,' and four chose '5.' The average score for the posttest was 4.34, with a standard deviation of 0.5. The median score was '4,' with minimum and maximum scores of '4' and '5,' respectively. A p-value of 0.005 indicates these results are statistically significant.

Figure 4

Frequencies for Familiarity with Benefits of MBSR

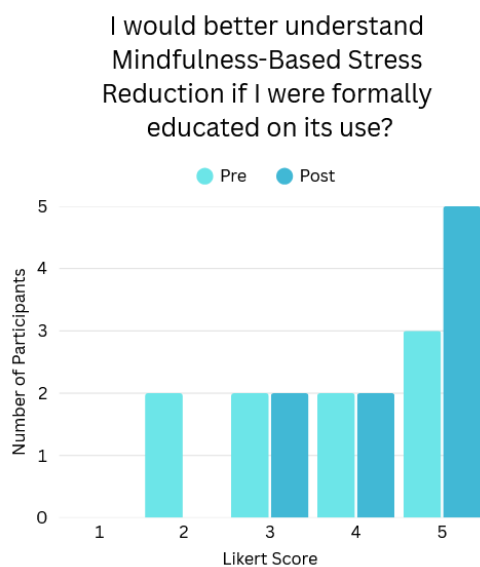


I would better understand Mindfulness-Based Stress Reduction if I were formally educated on its use

Figure 5 shows a graph of the selected pre- and post-test responses regarding the need for education on MBSR. In the pretest, two respondents chose '2,' two chose '3,' two chose '4,' and three chose '5.' The average score was 3.66, with a standard deviation of 1.22. The median score was '4,' with a range from '2' to '5.' In the posttest, two respondents selected '3,' two selected '4,' and five selected '5.' The average score rose to 4.33, with a standard deviation of 0.86. The range was from '3' to '5,' and the median score was '5.' A p-value of 0.046 indicates these results are statistically significant.

Figure 5

Frequencies for the Need for Education to Understand MBSR



Perceived Benefit

The second aim of this project was to increase the perceived benefit of MBSR techniques. This was done by formulating the following question: *One benefit of Mindfulness-Based Stress Reduction is that it has been proven to be effective, and Mobile apps, such as Headspace, can be used to utilize Mindfulness-Based Stress Reduction techniques effectively and conveniently.*

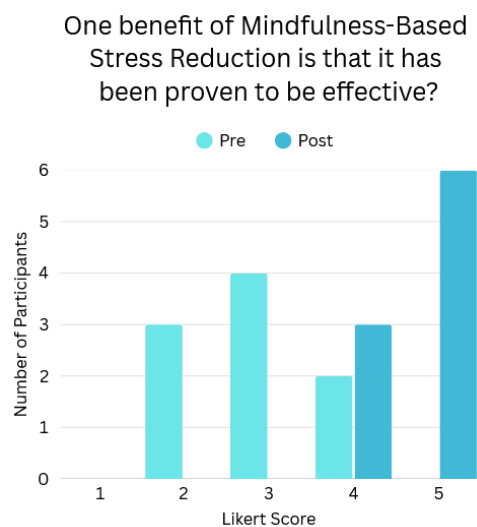
One benefit of Mindfulness-Based Stress Reduction is that it has been proven to be effective

Figure 6 shows a graph of participants' responses during the pretests and post-tests for this question. In the pretest, three participants chose '2,' four chose '3,' and two chose '4.' The average score was 2.88 with a standard deviation of 0.78. The scores ranged from '2' to '4,' with a median of '3.' In the posttest, three participants selected '4,' and six selected '5.' The average

score was 4.66 with a standard deviation of 0.5. Scores ranged from ‘4’ to ‘5,’ with a median of ‘5.’ A p-score of 0.005 indicates that these results are statistically significant.

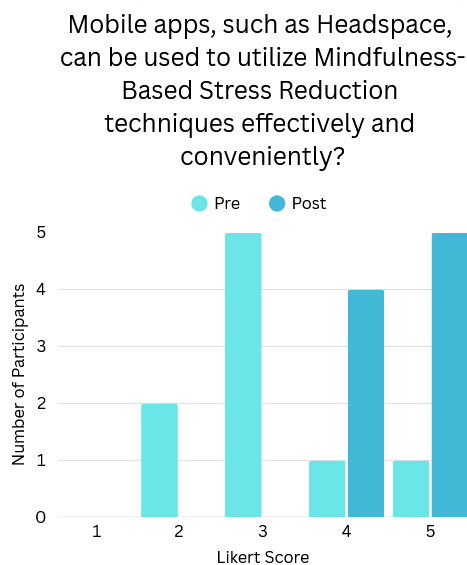
Figure 6

Frequencies of the Effectiveness of MBSR



Mobile apps, such as Headspace, can be used to utilize Mindfulness-Based Stress Reduction techniques effectively and conveniently

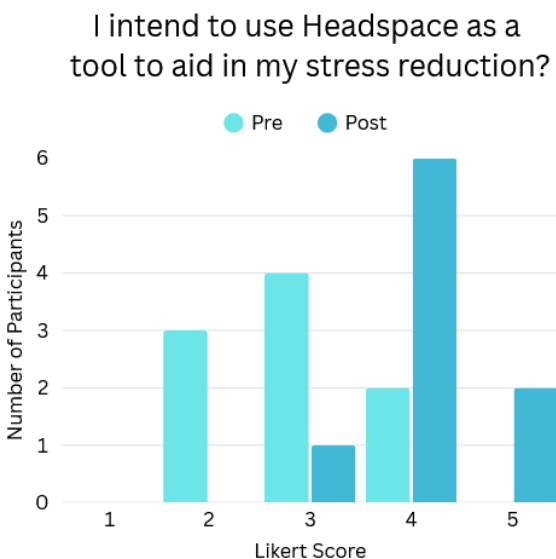
Figure 7 illustrates the scores during the pretests and posttests for this question. In the pretest, two responders selected ‘2,’ five chose ‘3,’ one selected ‘4,’ and one chose ‘5.’ The mean score was 3.11 with a standard deviation of 0.92. Scores ranged from ‘2’ to ‘5,’ with a median of ‘3.’ In the posttest, four responders chose ‘4,’ and five chose ‘5,’ resulting in a mean score of 4.55 and a standard deviation of 0.52. Scores ranged from ‘4’ to ‘5,’ with a median of ‘5.’ These results yielded a p-value of 0.01, indicating statistical significance for this dataset.

Figure 7*Headspace for MBSR is Effective and Convenient***Intent to Adopt**

The third aim of this QI project was to increase the participants' intent to adopt Headspace into their personal practice for MBSR. To determine this, the following question was formulated: *I intend to use Headspace as a tool to aid in my stress reduction.*

I intend to use Headspace as a tool to aid in my stress reduction

Figure 8 shows a graphical representation of participant answer frequencies for the pretest and posttest. During the pretest, three responders chose '2,' four chose '3,' and two chose '4,' resulting in an average score of 2.88 with a standard deviation of 0.78. The range was from '2' to '4,' with a median score of '3.' Posttest results were as follows: one participant chose '3,' six chose '4,' and two chose '5,' leading to an average score of 4.11 with a standard deviation of 0.6. The range was from '3' to '5,' with a median score of '4.' A p-value of 0.008 was found, indicating the results are statistically significant.

Figure 8*Frequencies of the Intent to Use Headspace for MBSR***Question 7 and Other Data**

Question 7 on the posttest survey was created solely to inform future quality improvement efforts or student projects and was not included in the statistical analysis of the data above. Additionally, mean and median scores were analyzed. Figure 9 presents the data from Question 7, while Figures 10 and 11 display the mean and median scores for the pre- and post-test results. Question 7 was designed to identify whether participants preferred to continue using Headspace or switch to another resource for their MBSR practices. The question states: I intend to use a different resource (not Headspace) to aid in my stress reduction.

For question 7, five participants chose '3,' three chose '4,' and one chose '5,' resulting in an average score of 3.55 with a standard deviation of 0.72. The lowest and highest scores were '3' and '5,' respectively, with a median score of '3.' Figure 10 shows the mean for the pretests

and posttests, while Figure 11 displays the median. Both figures demonstrate an increase in mean and median scores after education.

Figure 9

Frequency of Intent to Use a Different Resource

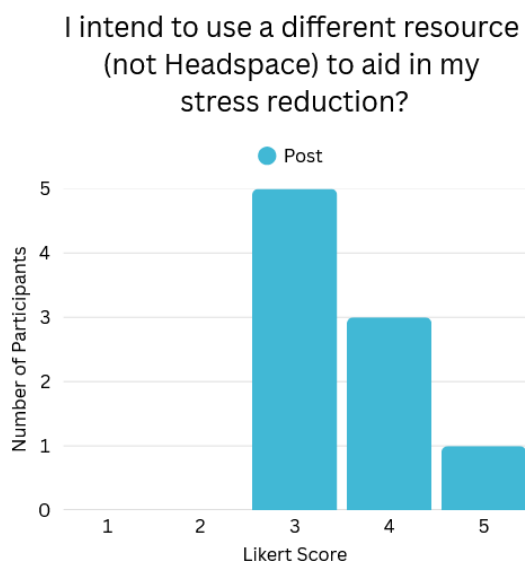


Figure 10

Pre- and Post-Assessment Mean Scores

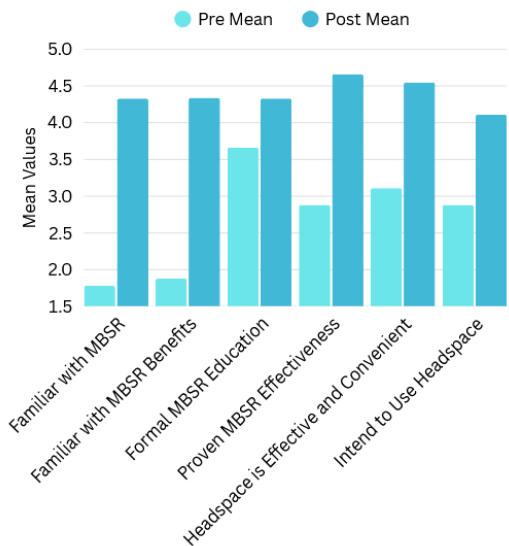
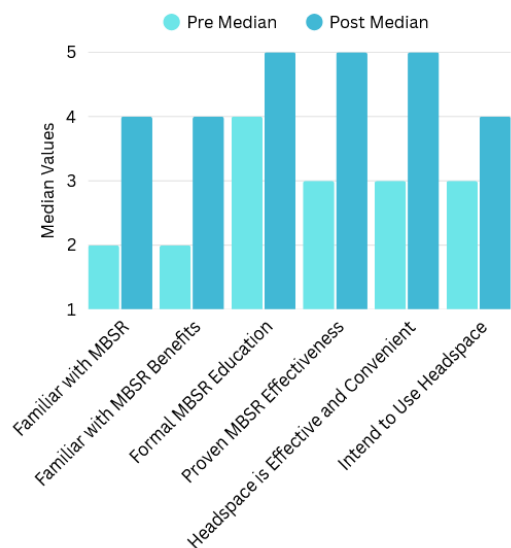


Figure 11*Pre- and Post-Assessment Median Scores*

Discussion

The findings of this DNP QI project show that a structured, on-demand educational intervention significantly boosted SWAT RNs' understanding of the benefits of MBSR techniques and their willingness to adopt them using the Headspace mobile app. Across all survey items, pretest and posttest scores demonstrated statistically significant improvements. This confirms the success of the educational intervention in boosting knowledge and the intention to use stress management strategies among critical care nurses.

Participants' familiarity with MBSR and its benefits increased significantly after the intervention. Pretest scores showed limited initial knowledge (mean scores 1.78-3.66), while post-test scores indicated greater understanding (mean scores 4.11-4.34). This indicates that targeted education can effectively improve knowledge. These findings are consistent with

previous research suggesting that structured MBSR education can raise awareness and understanding of stress reduction techniques.

The interventions also notably increased participants' perceived effectiveness and convenience of app-based MBSR. Scores for items evaluating the evidence-based benefits of MBSR and the usability of Headspace rose from means of 2.88 and 3.11 to 4.66 and 4.55, respectively. The findings of perceived effectiveness are consistent with research outcomes demonstrating that on-demand education on mobile-guided MBSR interventions can enhance individuals' perceived ability to manage stress.

Intent to integrate Headspace into personal practice also improved significantly, with posttest mean scores increasing from 2.88 to 4.11. This suggests that on-demand accessible educational interventions not only enhance knowledge but may also influence behavioral interventions, which is an essential factor in promoting sustainable stress management among critical care nurses.

Alignment with DNP Essentials

The Doctor of Nursing Practice (DNP) Essentials, created by the American Association of Colleges of Nursing (AACN) in 2006, provides a comprehensive framework of competencies required for the DNP degree. These Essentials guide DNP graduates in leading evidence-based practice initiatives, influencing healthcare policies, and delivering safe, high-quality patient care. This DNP project demonstrated alignment with several DNP Essentials, including the integration of scientific principles, the use of analytical methods for evidence-based practice, and the application of leadership strategies to improve clinical outcomes. By addressing these

competencies, the project shows how DNP-prepared nurses can translate evidence into practice to enhance patient care and promote system-wide quality improvements.

Essential I: Scientific Underpinnings for Practice

This project applies foundational scientific principles from neuroscience, psychology, and stress physiology to understand the mechanisms by which MBSR enhances resilience among SWAT nurses. The intervention draws on evidence regarding neuropeptide Y (NPY), HPA axis modulation, and structural changes in the brain that underlie stress reduction, reflecting the integration of scientific knowledge into advanced nursing practice.

Essential II: Organizational and Systems Leadership for Quality Improvement

The project showcases leadership through a structured, on-demand stress management education initiative within the SWAT RN unit. It tackles workflow challenges, enhances staff well-being, and provides a model for system-wide quality improvements, highlighting nurse-led efforts to boost organizational outcomes.

Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice

This project involved a comprehensive review of the literature, including meta-analyses, randomized controlled trials, and systematic reviews, to guide the development of the on-demand educational intervention on mobile-guided MBSR for stress reduction. The intervention included an audio-recorded PowerPoint presentation along with pre- and post-surveys. Data collection and statistical analysis of survey responses demonstrated the use of analytical methods to evaluate evidence-based practices, supporting informed decisions for strategies to improve perceived stress management among SWAT nurses.

Essential IV: Information Systems and Patient Care Technology

As part of the educational intervention, this project incorporated the Headspace mobile app to provide accessible, evidence-based mindfulness education to SWAT nurses. The intervention included an on-demand audio-recorded PowerPoint presentation, as well as pre- and post- surveys, demonstrating how digital tools can be effectively utilized to enhance self-directed learning, promote adherence to stress reduction strategies, and facilitate real-time data collection. By combining technology with structured assessment, the project emphasizes how information systems and patient care technologies can support quality improvement efforts and guide evidence-based practice in professional nursing settings.

Essential V: Health Care Policy for Advocacy in Health Care

Although this project was carried out at the unit level, it supports health care policy and advocacy by focusing on occupational health, nurse well-being, and burnout prevention. The educational intervention, which offered on-demand MBSR education, showed how evidence-based strategies can guide unit-level practices and offer practical insights for leaders. By raising awareness and perceived effectiveness of stress reduction techniques, the project provides a model that DNP-prepared nurses and organizational leaders can adopt to promote initiatives, advocate for employee wellness programs, and shape policies that boost staff resilience and patient safety.

Essential VI: Interprofessional Collaboration for Improving Patient and Population Health

This project was carried out at BDMC with approval delegated by the University of Arizona College of Nursing, which authorized Banner's RDC and IRB to oversee the quality improvement initiative. The DNP student worked closely with nursing leadership and other

healthcare professionals to implement and evaluate an educational intervention focused on on-demand MBSR education. Engaging these stakeholders ensured alignment with organizational goals, fostered a culture of wellness, and supported strategies to reduce stress-related errors and enhance clinical performance. The initiative demonstrates how DNP-prepared nurses can lead interprofessional efforts to improve staff well-being and indirectly influence patient and population health outcomes.

Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health

Registered nurses are experiencing high levels of stress and burnout, with surveys indicating that 62% face overwhelming workplace stress and 41.3% of those planning to leave the profession cite burnout as the main reason (Berlin et al., 2024; NCSBN, 2024). This project aimed to educate critical care nurses about the importance of stress reduction and burnout prevention to support workforce well-being. By promoting nurse mental health, the intervention not only improves patient safety and quality of care but also helps sustain a healthy, resilient nursing workforce capable of meeting population health needs.

Essential VIII: Advanced Nursing Practice

This project demonstrates advanced nursing practice by applying evidence-based interventions to solve complex clinical and organizational issues. It showcases leadership, scholarly inquiry, and the use of innovative strategies to enhance nurse resilience and patient safety.

Sustainability

The sustainability of this QI initiative relies on integrating MBSR education and app-based mindfulness practice into the ongoing professional development of SWAT nurses at

BDMC. The on-demand format of the educational intervention ensures long-term accessibility, allowing current and future nurses to engage with the content at their convenience, regardless of shift schedules or staffing constraints. Headspace, as a mobile application, provides a cost-effective, scalable, and self-directed platform that supports continued use beyond the initial training period.

To maintain engagement, leadership can introduce periodic reminders, optional follow-up sessions, or quick check-ins during team meetings to promote ongoing use and discussion of MBSR techniques. Incorporating the intervention into orientation for new SWAT nurses and including it in annual competency or wellness programs will help embed mindfulness practices into the unit culture as a routine part of professional development. Furthermore, tracking metrics such as voluntary usage rates, self-reported stress levels, or participation in follow-up surveys can provide ongoing feedback, enabling leadership to assess the continued impact and adjust strategies as needed.

By leveraging mobile technology, integrating mindfulness education into routine training, and actively promoting its use through leadership support, this initiative can remain a sustainable and practical part of stress management and burnout prevention for SWAT nurses over the long term.

Limitations

Although the findings were promising, several practical limitations should be recognized. The project involved a small, unit-level sample ($n = 9$), which reflects the scope of this quality improvement initiative rather than a research study aimed at generalization. Data were gathered through self-report measures, which may have been affected by participants' expectations or

perceptions. The brief duration of the intervention and the immediate post-test limited the ability to evaluate long-term knowledge retention, ongoing use of mindfulness strategies, or sustained stress reduction. Additionally, physiological measures of stress were not included, which could offer complementary evidence in future QI initiatives.

Conclusion

This quality improvement project highlights the potential of low-cost, flexible, and scalable interventions to reduce burnout and stress among SWAT nurses, a group especially vulnerable due to the high-pressure nature of rapid response roles. The on-demand educational intervention served as the foundation for this project; without it, improvements in familiarity, perceived benefits, and intention to adopt stress reduction practices would not have been achievable. On-demand education allows critical care nurses to participate in stress management strategies despite shift work, unpredictable schedules, and limited chances for in-person training. These results indicate that similar QI initiatives could be sustainably incorporated into unit-level practice to boost staff well-being and guide future organizational strategies.

Implications for Future Practice

This project illustrates that on-demand education can serve as an effective platform to support nurses' well-being, resilience, and stress reduction. From an organizational perspective, implementing scalable educational interventions allows leadership to incorporate wellness strategies into existing workflows, boost staff engagement, and foster a culture of safety and support. Integrating these approaches into unit-level wellness programs may reduce turnover, increase staff satisfaction, and improve the overall functioning of high-acuity teams, ultimately benefiting organizational performance and sustainability.

From a clinical perspective, enhancing nurse well-being directly influences patient care. Nurses with lower stress levels are better able to focus, make accurate clinical decisions, and deliver high-quality care, which reduces errors and improves patient outcomes. Incorporating stress reduction and resilience strategies into routine practice enables clinicians to maintain their mental health while providing safe, patient-centered care. This creates a positive feedback loop that supports both workforce stability and patient safety.

Overall, future QI initiatives could focus on expanding on-demand educational interventions across units, assessing their integration into organizational policies, and continuously tracking clinical results. This approach demonstrates how staff wellness and clinical excellence can be aligned to support sustainable improvements at both the clinical and organizational levels.

Appendix A

Banner Letter of Support (Site Approval/Authorization Letter)

BANNER DESERT MEDICAL CENTER

Date: 08/06/2025

To: Zachary Crouch, DNP-PMHNP Student
University of Arizona
School of Nursing

cc: Dr. Shawn Patrick Gallagher, PhD, DNP, PMHNP-BC, PMHCNS-BC, FNP-BC
Banner Health Research Determination Committee (via iRIS)

From: Michelle Geisbert, RN BSN, Director *Clinical Care Operations*

Re: The Impact of Structured Education on Stress Reduction among SWAT Nurses

Our team at Banner Desert Medical Center, Clinical Care Operations (CCO) Department have assessed the above referenced project proposal for implementation potential and determined that the project is feasible and congruent with Banner Health initiatives: Strong Teams through Strong Engagement, Becoming a High Reliability Organization It aligns with our goal: to relentlessly improve and higher staff retention.

The resources needed: time and effort have been reviewed and determined necessary/acceptable. Further it is my/our understanding that the CCO Department and SWAT Nurses assisting with data collection and participating in the educational project are in full support of the project.

The Banner Health Research Determination Process requires this letter of support along with the project application be uploaded into the IRIS electronic program. The Banner Research Determination Committee (RDC) will then review your initiative. This same committee will provide one final check for HIPPA compliance.

Following a determination of non-research, non-human subjects research, or exempt human subjects research that falls under one of the categories the RDC may grant approval for, you will be notified of approval to begin your project at Banner Desert Medical Center.

However, should the RDC determine your project constitutes human subjects research or involves protected health information (PHI), that requires Institutional Review Board (IRB) review, you will be notified and may begin the IRB review process. If your project will be reviewed by the Banner Health IRB, the Banner Research Regulatory Affairs team will also be notified to assist you with the submission process. You may not initiate the project until the IRB has granted approval.

Should you have any questions during the process, please contact RDC Staff at BHIRB_RDCMailbox@bannerhealth.com. Upon completion of your project, we request that you disseminate your findings to the CCO Department or in another mutually agreed upon forum. Best wishes on the successful completion of your project.

Sincerely,



Michelle Geisbert, RN BSN, Director *Clinical Care Operations*

By checking this box, I attest to the project feasibility and confirm all necessary department/facility approval have been obtained.

Appendix B

Consent Document (Invitation to Participate; Voluntary Disclosure; Consent Form)

THE IMPACT OF STRUCTURED EDUCATION ON STRESS REDUCTION AMONG SWAT NURSES

Project Lead: Zachary Crouch

Dear Colleagues,

My name is Zachary Crouch and I am a Doctor of Nursing Practice student at the University of Arizona. As a requirement for completion of my degree, you are invited to participate in the quality improvement project (QI) titled “The Impact of Structured Education on Stress Reduction among SWAT Nurses.”

The purpose of this project is to increase the perceived knowledge and perceived benefits of Mindfulness-Based Stress Reduction (MBSR) techniques among BDMC SWAT RNs and their intention to adopt MBSR (i.e., Headspace) into their practice.

If you choose to take part in this project, you will be asked to:

1. Complete a short pretest survey (2 minutes)
2. Participate in an on-demand PowerPoint educational session (10 minutes)
3. Complete a short posttest survey (2 minutes)

There are no foreseeable risks associated with participating in this project. Benefits of participation may include an increase in confidence and knowledge about stress reduction. Your survey responses are anonymous. Your name will not be collected or linked to your answers.

Completion of the survey and participation in this QI project is voluntary.

By choosing to participate in this project, you are providing your consent.

You may withdraw at any time from the project.

Participation in this project is not a condition of employment at Banner Health. You may complete this survey at work. If you elect to complete the survey on your own time, you will not be paid for your time spent on completing the survey.

For questions, concerns, or complaints about the project, you may contact:

Zachary Crouch, RN

DNP-PMHNP Student, University of Arizona

Email: zacharycrouch@arizona.edu

Appendix C

Recruitment Material (Recruitment Email)

Subject: Invitation to Participate in DNP Project on Stress Reduction for SWAT Nurses

Dear BDMC CCO SWAT Team,

Zachary Crouch will be conducting a DNP project titled “**The Impact of Structured Education on Stress Reduction Among SWAT Nurses**” and is seeking full-time or part-time SWAT nurses to participate. The goal of this project is to assess the perceived knowledge, perceived benefit, and their intent to adopt Mindfulness Based Stress Reduction techniques via mobile application Headspace into their health practice.

Exclusion criteria:

If you have received formal education on Mindfulness-Based Stress Reduction (MBSR) within the past 6 months, your participation is not necessary. You are welcome to view the on-demand PowerPoint in-service, but your survey responses would not be applicable.

Participation is **voluntary**; you may withdraw consent at any time, and there is **no perceived benefit** for participating. If you choose to take part, you will receive via the attached PowerPoint:

- A QR code to complete a **pre- and post-intervention survey**
- An **on-demand PowerPoint in-service** on stress reduction

Attached is the **invitation to participate**. Please read it carefully. If you choose to participate, please open the attached educational PowerPoint, complete the pre-survey via QR code on the first slide, read through and listen to the content provided on the PowerPoint, and finally complete the post-survey via QR code at the end of the presentation. You can come back to the PowerPoint at any time. The survey is open from 09/18/2025 to 09/25/2025.

Thank you for considering this opportunity to support evidence-based practice and improve stress management among SWAT nurses.

Best regards,

Samantha Abel, RN MSN
Associate Director *Clinical Care Operations*
480-412-3267



Zachary Crouch, DNP-PMHNP Student
University of Arizona
zacharycrouch@arizona.edu



Appendix D

Evaluation Instruments (Pre-Education Survey, Post-Education Survey)

Mindfulness Based Stress Reduction

Pre-Education Survey_ver 2.0_8-24-2025

* Indicates required question

I am familiar with what Mindfulness-Based Stress Reduction is? *

1 2 3 4 5

Strongly Disagree Strongly Agree

I am familiar with the benefits related to Mindfulness-Based Stress Reduction? *

1 2 3 4 5

Strongly Disagree Strongly Agree

I would better understand Mindfulness-Based Stress Reduction if I were formally educated on its use? *

1 2 3 4 5

Strongly Disagree Strongly Agree

One benefit of Mindfulness-Based Stress Reduction is that it has been proven to be effective? *

1 2 3 4 5

Strongly Disagree Strongly Agree

Mobile apps, such as Headspace, can be used to utilize Mindfulness-Based Stress Reduction techniques effectively and conveniently? *

1 2 3 4 5

Strongly Disagree Strongly Agree

I intend to use Headspace as a tool to aid in my stress reduction? *

1 2 3 4 5

Strongly Disagree Strongly Agree

Submit

Clear form

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Does this form look suspicious? [Report](#)

Google Forms

Mindfulness Based Stress Reduction

Post-Education [Survey_ver_2.0_8-24-2025](#)

* Indicates required question

I am familiar with what Mindfulness-Based Stress Reduction is? *

1 2 3 4 5
Strongly Disagree Strongly Agree

I am familiar with the benefits related to Mindfulness-Based Stress Reduction? *

1 2 3 4 5
Strongly Disagree Strongly Agree

I would better understand Mindfulness-Based Stress Reduction if I were formally educated on its use? *

1 2 3 4 5
Strongly Disagree Strongly Agree

One benefit of Mindfulness-Based Stress Reduction is that it has been proven to be effective? *

1 2 3 4 5
Strongly Disagree Strongly Agree

Mobile apps, such as Headspace, can be used to utilize Mindfulness-Based Stress Reduction techniques effectively and conveniently? *

1 2 3 4 5
Strongly Disagree Strongly Agree

I intend to use Headspace as a tool to aid in my stress reduction? *

1 2 3 4 5
Strongly Disagree Strongly Agree

I intend to use a different resource (not Headspace) to aid in my stress reduction? *

1 2 3 4 5
Strongly Disagree Strongly Agree

Submit

Clear form

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Google Forms

Appendix E

Participant Material (PowerPoint Presentation; Script for the Audio Recording)

THE IMPACT OF STRUCTURED EDUCATION ON STRESS REDUCTION AMONG SWAT NURSES

Zachary Crouch, DNP-PMHNP Student

Pre-Education
Survey



THE UNIVERSITY OF ARIZONA
College of Nursing



Burnout in Nursing – A Widespread Crisis

- 62% of RNs report overwhelming workplace stress.
 - 31.4% consider leaving the profession entirely.
- 63% of nurses feel their employers do not prioritize mental well-being.
- Bedside RN burnout impacts SWAT RNs due to high-stress responsibilities.
 - Dual responsibility: Clinical intervention and team mentorship.
- Mindfulness-Based Stress Reduction (MBSR) is proven to help provide stress relief.

References: (Berlin et al, 2024; Shah et al., 2021; APA, 2019)



Burnout in Nursing – A Widespread Crisis

- “Burnout” was coined in 1974 to describe fatigue among “helping man” professions.
- WHO classifies burnout as an occupational syndrome (ICD-11)
- Burnout in nurses is linked to emotional exhaustion, depersonalization, and low self-worth.
 - Critical care nurses face higher risks due to trauma, ethical dilemmas, and a lack of emotional processing.
 - 31% Emotional exhaustion, 18% depersonalization, 46% diminished sense of personal accomplishment.
- Consequences: PTSD, anxiety, depression, physical illness, and reduced patient care quality.
- SWAT RNs face high demands and are expected to handle critical patient deterioration
- Education on MBSR is vital to promote resilience and patient safety.

References: (Ramirez-Elvira et al., 2021; Kerlin et al., 2020; WHO, 2019; Heinemann & Heinemann, 2017)



Neurobiology of Mindfulness & Stress Reduction

- Mindfulness modulates **neuropeptide Y (NPY)**, which buffers the stress response via HPA axis.
 - NPY reduces cortisol secretion – ↓ physiological stress.
- NPY induces structural brain changes:
 - ↓ Activity in the basolateral amygdala (BLA).
 - ↑ Executive function via enhanced prefrontal cortex activation.
- Results in greater **emotional control, resilience, and reduced fear/anxiety.**

References: (Østergaard et al., 2025; Michaelson et al., 2020; Gotnik et al., 2016)



Guided Meditation & MBSR App Delivery

- Guided meditation (e.g., body scan, mindful breathing) is beginner-friendly and accessible.
 - Offers structure, reduces overthinking, and supports MBSR skill development.
- RCTs have shown that self-guided, mobile MBSR apps are an effective way to improve stress, anxiety, and depression.
- Evidence-based apps like **Headspace** and **Calm** deliver guided meditation conveniently through a mobile device.
 - Headspace is validated through multiple RCTs for reducing stress, anxiety, and depression.
 - Calm has been shown to improve mindfulness and reduce stress in one RCT.

References: (Lopez-Del-Hoyo et al., 2024; Taylor et al., 2022; Huberty et al., 2019; Yang et al., 2015)

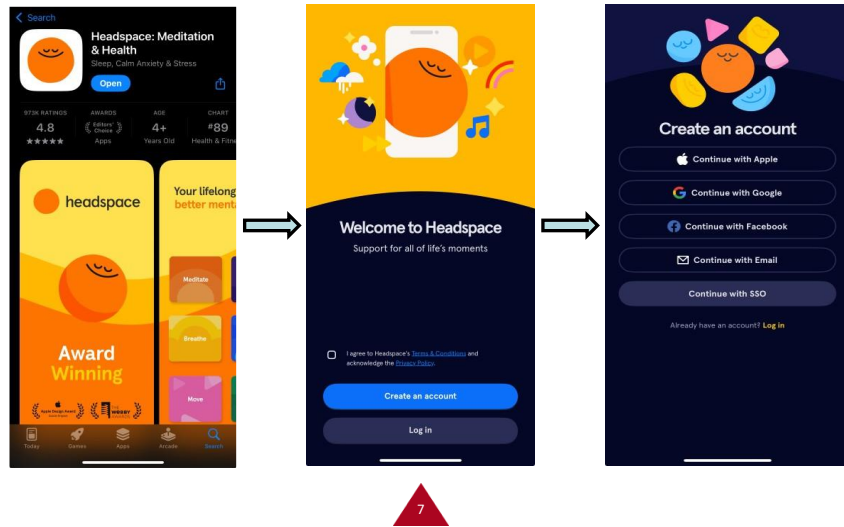


Implications for Mental Health and Practice

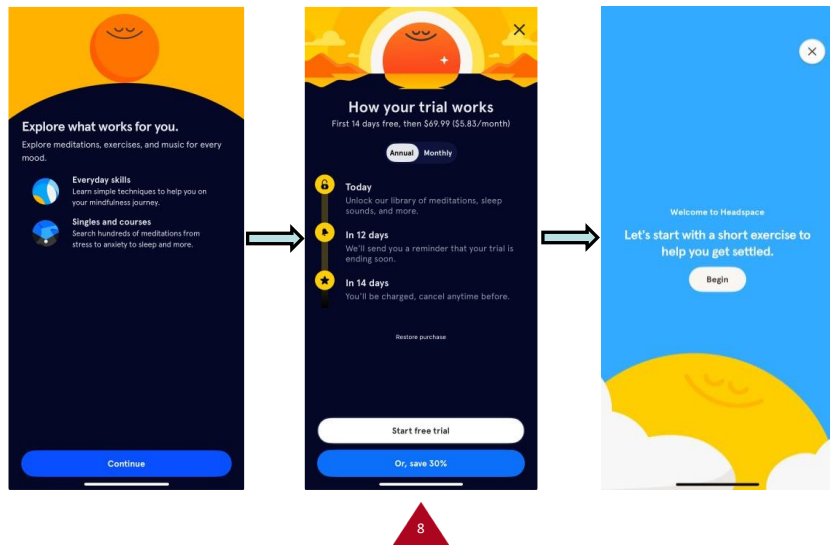
- **Reduced burnout:** Enhances emotional resilience and mitigates emotional exhaustion.
- **Improves patient safety:** Less stress means fewer errors and better clinical performance.
- **Supports nurse retention:** Increased coping ability leads to lower turnover rates.
- **Accessible interventions:** Apps like *Headspace* offer low-barrier, on-demand support.
- **Neurobiological benefits:** Improves emotional regulation via prefrontal cortex activation and reduced amygdala hyperactivity.
- **Cost-effective:** Reduces absenteeism and long-term healthcare costs related to stress-induced conditions.



Headspace Application



Headspace Application



Headspace Application



9

Summary

- **Burnout is a critical issue in nursing**, especially among SWAT RNs due to high-stress roles and dual responsibilities (clinical care + mentorship).
- **Mindfulness-Based Stress Reduction (MBSR)** is a proven, accessible intervention for reducing stress, anxiety, and emotional exhaustion.
- **Neurobiological mechanisms** include increased prefrontal cortex activity and decreased amygdala hyperactivity, improving emotional control and resilience.
- **Mobile MBSR apps** like *Headspace* are evidence-based tools shown to reduce stress, improve mindfulness, and enhance mental health outcomes.
- **Practice implications** include:
 - Improved patient safety and clinical performance
 - Higher nurse retention and resilience
 - Cost-effective, low-barrier mental health support

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11

Post-Education Survey



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Slide 1.

“Hello, everyone, my name is Zachary Crouch. I am in the Doctor of Nursing Practice program at the University of Arizona. Thank you for agreeing to participate in this presentation and for listening to the information I have about stress. If you haven't already, please complete the Pre-Education Survey via the QR Code on the bottom left of the screen by scanning it with your mobile device. Please pause the PowerPoint to scan the QR code and complete the survey before continuing. Thank you.”

Slide 2.

“Nursing stress and burnout have reached a critical level, with over 60% of RNs overwhelmed and nearly a third considering leaving the profession. This is due to a combination of poor staffing, weak leadership, and high workloads. At Banner Desert Medical Center, SWAT RNs are particularly affected, as they respond to intense clinical events and are increasingly overutilized. To address this, we selected mindfulness-based stress reduction — or MBSR — as our primary intervention to support mental well-being.”

Slide 3.

"The term 'burnout' was first introduced by Herbert Freudenberger in 1974, highlighting the emotional and physical fatigue common among those in helping professions. Since then, the World Health Organization (WHO) has formally recognized burnout as an occupational syndrome. In nursing, especially critical care, the condition manifests as emotional exhaustion, detachment, and a loss of personal accomplishment. These symptoms, when left unaddressed, can result in PTSD, anxiety, depression, and even chronic physical illness — all while compromising patient care. SWAT RNs at Banner Desert Medical Center serve on the frontlines, rapidly assessing and managing clinical deterioration. Yet, they face mounting stress due to under-resourcing, unclear expectations, and frequent exposure to trauma. With chronic stress being a root cause of burnout, it's essential to assess their current understanding of stress management. Providing structured mindfulness-based stress reduction education can enhance coping, improve resilience, and ultimately support both staff and patient outcomes."

Slide 4:

"Mindfulness works on a neurobiological level by increasing neuropeptide Y, or NPY, which downregulates the hypothalamic-pituitary-adrenal axis (HPA) and reduces cortisol levels—the primary stress hormone. NPY also alters brain structure and function by dampening amygdala activity and enhancing the prefrontal cortex's control over emotional regulation. This shift supports greater resilience and emotional clarity under stress, especially important for critical care nurses."

Slide 5:

"Guided meditation is a popular entry point into mindfulness-based stress reduction, or MBSR. These practices are structured, easy to follow, and effective—especially when delivered via mobile apps like Headspace and Calm. Headspace, in particular, has been rigorously studied and shown to lower stress and improve mental health across a range of populations. Calm also shows similar benefits, especially in promoting mindfulness and self-compassion. These apps offer a convenient, private, and accessible option—especially valuable for SWAT RNs with long hours and high-stress roles. For the purpose of this project, Headspace was the clear choice after analyzing the current data in support of the app.

Slide 6:

"Implementing MBSR techniques, especially through evidence-based mobile applications, offers powerful implications for nursing mental health and system-wide outcomes. These practices are linked to reduced burnout, improved emotional regulation, and better retention of experienced nurses—factors that directly affect patient safety and organizational efficiency. Apps like *Headspace* provide accessible, cost-effective ways to foster stress resilience, all while promoting sustainable, long-term mental health support within high-stress healthcare environments like critical care."

Slide 7:

Headspace is backed by evidence and is beneficial in helping improve stress and anxiety. Because of this, it is the recommended mobile application. Let's briefly review how to set up an account with Headspace using the mobile app. First, go to the App Store or Google Play Store and search for "Headspace". Once you find the app, go ahead and download it. After downloading the app, open it, and you will be presented with this page. Check the box to agree to the terms and conditions to create your account. |When you create an account, there are various options for you to choose from. Please select the preference that suits you best.

Slide 8:

"You will now be on this page, where you can select options that suit your needs. Please choose the options you prefer. Next, you will be directed to this page, where it will help guide you based on the preferences you selected previously. Headspace is a pay-to-use mobile app; however, it does offer a 14-day free trial for users to explore the app's contents and decide if they are willing to invest in its features. Either select the free trial or add your payment information if you are willing to proceed with payment immediately. You can select annual or monthly billing. You can see here that the annual fee is \$69.99 annually, or about \$5.83 per month. After choosing the free trial or paying, it will start with a short exercise to prepare you for the journey you are about to take."

Slide 9:

“You can choose to continue with it or not by selecting the ‘X’ in the top right corner. Once you are on the home screen, you can see that it has chosen a few modules for me based on the selections I chose earlier. It has a few for the morning, afternoon, and evening. You can also choose to explore other options by hitting the ‘Explore’ button on the bottom, and scrolling through an extensive list of options they have. What is shown on the screen is a fraction of the options they have available.”

Slide 10:

“This project explores the impact of structured education on stress reduction among SWAT nurses. Burnout is a serious and growing issue, especially in high-acuity roles that demand both clinical expertise and team leadership. Symptoms like emotional exhaustion and depersonalization are common, and they directly impact patient care and nurse retention.

Mindfulness-Based Stress Reduction, or MBSR, has proven to be an effective solution. It helps regulate stress hormones, enhances emotional control, and improves brain function by reducing activity in the amygdala while strengthening the prefrontal cortex.

Mobile apps like Headspace and Calm make these techniques easily accessible. They’re evidence-based, low-barrier tools that improve stress, anxiety, and overall mental well-being.

Ultimately, MBSR leads to better clinical performance, safer patient outcomes, and higher nurse retention—all while reducing long-term costs related to burnout and absenteeism.”

Slide 11:

“Here is my list of references used for the information in this PowerPoint presentation. If anyone would like more information, please let me know, and I would be more than happy to share my sources.”

Slide 12:

“Here is a QR code to the post-test survey. I would greatly appreciate it if you could scan it and complete the survey. Thank you all for your time and for allowing me to complete my DNP project here and share the information I have learned about MBSR and its potent stress reduction capabilities. Thank you again, and I hope everyone has a wonderful day.”

Appendix F
Project Timeline

Completion Date	Planning	Pre-implementation	Implementation	Evaluation
08/06/2025	Site Approval			
08/13/2025	Banner NR EBP Committee Approval.			
09/17/2025	Banner RDC/IRB Results Received.			
09/18/2025		Recruitment Email will be sent to BDMC CCO SWAT Team.		
09/18 – 25/2025			An on-demand PowerPoint Presentation will be emailed to Participants, along with a QR code for the pre- and post-surveys.	
09/26 – 28/2025				Data analyzed.
09/29/2025				Data results and barriers will be presented to stakeholders.

Appendix G
Literature Review Grid

Project Question: Will an on-demand in-service education session on the effects of stress and potential benefits of guided meditation as a stress management strategy increase SWAT RNs' perceived knowledge of, familiarity with, and intent to adopt these techniques using MBSR (i.e., Headspace)?

Author's Last Name/ Pub Year	Title of Publication	Type of Study	Main Outcomes	Support for Project
Barranquero-Herbosa, M., Abajas-Bustillo, R., & Ortega-Mate, C. (2022)	Effectiveness of flipped classroom in nursing education: A systematic review of systematic and integrative reviews	Systematic and Integrative Review	Academic performance and overall satisfaction improved with “flipped” classroom methods. Participants overwhelmingly felt more autonomous and flexible in their nursing education.	Voice-over PowerPoint presentations and pre-recorded online lectures significantly helped nursing students improve their test scores and feel more autonomous in their education.
Gotnik, R. A., Meijboom, R., Vernooij, M. W., Smits, M., Hunink, M. G. M. (2016).	8-week Mindfulness Based Stress Reduction induce brain changes similar to traditional long-term meditation practice – A systematic Review	Systematic Review	MBSR (n=11) and MBCBT (N=15) neuroimaging were compared utilizing MRI. Post-MBSR, the prefrontal cortex, cingulate cortex, insula, and hippocampus showed increased connectivity, activity, and volume in stressed, anxious participants. The amygdala also showed decreased functional activity and improved connectivity to the prefrontal cortex in response to stimuli.	Using neuroimaging, it demonstrates the effectiveness of MBSR and the positive, structural, and functional changes that MBSR produces within participants' brains.
Huberty, J., Green, J., Glissmann, C., Larkey, L., Puzia, M., Lee, C. (2019).	Efficacy of the Mindfulness Meditation Mobile App “Calm” to Reduce Stress Among College Students: Randomized Controlled Trial	Randomized Controlled Trial	Eighty-eight participants were split into control and intervention groups (exclusion criteria had not been met). Calm App utilizes mindfulness techniques aligned with MBSR and MBCBT, including guided meditation.	Calm is a useful and convenient mobile app that demonstrates the ability to reduce the overall stress and improve health behaviors of those who utilize the MBSR techniques within the app.

Author's Last Name/ Pub Year	Title of Publication	Type of Study	Main Outcomes	Support for Project
			<p>The perceived stress change was measured using the Perceived Stress Scale.</p> <p>The follow-up showed improvements in perceived stress, sleep quality, and mindfulness compared to the control group.</p>	
<p>López-Del-Hoyo, Y., Fernández-Martínez, S., Perez-Aranda, A., Monreal-Bartolomé, A., Barceló-Soler, A., Camarero-Grados, L., Armas-Landaeta, C., Guzmán-Parra, J., Carbonell, V., Campos, D., Chen, X., & García-Campayo, J. (2024).</p>	<p>Effectiveness of a Web-Based Self-Guided Intervention (MINDxYOU) for Reducing Stress and Promoting Mental Health Among Health Professionals: Results From a Stepped-Wedge Cluster Randomized Trial</p>	<p>Stepped-Wedge Cluster Randomized Trial</p>	<p>Web-based, self-guided mindfulness meditation programs focused on various mindfulness activities, such as MBSR and MBCBT.</p> <p>Improvements in the perceived stress scale, PHQ-9, GAD-7, BSI-18 in healthcare workers within the intervention group ($P<0.05$).</p> <p>Improvements in resilience, self-compassion, and mindfulness facets ($P<0.05$).</p>	<p>Large sample size of healthcare workers ($n=357$; $n=229$ “completers”).</p> <p>Self-guided MBSR applications are helpful for healthcare workers looking to improve resilience and mindfulness.</p> <p>Supports use of applications for personalized MBSR techniques and times of practice.</p>
<p>Michaelson, S. D., Tapia, A. P. M., McKinty, A., Villarroel, H. S., Mackay, J. P., Urban, J. H., & Colmers, W. F. (2020).</p>	<p>Contribution of NPY Y5Receptors to the Reversible Structural Remodeling of Basolateral Amygdala Dendrites in Male Rats Associated with NPY-Mediated Stress Resilience</p>	<p>Preclinical Study/Research</p>	<p>Endogenous NPY and CRF were used in vivo in the intervention group of rats to modulate BLA responses to stress.</p> <p>Electrophysiological imaging determined both groups' brain electrical activity in response to stress.</p> <p>The intervention group showed dendritic hypotrophy and increased stress resilience compared to the control group.</p>	<p>This study demonstrated that higher levels of endogenous NPY decrease BLA activation and lead to dendritic hypotrophy. Less BLA activation and greater prefrontal cortex activation during periods of stress improve stress resilience and executive functions.</p> <p>It supports MBSR in improving stress resilience through NPY modulation.</p>

Author's Last Name/ Pub Year	Title of Publication	Type of Study	Main Outcomes	Support for Project
O'Daffer, A., Colt, S. F., Wasil, A. R., & Lau, N. (2022).	Efficacy and Conflicts of interest in randomized controlled trials evaluating Headspace and Calm apps: Systematic review.	Systematic Review	<p>Review of the RCTs on two mobile-based MBSR applications, Headspace and Calm.</p> <p>A total of 14 RCTs for Headspace and 1 RCT for Calm.</p> <p>Conflict of interest variables included in the review. 36% of Headspace RCTs were preregistered, and the 1 Calm RCT was not preregistered.</p> <p>Headspace (company) was reported in 40% of the RCTs and as a COI.</p>	<p>Evidence supports Headspace as an effective tool for learning MBSR and increasing stress resilience.</p> <p>Lack of RCT for Calm, however, it demonstrates improvements in participants.</p> <p>Headspace reported as a potential COI.</p>
Østergaard, H. D., Pallesen, K. J., Nielsen, M. N., Fjorback, L., Juul, L., & Winterdahl, M. (2025).	Effects of mindfulness-based stress reduction on neuropeptide Y plasma levels in stressed individuals.	Pilot Study, RCT	<p>First study of its kind to measure MPY plasma levels after MBSR interventions.</p> <p>The intervention group showed increased NPY levels and improvement in test scores compared to the control group.</p>	<p>Statistically, it demonstrates a possible relationship between NPY and its modulatory effect on stress, potentially through the HPA axis.</p> <p>MBSR techniques improve NPY plasma levels, thus increasing stress resilience.</p>
Quesada-Puga, C., Izquierdo-Espin, F. J., Membrive-Jiménez, M. J., Aguayo-Estremera, R., Cañadas-De La Fuente, G. A., Romero-Béjar, J. L., & Gómez-Urquiza, J. L. (2024).	Job satisfaction and burnout syndrome among intensive-care unit nurses: A systematic review and meta-analysis.	Systematic Review	<p>Reviewed 73 unique articles that met the inclusion criteria.</p> <p>Demonstrates common risk factors associated with burnout amongst ICU nurses, including substance use such as alcohol and tobacco.</p> <p>It demonstrates that up to 30% of ICU nurses are experiencing burnout at a given time, with more exhibiting symptoms of burnout.</p>	<p>This demonstrates that critical care nurses continue to face high levels of burnout and stress.</p> <p>The more specialized and ICU nurses are, such as SWAT RNs, the increased risk of chronic stress leading to burnout.</p> <p>This shows the need for improvement in stress</p>

Author's Last Name/ Pub Year	Title of Publication	Type of Study	Main Outcomes	Support for Project
			<p>Worsening symptoms of burnout the more specialized an ICU nurse is.</p> <p>Work environment plays a key support in stress resilience.</p>	<p>resilience, which could be tough to achieve through MBSR techniques.</p> <p>Also, workplace environments need to improve screening for burnout and provide resources to prevent further emotional decompensation.</p>
<p>Ramírez-Elvira, S., Romero-Béjar, J. L., Suleiman-Martos, N., Gómez-Urquiza, J. L., Monsalve-Reyes, C., La Fuente, G. a. C., & Albendín-García, L. (2021).</p>	<p>Prevalence, Risk Factors and Burnout Levels in Intensive Care Unit Nurses: A Systematic Review and Meta-Analysis</p>	<p>Systematic Review and Meta-Analysis</p>	<p>Reviewed 15 unique articles that met their inclusion criteria.</p> <p>Emotional exhaustion and low personal levels of job accomplishment are key features plaguing ICU nurses who are experiencing burnout symptoms.</p> <p>The work environment plays a role in how nurses respond to work-related stressors.</p>	<p>Emotional exhaustion and low job satisfaction are key indicators that can help predict levels of burnout.</p> <p>The workplace environment indicates the ability to form stress resilience.</p> <p>This demonstrates a further need for MBSR techniques to be taught to critical care nurses to improve stress resilience.</p> <p>Demonstrates a need for screening and resources to be routinely provided to critical care nurses.</p>
<p>Saidu, A., Lee, K., Ismail, I., Arulogun, O., & Lim, P. Y. (2023)</p>	<p>Effectiveness of video self-instruction training on cardiopulmonary resuscitation retention of knowledge and skills among nurses in north-western Nigeria.</p>	<p>Randomized Controlled Trial</p>	<p>No significant differences were found between the control group (traditional in-person teaching) and the intervention group (self-instruction training).</p>	<p>Self-instruction training can be just as efficient as in-person training in terms of learning.</p>

Author's Last Name/ Pub Year	Title of Publication	Type of Study	Main Outcomes	Support for Project
Takagi, K., Hata, N., Kimura, J., Kikuchi, S., Noma, K., Yasui, K., Fuji, T., Yoshida, R., Umeda, Y., Yagi, T., & Fujiwara, T. (2023)	Impact of educational video on performance in robotic simulation training (TAKUMI-1): a randomized controlled trial	Randomized Controlled Trial	On-demand educational videos improved the training and performance of surgeons developing robotic surgery skills when compared to a control group.	Educational video training and be effective in improving clinical skills and shortening overall learning.
Taylor, H., Cavanagh, K., Field, A. P., & Strauss, C. (2022).	Health care workers' need for headspace: findings from a multisite definitive randomized controlled trial of an unguided digital Mindfulness-Based self-help app to reduce healthcare worker stress.	Randomized Controlled Trial	<p>Large sample size (n=2182).</p> <p>Compared the unguided MBSR app Headspace to an active controlled app Moodzone.</p> <p>Headspace demonstrated improvements in key indicators over Moodzone.</p>	<p>While the effect size is small, Headspace demonstrates improvements depression, anxiety, well-being, mindfulness, self-compassion, compassion for others, and worry.</p> <p>Demonstrates that using apps, such as Headspace, can mitigate and improve stress resilience until organizational-level interventions can assist in stress resilience for healthcare workers.</p>
Yang, E., Chamber, E., Meyer, R. M. L., & Gold, J. I. (2018).	Happier Healers: Randomized Controlled Trial of Mobile Mindfulness for Stress Management	Randomized Controlled Trial	<p>Utilized a total of 88 medical students. Perceived stress scale (PSS), Five-Facet Mindfulness Questionnaire (FFMQ), and General Well-Being Schedule (GWBS) scores were taken pre- and post-intervention.</p> <p>The intervention group utilized Headspace, which showed improvements in all scales compared to the control group.</p>	<p>This study demonstrates that Headspace can be effectively utilized as an MBSR technique, allowing users to progress at their own pace while improving their stress resilience.</p> <p>This potentially sets the stage for increasing stress resilience while in school, which will ultimately improve personal and patient outcomes in the future.</p>

Appendix H

Banner Health RDC/IRB Approval



FWA #00002630
IORG #0004299

September 17, 2025

Zachary Crouch, RN
 Attn: Shelly Fleiner, DNP RNC-NIC CCNS
 Banner Desert Medical Center
 1400 S Dobson Rd
 Mesa, AZ 85202

RDC Project # -25-0062 The Impact of Structured Education on Stress Reduction Among SWAT Nurses
iRIS Reference # 023841

Documentation Reviewed: Reminder to Cancel Email (v1.0 dated 09.12.2025)

Determination: Not Research – Verification of Additional Documentation

Dear Zachary Crouch:

Thank you for submitting the response to the Research Determination Committee's (RDC) request for additional supporting documentation for your project submission that was reviewed and determined Not Research by the RDC on September 09, 2025.

The response has been reviewed and verified by RDC Staff. The response is sufficient and does not impact the Not Research determination. Your project has been cleared by the RDC, no further action is required at this time.

PLEASE NOTE

The RDC determination is based on the information you provided in your application and supporting documents. If the project is modified in any way that may impact the research determination, such as, but not limited to, re-analysis of data, adding/revising data sheets, or the addition of new activities (e.g. interviews, medical record review, etc.), the determination is no longer valid. If you would like to make any changes please reach out to the IRB Manager or Staff for further direction on review requirements and how to submit the revisions. IRB contact information can be located on the HRPP employee website at <https://bannerhealth.sharepoint.com/sites/Connect/Banner-Research/Human-Research-Protection-Program>, under the Our Leaders tab. Or, you can reach the RDC staff at BHIRB_RDCMailbox@bannerhealth.com.

Please note: As part of continuing process improvement, random audits are conducted to assess compliance and adherence with submitted/approved applications.

A copy of this letter will be retained electronically.

Sincerely,

Kathryn Reitz, BS, CIP
 Director, Human Research Protection Program (HRPP)
 Banner Health



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