Intervention Effects of a Cognitive Behavioral Skills Building Program on Newly Licensed Registered Nurses

Dissertation

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By

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Abstract

Background: The well-being of healthcare clinicians is considered a national crisis. Healthcare clinicians, including nurses, have higher rates of substance abuse, depression and suicide than the national average. Depression and poor health in nurses are linked to medical errors and patient dissatisfaction. Ninety-one percent of NLRNs report high stress levels resulting in stress-related illness, absenteeism and burnout. In 2017, the National Academy of Medicine launched the Action Collaborative on Clinician Well-being to develop evidence-based solutions to reduce this public health epidemic. The purpose of this study was to examine the effects of a Cognitive Behavioral Therapy (CBT)-based skills building program entitled MINDBODYSTRONG for Healthcare Providers on perceived stress, anxiety, depressive symptoms, healthy lifestyle beliefs, healthy lifestyle behaviors, job satisfaction and work absences in NLRNs participating in a nurse residency program.

Methods: A two-group, cluster randomization control trial was conducted using the MINDBODYSTRONG program. The attention control group received the usual nurse residency curriculum while the intervention group received the usual nurse residency curriculum in addition to eight weekly sessions of the MINDBODYSTRONG program. A pre/posttest with a three month post-intervention follow up was used to evaluate the effects of the intervention on perceived stress, anxiety, depressive symptoms, healthy

lifestyle beliefs, healthy lifestyle behaviors, job satisfaction and work absences in NLRNs. Ninety-three NLRNs participating in the nurse residency program were recruited. Repeated measures ANOVA was used to analyze the data at three time points. Paired *t*-tests were used for comparing data from baseline to immediate post-test, immediate post-test to 3-month post-test, and baseline to 3-month post-test. Cohen's *d* was used to determine effect sizes, and Pierson's *r* was used to determine correlations among the variables.

Results: Eighty-nine NLRNs, 42 in the control group and 47 in the intervention group, completed measures for all time points. The intervention group had significant improvement and moderate to large positive effects for stress, anxiety, depression and healthy lifestyle behaviors for all time points compared to the control group. The intervention group scored better and had a moderate to large positive effect for job satisfaction. There was a floor effect with work absence with too few NLRNs reporting calling off shifts to see a significant result or effect size.

Conclusion: The MINDBODYSTRONG for Healthcare Providers Program was effective in improving the mental health and healthy lifestyle behaviors for this group of NLRNs. It also shows promise for improving job satisfaction and work absences in this population. A larger scale clinical trial that is fully powered is now needed to determine if the positive short-term effects of MINDBODYSTRONG can be sustained over a longer period of time.

Dedication

This dissertation is dedicated to those who are not able to be here to celebrate my success, but made this day possible, nonetheless:

Mom and Dad, you never had the chance to graduate high school, yet you set the educational bar high so that your children could reach their dreams. As parents, you were selfless, hardworking, and encouraging. There was never a day that I did not believe I could do whatever I wanted, with hard work and dedication. Thank you for your sacrifices on my behalf. I hope I am making you proud.

Lucas, my heart. Cancer stole your dreams much too early in your life. You were on the edge of greatness with your talents, your drive for knowledge, but most of all your heart for people. Even from your bed, you encouraged me to keep going. You were more than my son, you were my friend, my confidant, my inspiration. When I wanted to quit, I heard your voice cheering me on. When I doubted myself, I remembered how hard you fought, and I fought harder. When I doubted my ability, I remembered how much you believed in me, and I trusted your judgement. I would trade all of this to have you back, but for now, I dedicate my success to you, my boy.

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I am eternally grateful for my committee's guidance and support. Dr. Melnyk, what an honor to be mentored by a world renowned researcher and leader. I have learned so much from you, and I look forward to our continued efforts on behalf of nurses. Dr. Hrabe, your influence on my career began before I knew I wanted to do nursing research. You were kind enough to provide advice and encouragement to me when I participated in an abbreviated Nurse Athlete class. I've been a fan since! Dr. Tucker, I am grateful that you chose OSU as your new home. What a positive influence you've been to our College

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Lastly, I want to thank all the nurse residents who inspire me to be my best every day. I love your energy, your sense of adventure, and your willingness to allow me to share this transition to practice with you. I am excited to come to work every day because I get to work with such exceptional new nurses. I hope that I inspire you to be your best selves.

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Chapter 1. Introduction

Background

Occupational Health

Improving the health of working adults is a top priority for the World Health Organization and businesses across the globe (Baxter et al., 2015). The driving force for the workplace as a setting for healthcare promotion is primarily the economical need to improve productivity through reduction in absenteeism from injury and illness (Baxter et al, 2015; Iverson, Lewis, Caputi, Knospe, 2010; Kent, Goetzel, Roemer, Prasad, Freundlih, 2016). In the United States, researchers note an epidemic of "lifestyle diseases" including obesity, diabetes, heart disease and addiction (Benjamin, Blaha, Chiuve, 2017; Goetzel et al., 2007). The Centers for Disease Control lists four behaviors contributing to the development of chronic disease: inactivity, poor nutrition, tobacco use and overconsumption of alcohol (Mattke et al., 2013, p.1; Soler et al., 2010). Recent trends show that the treatment of chronic disease in the United States exceeds 75% of health expenditures. In addition, chronic disease is no longer the affliction of the elderly. Rather, chronic disease in working age adults has increased by 25% in the last decade simultaneously increasing the utilization of health care services, and negatively impacting productivity through absenteeism, increased accidents and increased disability (Benjamin et al., 2017; Goetzel, Roemer, Liss-Levinson, Samoly, 2008; Mattke, et al 2013).

Further, the co-morbidity of mental health conditions exacerbates the loss of productivity (Iverson et al, 2010; Klachefsky, 2013; Parker, Wilson, Vandenerg, DeJoy, Orinas, 2009; Kessler, Ormel, Demler, Stang, 2003).

The work environment is central to the identity and social life for most adults. As such, it provides a significant source of accomplishment as well as stress and anxiety for employees (Tausig, 2013). Growing research shows increasing numbers of workers are dissatisfied with their work, and report high levels of stress. *The National Institute for Occupational Safety and Health* (NIOSH) reports that, compared to all other non-fatal work-related injuries and illness, anxiety and stress related events are responsible for the greatest long-term work loss, resulting in more than 30 missed days per event, resulting in 50% of workplace absences and 40% of turnover (NIOSH, 2008; Roberts, Grubb, Grosch, 2012).

The well-being of healthcare clinicians is of increasing concern across the medical field. Reports of rising rates of depression, suicide and sub-optimal health among nurses and physicians has prompted the National Academy of Medicine (NAM) to convene the Action Collaborative on Clinical Well-Being and Resilience to combat the startling trend in clinician burnout (National Academy of Medicine, 2016). This phenomenon is linked to increased medical errors and patient dissatisfaction (National Academy of Medicine, 2016; Melnyk et al., 2018). One of the primary goals of NAM's action coalition is to promote evidence-based practices that help decrease this trend.

Occupational Health and Healthcare Clinicians

Occupational stress in healthcare workers is a longstanding concern. This particular workforce experiences high levels of stress due to organizational factors including job demands, lack of resources and poor social support. As these support structures decline, demands for improved patient experience, safety and outcomes increase (Bodenheimer & Sinsky, 2014; NIOSH, 2008; Ommaya et al, 2018, Dyrbye et al, 2017). The Lucian Leape Institute reports a greater number of missed days for healthcare workers than for other high-risk occupations (Lucien Leape Institute, 2013). Studies indicate that health care workers have higher rates of substance abuse and suicide than other professions (West, Dyrbye, Erwin, Shanafelt, 2016; Rothenberger, 2017; Dyrbye et al., 2017). Higher rates of depression and anxiety linked to job stress are reported (Ruotsalainen et al., 2015; West et al., 2016; Rothenberger, 2017; Dyrbye et al., 2017). Work related stress and depression are also linked to medical errors and patient dissatisfaction (National Academies, 2016).

In 2008, the Institute for Healthcare Improvement began the Triple Aim Initiative to improve patient healthcare experience, patient health outcomes and reduce cost of care (Whittington, Nolan, Lewis & Torres, 2015). While these standards were set with the intention of improving population health, they contribute to a work environment lacking the resources needed to accomplish the task, and increased clinician stress and burnout (Dyrbye et al., 2017; Ommaya et al., 2018). This led Bodenheimer and Sinsky to suggest adding a fourth aim: improving the work life of clinicians and staff (Bodenheimer & Sinsky, 2014). In response to high rates of depression and suicide in healthcare clinicians,

the National Academy of Medicine launched its Action Collaborative in 2017. This collaborative involves multiple professional and educational organizations who combine to identify evidence-based solutions for combatting this problem (National Academy of Medicine, 2017).

Occupational Health and Nurses

The effects of stress in the work environment is far-reaching, and therefore, of increasing interest in nursing research. Clinician well-being is such a major health problem that the NAM's action collaborative was developed to raise awareness of clinician anxiety, depression, stress and suicide. In addition, one of their main goals is to develop evidence-based strategies to reduce this public health epidemic (National Academy of Medicine, 2017). Nursing is not immune to these conditions. Studies show that between 17% and 18% of nurses report clinical depression, over double the national average (Letvak, 2013; Dyrbye et al, 2017; Davidson, Mendis, Stuck, DeMichele, Zisook, 2018; Melnyk et al., 2018). In addition to psychological distress, other outcomes of job stress in nurses include burnout, absenteeism, intent to leave, reduced patient satisfaction, and diagnosis and treatment errors (Hall, Johnson, Watt, Tsipa, O'Connor, 2016; Melnyk et al., 2018). For example, one study showed that, between 2010 and 2011, the satisfaction levels for nurses decreased, and 43% of those sampled would not recommend nursing as a profession. In addition, 25% reported an intent to leave their current employers (AMN Healthcare, 2011). An American Nurses Association survey revealed nearly 76% of nurses reported that unsafe working conditions interfered with quality care delivery (ANA, 2015; Lucian Leape Institute, 2013).

The focus on patient satisfaction scores and safety to maximize outcomes and reimbursement during a time when resources are limited creates nursing environments that are fraught with challenges (Oore et al., 2010; Roch, Dubois, Clarke, 2014). Confounding this is the continued shortage of nursing staff to fill the growing number of open positions vacated by retiring baby-boomers, newly graduated nurses leaving the profession, and normal staff attrition. For example, the nursing turnover rate increased from 13.5% to 15% nationally despite an economic downturn (Zimmerman & Ward-Smith, 2012) The Joint Commission reported that inappropriate staffing levels contribute to as much as 24% of sentinel events over the past five years and staffing ratios impact patient mortality, nursing errors, and failure to rescue (Hall et al, 2016). Correspondingly, medical errors are now considered the third leading cause of death in the U.S. (Makary, 2016).

Melnyk and colleagues report that of the 1790 nurses surveyed, over half reported sub-optimal physical and mental health. These nurses were between 26% and 71% more likely to report having medical errors. Depression was the leading predictor of medical errors. The same study reported that health care workers are at higher risk for suicide, and nurses in particular, exhibit poorer healthy lifestyle behaviors such as regular physical activity than both physicians and the general population (Melnyk et al, 2018). Further, between 55% and 65% of nurses reported being overweight or obese (Melnyk, Hrabe, Szalacha, 2013).

Occupational Health and the Newly Licensed Registered Nurse

For newly licensed registered nurses (NLRNs), turnover rates are as high as 30%-60% in the first 12 to 24 months of their professional practice. This is nearly double the national average of 10%-15% for experienced nurses (Unruh & Zhang, 2014; Parker, Giles, Lantry, McMillan, 2014). Currently, NLRNs make up approximately 10% of nurses working in a hospital setting. This is expected to increase as more nurses reach retirement age. The loss of a NLRN in the first year of practice costs the organization up to three times their annual salary when accounting for the cost of recruitment, training and orientation (Hunt, 2009; Unruh & Zhang, 2014). Nearly 60% of NLRNs leave their first professional position within the first 24 months (Twibell & St. Pierre, 2012). Research shows that 91% of NLRNs report high stress levels in their first years of working (Unruh & Zhang, 2014). New nurses report unreasonable workloads, low sense of control, lack of respect, and lack of trust and collaboration with coworkers as major contributors to dissatisfaction (Hunt, 2009; Unruh & Zhang, 2014). This turnover exacerbates the nursing shortages experienced by many organizations and complicates the already stressful transition into the workforce for NLRNs. In addition to the anticipated transitional stress, NLRNs are met with criticism, bullying and incivility from co-workers (Read & Laschinger, 2013; Laschinger, Grau, Finegan, Wilk, 2012). The combination of work stress, lack of support, lack of resources and inappropriate interactions such as incivility from peers results in burnout, physical illness, and absenteeism in NLRNs (Laschinger, Grau, Finegan, Wilk, 2010; Ruotsalainen, Verbeek, Marine, Serra, 2015).

Knowledge Gap

There is a paucity of theory-based interventions to improve the health outcomes and stress reduction skills for new nurses. A recent systematic review of interventions to promote or improve the mental health of nurses found only seven articles, none of which were randomized controlled trials. They found that, of the studies, Cognitive Behavioral Theory (CBT) techniques produced the largest effects (Duhoux, Menear, Charron, Lavoie-Tremblay, Alderson, 2017). In addition, a plethora of strategies has been used to improve the transition from student to professional nurse with limited success. In a systematic review, Edwards and colleagues report an improved transition for NLRNs when support is provided by the organization. However, they report weak evidence and a need for more rigorous experimental studies to determine program efficacy. Further, in a literature synthesis, Letvak found only 18 articles on evidence-based strategies to improve the health of nurses. Over half of the studies were conducted outside of the U.S., and only half used an experimental design emphasizing the need for rigorous experimental research in the area of nurses' health (Letvak, 2013).

Few studies focus on the mental health of NLRNs and how it relates to turnover, work absences and job satisfaction. The inspiration for this particular study was the 2018 study conducted by Melnyk and colleagues. This study linked poor health in nurses to medical errors (Melnyk et al, 2018). The MINDBODYSTRONG for Healthcare Providers Program is a novel adaptation of an evidence-based, cognitive-behavioral theory (CBT)-based skills building intervention entitled Creating Opportunities for

Personal Empowerment (COPE) created by Bernadette Melnyk (Hart-Abney, Lusk, Hovermale, Melnyk, 2018; Melnyk et al., 2016; Hoying, & Melnyk, 2016; Hoying, Melnyk, Arcoleo, 2016), which provides a comprehensive, theory-based approach to address the mental health and lifestyle behaviors of NLRNs during their transition to practice.

Specific Aims and Research Questions

The primary purpose of this study was to examine the effects of a CBT-based skills building program entitled MINDBODYSTRONG for Healthcare Professionals on perceived stress, anxiety, depressive symptoms, healthy lifestyle beliefs, healthy lifestyle behaviors, job satisfaction and work absences in NLRNs. Study aims and hypothesis include:

Aim 1: To evaluate the effects of the MINDBODYSTRONG program on perceived stress, anxiety, and depressive symptoms in NLRNs.

Research Question 1: What is the effect of the MINDBODYSTRONG program on perceived stress, anxiety and depressive symptoms in NLRNs?

Aim 2: To evaluate the effects of the MINDBODYSTRONG program on healthy lifestyle beliefs and healthy lifestyle behaviors of NLRNs.

Research Question 2: What is the effect of the MINDBODYSTRONG program on healthy lifestyle beliefs and healthy lifestyle behaviors of NLRNs?

Aim 3: To evaluate the effects of the MINDBODYSTRONG program on job satisfaction of NLRNs.

Research Question 3: What is the effect of the MINDBODYSTRONG program on the job satisfaction of NLRNs?

Aim 4: To evaluate the effect of the MINDBODYSTRONG program on absences in NLRNs.

Research Question 4: What is the effect of the MINDBODYSTRONG program on work absences in NLRNs?

Aim 5: To determine the relationships among the study variables.

Research Question 5a: What is the relationship between healthy lifestyle beliefs and healthy lifestyle behaviors within the study groups?

Research Question 5b: What is the relationship among healthy lifestyle beliefs and perceived stress, anxiety, and depressive symptoms within each of the study groups?

This dissertation research project used a two group, randomized controlled study examining the effects of the MINDBODYSTRONG program on stress, anxiety, depressive symptoms, healthy lifestyle beliefs, healthy lifestyle behaviors, job satisfaction and work absences on NLRNs participating in a nurse residency program.

Theoretical Framework

The theoretical framework for this study is Cognitive Behavioral Theory. Aaron Beck and colleagues conceptualized CBT in the 1960s as an alternative to psychoanalysis and behaviorism (Beck, 1979). The central theme of CBT is that an individual's cognitions plays a primary role in emotional and behavioral responses to life situations. An individual's appraisals, assumptions, meanings and judgments are drivers of how they

both feel and react to life events. There are three fundamental assumptions of CBT (Beck, 2011; Beck, 2005):

1. Cognitive processes and content are known and accessible.
2. Our thinking mediates our response to environmental cues.
3. Cognitions can be targeted, modified and changed.

These triad assumptions are conceptualized as the Thinking-Feeling-Behaving Triangle.

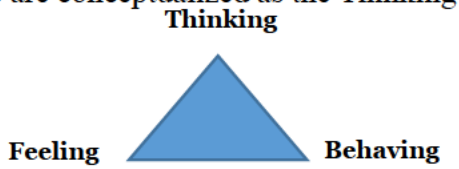

Figure 1. Thinking-Feeling-Behaving Triangle (Melnyk, Schapiro, Sharp & Taylor, 2006; Melnyk et al., 2009)

Developing Knowledge through Framework

CBT focuses on the thoughts and feelings that drive behavior, thus, it is effective in the treatment of post-traumatic stress disorder, anxiety disorders, addiction and depression (Beck, 2011). The overarching goal is to help individuals control the automatic thoughts that exacerbate emotional difficulties including anxiety and depression (Coull & Morris, 2011). For this study, it was postulated that the NLRN has learned and established cognitive processes, and automatic thoughts mediate positive or negative feelings and behaviors. The model emphasizes cognitive rehearsal and cognitive reappraisal that help to modify automatic negative thoughts and beliefs into more positive emotions and beliefs, positively affecting behavior (Beck, 2011, Lusk & Melnyk, 2011). The conceptual model for this study is shown in Figure 2.

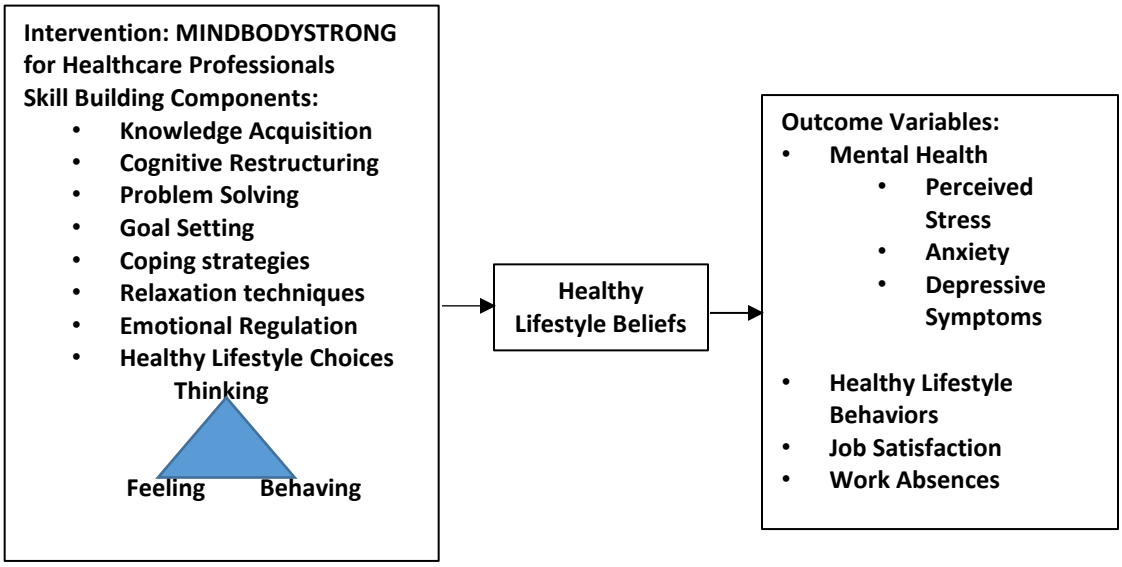

Figure 2. The MINDBODYSTRONG Model for Healthcare Professionals

Based on this model, it was postulated that delivery of the MINDBODYSTRONG program would improve NLRNs cognitive beliefs about their ability to manage stress and engage in healthy behaviors, resulting in decreased anxiety and depressive symptoms. In addition, the development of more optimistic beliefs as a result of the MINDBODYSTRONG intervention would positively influence NLRNs healthy lifestyle behaviors and sense of well-being. In turn, job satisfaction among NLRNs participating in the MINDBODYSTRONG program should increase and work absences decrease over the study period.

Chapter 2. Literature Review

Utilizing the following PICOT question as a guide: "In NLRNs, how do CBT-based skills building intervention program compared to other types of intervention programs affect perceived stress, anxiety, depressive symptoms, healthy lifestyle beliefs, healthy lifestyle behaviors, job satisfaction and work absences?" a search of PubMed, CINAHL, Psych INFO, MEDLINE, Scopus, and Cochran electronic databases was conducted for publications related to the following study variables:

Mental Health

- Perceived Stress
- Anxiety
- Depressive Symptoms

Healthy Lifestyle Beliefs

Healthy Lifestyle Behaviors

Job Satisfaction

Work Absence

Inclusion criteria included peer-reviewed articles published in English between 2008 and 2018. While the search originally focused on newly licensed registered nurses, the search was expanded to all nurses when limited data were available. Following is a review of the literature to answer the PICOT question.

Mental Health

Our work environment and mental health are uniquely related. According to Klachefsky, as job demands and workloads increase, so do mental health disorders (Klachefsky, 2013). Nursing is emotionally demanding. Stress is linked to mental health disorders such as anxiety, compulsive behaviors, substance abuse and depression. There is an association between stress, low productivity, decreased job satisfaction, absenteeism and job turnover (Melnyk, Hrabe, Szalacha, 2013; Klachefsky, 2013; Perry, Lamont, Brunero, Gallagher, Duffield, 2015). More concerning is the relationship between depression in nurses and medical errors (Melnyk et al., 2018). This calls for an increased vigilance in finding ways to improve the work environments for all nurses, but especially those new to the profession.

Perceived Stress: Cohen and colleagues defined perceived stress as "the measure of the degree to which situations in one's life are appraised as stressful" (Cohen, Kamarck, & Mermelstein, 1983, p 386). A plethora of literature exists regarding stress in NLRNs and includes both qualitative and quantitative designs. The seminal research conducted by Marlene Kramer introduced the phenomenon of Reality Shock in new nurses in the 1970's. Her work described a disconnect between NLRNs expectations of the nursing profession and the reality of nursing in the work setting. This disconnect leads to increased stress (Kramer, 1974). Since then, researches have explored various aspects of stress experienced by NLRNs. For example, role transition is known to elicit stress in NLRNs. Arrowsmith identified 14 studies focusing on the transition period. All studies noted similar experiences for NLRNs including worry (Cubit & Lopez, 2012),

frustration (Bombard, Chapman, Doyle, Shippee-Rice, Kasik, 2010; Rungapadiarchy, Madill, Gough, 2006), stress and anxiety (Boychuck, 2008; Cubit & Lopez, 2012; Etheridge, 2007; Sullivan-Benz et al., 2011), and lack of confidence (Dearnley, 2006; Etheridge, 2007; Melrose & Gordon, 2011; Schloessler & Waldo, 2006; Sullivan-Benz et al., 2010; Bjorkstrom, Johansson, Athlin, 2008; Deasey, Coughlan, Pironom, Jourdan, Mannix-McNamara, 2011; Halpin, Terry, Curzio, 2017).

Other nurse scientists have explored the sources of stress. For example, Al Awaisi and colleagues found reality shock, heavy workloads, time management and lacking experience as key stressors for new nurses (Al Awaisi, Cooke, Pryjmahuk, 2015). Similarly, workload, experiencing a patient death, lack of confidence, and fear of making mistakes were common themes (Naholi, 2015; Qiao, 2011; Regan et al., 2017; Hu, Zhang, Shen, Wu, Malmedal, 2016). Specific work environment concerns were also identified as evoking stress. Cheng and colleagues explored the relationship between work hours and length of employment and stress. They found that stress decreased gradually from three months of employment to 12-months of employment. In addition, they found a negative correlation between stress and 12-hour shifts compared to eight hour shifts. Further, lower stress at three months was inversely correlated with job satisfaction in month three and twelve (Cheng, Liou, Tsai, Chang, 2015). Happell and colleagues reported unsupportive management, human resource issues and parking as sources of occupational stress (Happell et al., 2013). Finally, Yeh and Yu reported nurses working in medical centers perceived less stress than those working in regional hospitals, perhaps due to the availability of resources. Further, they report that nurses working night

shift perceived less stress than those working days, and job stress was highest in the early months of employment (Yeh & Yu, 2009).

Researchers are beginning to link stress with health outcomes such as obesity (Ross, Bevans, Brooks, Gibbons, Wallen, 2017). Chou and colleagues found a positive relationship between anxiety and insomnia severity. They also report that younger nurses and nurses with less experience report an increase in insomnia (Chou, Chang, Chung, 2015). Teh and colleagues found that perceived stress was negatively associated with perceived health (Teh, Archer, Chang, Chen, Sha, 2015).

Anxiety*:* The DSM-5 defines anxiety disorder as excessive worry and apprehension occurring more days than not for at least six months, about a number of events or activities such as work (DSM-V). Anxiety disorders are the most common group of psychiatric disorders in the U.S. (Ramsawh, Bomyea, Stein, Cissell, Lang, 2016) and frequently comorbid with other disorders, particularly depression (Bolognesi, Baldwin, Ruini, 2014). Anxiety disorders include features of fear and anxiety (DSM-V) with correlated behavioral disturbances related to the central nervous system. These fight or flight responses can include muscle tension and vigilance or avoidant behaviors (American Psychiatric Association, 2018). When faced with repeated chronic stressors, the CNS can become maladaptive and contribute to chronic disease processes (McEwen & Gianaros, 2010). Although stress in the NLRNs has been widely studied, few studies have explored anxiety in this population. Arnaud and colleagues conducted a systematic review to identify interventions to promote or improve the mental health of nurses (Arnaud, Menear, Charron, Lavoie-Tremblay, Alderson, 2017). Of the eight studies, only

one examined NLRNs exclusively (Brunero, Cowan, Fairbrother, 2008). Gardiner and Sheen used a mixed-methods approach to study the relationship between anxiety and receiving feedback. They found that providing frequent, regular and supportive feedback was associated with reduced anxiety. This was not true for those receiving irregular, negative or infrequent feedback from preceptors and management. They also reported that NLRNs did not recognize supervisor feedback as feedback due to unclear messaging (Gardiner & Sheen, 2017).

Depressive Symptoms: The DSM-V defines depression as a depressed mood or loss of interest in daily activities for more than two weeks with mood representing a change from their normal baseline (American Psychiatric Association, 2018). This is an emerging area of focus for nursing researchers. However, several studies have established that nurses are at high risk for depression (Morrissy, Boman Mergler, 2013; Letvak, Ruhm, McCoy, 2012; Melnyk et al. 2018; Branford & Reed 2016). Historically, depression research in nursing focused on descriptive aspects such as prevalence (Ardekani, Kabooei, Ayattollahi, Choobineh, Seraji, 2008; Flo, Pallesen, Mageroy, Moen, Gronli, Nordhus, Bjorvatn, 2012; Gong, Han, Yinm Yang, Zhuang, Chen, Lu, 2014; Skinner & Scott, 1993), symptomology such as sleepiness, fatigue, and somatic complaints (Bjorvatn, Dale, Hogstad-Erikstein, Fiske, Pallesen, Waage, 2012; Gao, Pan, Sun, Wu, Wang, Wang, 2012), workplace factors contributing to depressive moods (Baba, Galperin, Lituchy, 1999; Chiang & Chang, 2012; Gao et al. 2012; Mark & Smith, 2012; Ohler et al., 2010), burnout (Ahola, Hakanen, Perhoniemi, Mutanen, 2014; Bianchi, Schonfeld, Laurent, 2015) shift work (Eldevik, Flo, Moen, Pallesenm, Bjorvatn,

2013; Flo et al., 2012; Flo et al., 2014; Oyane, Pallesen, Moen, Akerstedt, Bjorvatn, 2013) and effects on patient outcomes (Letvak et al., 2012; Melnyk et al. 2017). Letvak and colleagues conducted a study with 1171 hospital-employed registered nurses. They found a self-reported prevalence rate of 18% for depression for the participants. This correlated with increased presenteeism and increased patient falls and medication errors (Letvak, S.A., Ruhm, C., Gupta, S.N., 2012). However, the 2018 landmark study by Melnyk and colleagues escalates the urgency for researchers to move from descriptive and correlative studies to intervention strategies for nurses at risk for depression and other physical and mental health disorders. In this study 32.8% of the 1790 nurses surveyed reported depressive symptoms. In addition, 49.7 % reported having a medical error in the past 5 years. Most startling, however, was the finding that nurses who reported poor physical and/or mental health were 26%-71% more likely to report a medical error (Melnyk et al. 2018).

Healthy Lifestyle Beliefs

The fundamental purpose of CBT is to help individuals make more realistic appraisals of themselves and their situations (Beck, 1979). Negative appraisals are the result of a faulty belief system developed over time. These negative beliefs distort the individual's ability to think and to make correct judgements about the world around them, leading to emotions, behaviors and attitudes that match the distorted thinking (Beck, 1979).

The MINDBODYSTRONG for Healthcare Professionals Model conceptualizes healthy lifestyle beliefs as a mediator between the MINDBODYSTRONG intervention

and the outcome variables of perceived stress, anxiety, depressive symptoms, healthy lifestyle beliefs, healthy lifestyle behaviors, job satisfaction and work absences in NLRNs. Earlier work by Melnyk and colleagues indicate a strong postitive relationship between healthy lifestyle beliefs and healthy lifestyle behaviors (Hart-Abney et al., 2018; Melnyk et al., 2016; Hoying, & Melnyk, 2016; Hoying, Melnyk, Arcoleo, 2016).

Healthy Lifestyle Behaviors

Health promoting behaviors such as sleep, healthy diet, and physical activity are critical to prevening lifestyle related diseases such as type II diabetes, cardiovascular disease and musculoskeletal injury (Chappel, VerswIjveren, Aisbett, C, Ridgers, 2017). Chronic illness has become an epidemic in the U.S. and accounts for more than 75% of healthcare expenditures (Benjamin et al., 2017; Goetzel et al., 2007). In addition, more than 50% of nurses report less than ideal health (Melnyk et al., 2018; Nahm, Warren, Zhu, Ann, Brown 2012; Nicholls, Perry, Duffield, Gallagher, Rierce, 2017). Findings from the Nurses' Health Study show that less than 3% of nurses surveyed report practicing healthy lifestyles (Priano, Warren, Zhu, Ann, Brown 2018). Studies show that a nurse's personal health behaviors may be a barrier to patient education and counseling, in addition to being seen as non-credible to patients (Wills, 2017; Priano et al., 2018). Several studies show more than 50% of nurses report being either overweight or obese (Jordan, Nowrouzi-Kia, Gohar, Nowrouzi, 2015; Nicholls et al. 2017; Bogossian et al., 2012; Melnyk et al., 2018). Studies show obesity as a contributing factor in nurse injury and absenteeism (Jordan et al., 2015; Priano et al. 2018). A systematic review conducted by Priano and colleagues states that more than 72% of U.S. hospital nurses did not

participate in aerobic exercise, more than 50% did not eat healthy diets, and less than 5% participated in five or more healthy lifestyle behaviors putting them at risk for cardiovascular disease and poor quality of life (Priano et al., 2018).

For many NLRNs, the trend of poor lifestye behaviors began in school, prior to entering the nursing profession. However, studies with nursing students and healthy lifestyle behavior curriculum show promise (Wills, 2017; McSharry & Timmins, 2016; Kara, 2015; Deasy et al., 2016). Because the transition period from student to profession nurse is so stressful, it is an ideal time to address healthy lifestyle behaviors and strategies to maintain optimal health. There are few studies devoted to this topic, however. Ketelaar and colleagues conducted a qualitative study looking at six novice nurse's experience with work-related health problems. They suggest providing health knowledge and psychosocial support during the transition phase (Ketelaar, Nieuwenhuijsen, Frings-Dresen, Sluiter, 2015). Frogeli and colleagues conducted a feasibility pilot study to determine if two 2-hour behavioral activation based program improved occupational stress-related ill health. The results were mixed, however, they determined that a full-scale study was appropriate (Fogeli, Rudman, Ljotsson, Gustavsson, 2018). Hrabe and colleagues conducted an intervention study with 88 new graduate nurses to determine the effect of a two day energy management intervention on healthy lifestyle behaviors, anxiety, depression, BMI and body fat percentages. Data were collected prior to the intervention and then six months post-intervention. Results show a significant decrease in BMI, body fat percentage, weight and depression at six months (Hrabe, Melnyk, Buck, Sinnott, 2017).

Job Satisfaction

Job satisfaction in nurses is an important measure for healthcare organizations not only for economic reasons, but also as a required reporting metric for Magnet and the Center for Medicare and Medicaid (Brewer, Kovner, Greene, Tukov-Shuser, Djukic, 2012; Bontrager, 2016). Several articles focused on the importance of NLRNs participating in a transition to practice program. Missen and colleagues conducted a systematic review of job satisfaction in NLRNs participating in transition to practice programs. They found a positive relationship between job satisfaction and confidence in those enrolled in residency programs in their first year of practice (Missen, McKenna, Beauchamp, 2014; D'ambra & Andrews, 2013). Similarly, D'ambra and Andrews (2013) found that residency programs improved job satisfaction and retention even with the presence of incivility. Brewer and colleagues found that job satisfaction and organizational commitment were the two leading factors to turnover in NLRNs (Brewer et al., 2012). Rush and colleagues focused on best practices in transition programs and found participation in skills practice, positive preceptor experiences, group participation, and mentorship were common themes in relationship to job satisfaction (Rush, Adamack, Gordon, Lilly, Janke, 2013). Finally, Edwards and colleagues conducted a systematic review to explore effective strategies and interventions to improve, among other things, job satisfaction in NLRNs. While results were mixed, they concluded that transition to practice programs had a positive impact on job satisfaction. Their conclusion was that

additional, quality studies were needed to determine effective interventions to improve job satisfaction in NLRNs (Edwards, Hawker, Carrier, Rees, 2015).

Another common theme for research on job satisfaction includes preceptorship and mentorship. Ke and colleagues (2017) conducted a systematic review on the relationship between job satisfaction and preceptorship and mentorship. They report limited findings with mixed results. They suggested, however, that a positive precepted experience could lead to increased job satisfaction in NLRNs (Ke, Kuo, Hung, 2017). Bonotrager also explored the preceptor experience. She found that preceptor role effectiveness and group cohesion had positive relationships with job satisfaction (Bontrager, 2016). Edwards and colleagues also found mentorship as a positive influence for NLRNs (Edwards et al., 2015). Finally, Banister and colleagues reported that pairing minority NLRNs with an experienced minority nurse in a mentoring relationship improved job satisfaction and retention (Banister, Bowen-Brady, Lituchy, 2014).

Work Absences

The literature for work absences in nurses is intertwined with research on absenteeism (Craft, Christensen, Wirihana, Bakon, Barr, Tsai, 2017). According to Leitao and colleagues, absenteeism is conceptualized as "the frequency or time loss of working shift when professionals are not present in their workstations" (Leitao, Sousa, Santiago, Bezara, de Morais, 2017, p. 119). The absence can be due to an illness or personal health condition, and is associated with both acute and chronic conditions (Howard & Potter, 2014; Knar, Zhu, Storr, Hinds, Derickson, Geiger-Brown, 2018). Both absenteeism and turnover are related to working conditions such as leadership, lack of resources and

workload (Leitao et al., 2017; Lamont et al., 2017; Davey, Cummings, Newurn-Cook, Lo, 2009). In the U.S., productivity loss due to absenteeism exceeds $118 billion (Howard & Potter, 2014). For healthcare organizations, absenteeism can negatively affect quality care outcomes and increase medical errors (Davey et al., 2009; Roelen, Rhenen, Schaufeli, van der Klink, 2014). In addition, absenteeism is positively associated with turnover and begins with a progression of withdrawal (Daouk-Oyry, Anouze, Otaki, Dumit, Osam, 2014; Davey et al., 2009). In healthcare, nurses represent the largest levels of absenteeism contributing to staff shortages and poor quality care (Roelen et al., 2014). Roelen and colleagues found that, for NLRNs, mental health related functioning and physical health related functioning were significant mediators for job demands. Both are shown to negatively correlate with sickness absences (Roelen et al., 2014). Finally, one hypothesis related to sickness absences states that, when work stressors permanently exceed an individual's coping ability, they are at risk for health related absence (Kottitz, Schade, Burger, Radlinger, Elferig, 2017, p 1) and that current sickness absences predict a pattern of absences in the future. Although research shows a high level of turnover for this population (Unruh & Zhang, 2014; Parker, Giles, Lantry, McMillan, 2014), intervention studies to decrease it are extremely limited. Since absenteeism is a pre-cursor to turnover, there is a need to determine best practices to decrease it in NLRNs.

Cognitive Behavoral Interventions and NLRNs

CBT is based on the idea that how we think, how we feel, and how we behave are interconnected. More specifically, our thoughts determine our feelings and behaviors (Beck, 1979). Studies using CBT have effectively demonstrated positive outcomes for

various populations who are stressed, anxious and depressed (Beck, 2011). There are limited data for its effectiveness in nurses. In 2017, Duhoux and colleagues published a systematic review of intervention studies conducted to promote or improve mental health in nurses who work in primary care. Seven studies, including one using a CBT intervention, spanning between 2003 and 2013 were included in their synthesis. They determined that the CBT intervention produced the largest effect size for burnout and stress (Dohoux et al., 2017).

The PI for this study conducted a review of the literature between 2013 and 2019 using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) to examine the state of the science on the use of CBT with nurses (*Figure 3*.). The search strategy applied by Duhoux and colleagues was repeated for this search. Keywords applied to the search included 'nurses,' 'mental health,' 'occupational health,' and 'intervention.' Databases included CINAHL, MEDLINE, PsychInfo, Pubmed, and Scopus. Studies were eligible if they included nurses in any primary or acute care setting. Studies were eligible if data were collected during at least two time-points. In addition, only studies that included at least one mental health variable such as stress, anxiety or depression were included. Finally, only studies utilizing a CBT intervention were included for this synthesis.

The initial search yielded 1,733 articles from all databases. Once duplicate articles were removed, a total of 1,517 remained. After applying the remaining search criteria, a total of three articles were retained for the synthesis. A synthesis table is included in Appendix A.

Among the three studies, one targeted hospice nurses, and two targeted healthcare professionals in which 10% or fewer were nurses. Sample sizes ranged from six to 10 nurses. Duration of the interventions ranged from two 1-hour weekly sessions to eight 1-hour weekly sessions (Askey-Jones, 2018; Darby & Beavan, 2017; Carter, Dyer, Mikan, 2013).

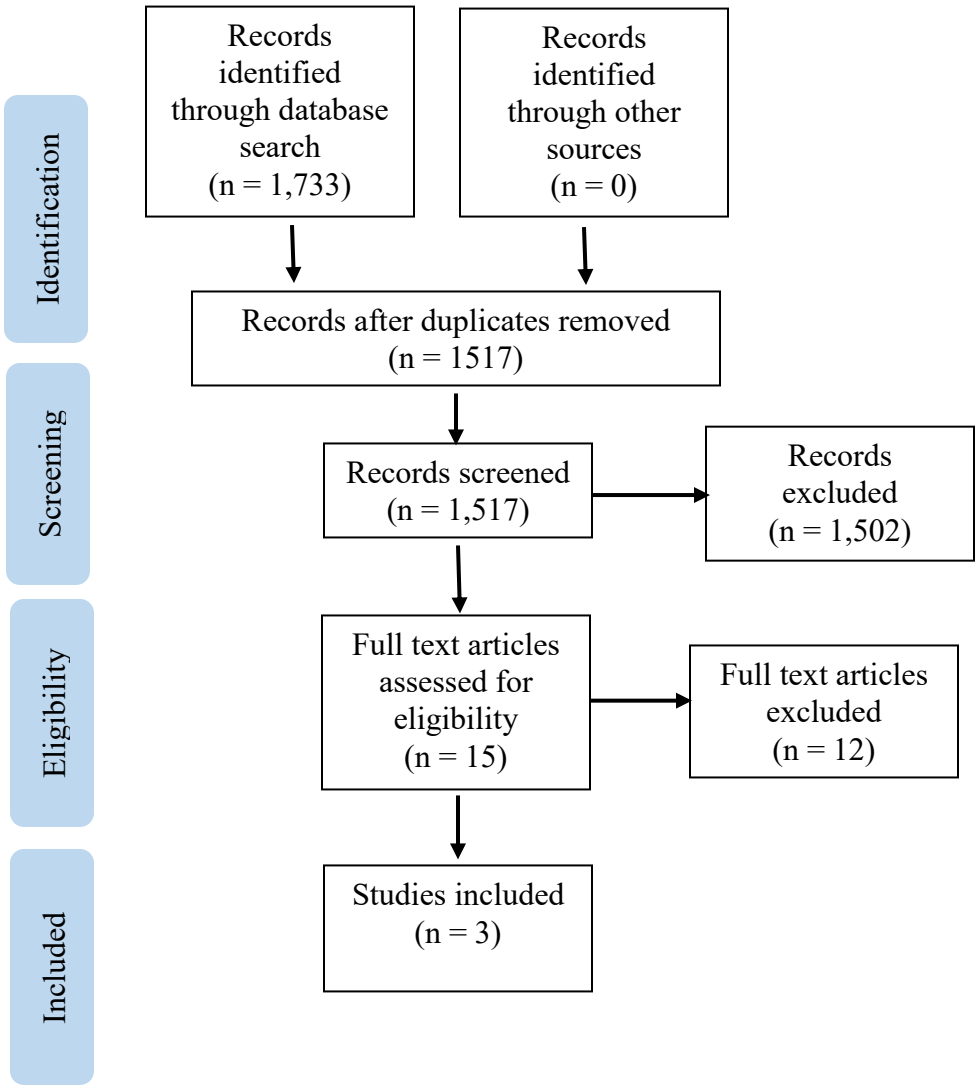

Figure 3. PRISMA flow diagram (Moher, Liberati, Tetzlaff, Altman, 2009).

Two studies included data collection points at baseline and immediately post-intervention. The Askey-Jones study had an additional data point at six months post-intervention. In contrast, the Darby & Beavan study was a follow-up qualitative study to a previous quantitative intervention study. They interviewed participants three and 21-months post-intervention to determine the benefits of the original study. Variables measured include burnout, mindfulness, sleep quality, depressive symptoms and sleep quality on self-care practices. Study findings were mixed among the three studies. Carter and colleagues, who included only two 1-hour sessions, reported less than 10% of participants successfully changed their routines, and only 20% incorporated relaxation techniques into their routines (Carter et al., 2013). In contrast, Askey-Jones, who provided eight weekly sessions, reported significant differences and large effect sizes in mean scores for emotional exhaustion and depersonalization associated with burnout (Askey-Jones, 2018).

The literature review amplified the need for further randomized controlled trials focusing on the well-being of new nurses. There is a lack of attention on the impact of work related stress on anxiety and depression in the current literature. In addition, there are a lack of interventional studies incorporating CBT using adequate dosing and longitudinal follow-up. Current literature does not address the relationship between healthy lifestyle beliefs and subsequent healthy lifestyle behaviors. Since sub-optimal health in nurses is linked to medical errors and patient dissatisfaction, understanding how

beliefs of the NLRNs influence their lifestyle choices may prevent the longterm, negative physical consequences of work-related stress, thus improving patient outcomes.

Chapter 3. Methods

Study Design

A two-group, cluster randomized controlled trial (RTC) was conducted using the MINDBODYSTRONG Program for Healthcare Providers. This is a follow-up study to a single group feasiblity and acceptability study conducted in the summer of 2017, which provided feedback to inform the current study (Melnyk & Morrison-Beedy, 2019). The two group cluster randomized design was appropriate since NLRNs were hired in residency cohort groups based on when they passed their NCLEX exam (Donner & Klar, 2004).

The control group acted as the attention control group receiving the usual nurse residency curriculum which included a 30 minute debriefing session during each seminar. The intervention group received the usual nurse residency curriculum in addition to the MINDBODYSTRONG program. Time to deliver both curriculum was equal. Both groups completed a post-test immediately following the eighth session and again at three months post-intervention (Table 1). All cohort members in the intervention group received the full MINDBODYSTRONG program regardless of signing consent. Those who consented to participating in the study completed the study instruments at baseline, immediately post-intervention, and at 3 months post-intervention. Those who did not consent to participate did not complete the survey instruments. Surveys were completed anonymously online using a unique, personalized code so that their data could be linked over time.

Table 1. *Research design*

	Baseline	Intervention	Post-Intevention	3-month Follow up
MINDBODYSTRONG Intervention Group	T1	X1	T2	T3
Control Group	T1	X2	T2	T3

Setting

The study was conducted in a large metropolitan academic medical center with an established nurse residency program. The medical center consists of six hospitals with more than 1200 acute care beds. More than 250 NLRNs participate in the nurse residency program annually.

Sample

Participants were NLRNs hired between July 1, 2018 and September 30, 2018 and placed in one of four cohorts based on hire date. Two cohorts were randomly assigned to the control group and two cohorts were randomly assigned to the MINDBODYSTRONG intervention group. Inclusion criterial included all NLRNs hired during the study period who signed consent for the study. Exclusion criteria included any NLRN who did not consent to participate in the study. Those who did not choose to participate were not asked to complete the study instruments. A member from the research team consented the

participants and kept possession of all consents during the study period in order to blind the PI to the study participants.

Recruitment

Written and verbal information about the study were provided during the first nurse residency seminar. Potential participants received a letter summarizing the purpose of the study as well as possible benefits and risks from participation (Appendix B). Consent was obtained and baseline data were collected for both the intervention and control groups.

Vulnerability for the Targeted Population

Since all NLRNs were new employees they may have felt obligated to participate in this study. In addition, the PI was also the director of the residency program, which could have resulted in additional pressure to participate in the study. However, since completion of the residency program, along with completion of regular surveys was a standard requirement for all NLRNs, the participants were not treated any differently than any new grad hired into the system.

To prevent any undue pressure, the PI was blinded to the consent process. The PI provided a letter detailing the study requirements and emphasized that participation or non-participation in the study would in no way impact their employment, nor their successful completion of the nurse residency program. Next, the PI provided the consent (Appendix C) and a blank envelope to each potential participant and left the room. The participants were instructed to place their signed or unsigned consent in the envelope and then seal the envelope. A volunteer from the group then collected the sealed envelopes

and placed them in a large envelope which was also sealed. Another member of the research team took the consents to another location, opened the envelopes, made copies of the consents, placed them in a sealed envelope with the name of the participant or non-participant, and returned copies to the groups individually. Consents were stored in a locked cabinet inside a locked office. Data were stored in an electronic file on an encrypted computer which was password protected.

Since measurements for depression were being collected, all participants were provided information regarding the Employee Assistance Program (Appendix D). In addition, plans were in place to transport any participant expressing suicidal ideation to the emergency department for assessment and observation. Finally, no participant was under any obligation to complete the surveys if they chose.

The MINDBODYSTRONG Program

The MINDBODYSTRONG Program for Healthcare Professionals curriculum is a manualized, cognitive behavioral theory-based skills-building and healthy lifestyle program for new nurses during their transition to professional practice. It consists of eight weekly, 30 to 45 minute sessions that include content focused on caring for the mind, caring for the body, and CBT-based skills building (Table 2). Each session was followed by skills building activities that participants were asked to complete to put the content they were learning in their group sessions into practice.

Table 2. *MINDBODYSTRONG Sessions*

Session	**Content**
1	Thinking, Feeling and Behaving: What is the Connection? Positive self-talk, mindfulness, nutrition and energy
2	Positive Thinking and Self-esteem Managing change, physical activity
3	Positive Thinking and Stress and Coping Health coping, managing stress, eating healthy on the go
4	Problem Solving and Setting Goals Strength training, overcoming barriers
5	Healthy Nutrition and Sleep
6	Dealing with your emotions in Healthy Ways through Positive Thinking and Effective Communication Guided imagery, effective communication, flexibility
7	Coping with Stressful Situations
8	Pulling it All Together

Intervention

The manualized intervention MINDBODYSTRONG for Healthcare Providers is an adaptation of other CBT-based skills-building programs entitled Creating Opportunities for Personal Empowerment (COPE) created by Dr. Bernadette Melnyk and colleagues. This CBT-based skills building intervention has been used successfully with school-aged children, adolescents with anxiety and depression, and with college students (Hart-Abney et al. 2018; Melnyk et al., 2016; Hoying, & Melnyk, 2016; Hoying et al., 2016). Use with NLRNs is a novel approach to managing the effects of stress during their transition to professional practice. This iteration of the program was specifically adapted

for use with NLRNs and includes curriculum for eight 30-45 minute weekly sessions. The researcher had previously completed training in implementing the program in addition to conducting an earlier feasibility and acceptability study with NLRNs using the MINDBODYSTRONG program.

Session 1: Thinking, Feeling and Behaving

Session one of the MINDBODYSTRONG program began with an introduction to the program curriculum, including the importance of self-care and well-being. In addition, the goals of the program were reviewed. Participants were provided information on the Thinking, Feeling, Behaving triangle and the ABCs (i.e. Activating event, Belief that follows, Consequences of the belief) of automatic thinking. The PI emphasized the need for practice and repetition to create the habit of positive thinking. The group reviewed the common types of automatic thoughts and identifed which were common to them personally. The concept of mindfulness was introduced and specific strategies discussed. The topic for caring for your body included information on health and energy including nutrition and how it relates to energy. The session ended by reviewing the skills-building activity for the week and participants setting personal goals.

Session 2: Self-esteem and Positive Self-talk

Session two included a review of the content from first session and a review of the Session one skills-building activities. The PI recorded how many participants completed at least part of their activity sheets as well as attendance. Since all cohort members in the intervention cohorts received the MINDBODYSTRONG program, the PI did not know which ones had concented regardless of their completion of the skills-

building sheet. The Session two curriculum reiterated the Thinking, Feeling and Behaving triangle and ABCs of positive thinking. In addition, new content included information on self-esteem, healthy coping habits, practicing thankfulness, steps to change and physical activity. Participants set personal goals for the next week.

Session 3: Stress and Coping

Session three included a review of the content from the previous session and a review of the previous session's skills-building activities. The PI recorded how many participants completed at least part of their activity sheets as well as attendance. The Session three curriculum reiterated the Thinking, Feeling and Behaving triangle and ABCs of positive thinking. New content included a discussion on the causes, signs, symptoms and physical responses to stress. Healthy and unhealthy coping strategies were discussed. In addition, the symptomology of anxiety was covered. Abdominal breathing was introduced and practiced as a positive coping activity for anxiety. Finally, healthy eating on the go was discussed, and particpants were given several healthy options to try. Participants set personal goals for the next week.

Session 4: Problem Solving and Setting Goals

Session four included a review of the content from the previous session and a review of the previous session's skills-building activities. The PI recorded how many participants completed at least part of their activity sheets as well as attendance. The Session four curriculum reiterated the Thinking, Feeling and Behaving triangle and ABCs of positive thinking. New content included problem solving and setting goals. The participants were asked to write down a dream goal that they would like to achieve over

the next five to ten years. They then practiced setting incremental goals as well as identifying barriers and overcoming barriers. Steps to problem solving and strength training was also discussed. Participants set personal goals for the following week.

At the end of this session, participants completed a mid-point quiz to identify how well they were understanding the content to this point (Appendix E). The average score was 92% for all participants in the intervention group indicating a good understanding of the content.

Session 5: Wellness Wonder Foods and Sleep

Session five included a review of the content from the previous session and a review of the skills-building activities. The PI recorded how many participants completed at least part of their activity sheets as well as attendance. The Session five content reviewed the Thinking, Feeling and Behaving triangle and ABCs of positive thinking. New content included the physiology of sleep and its importance to health. Participants were introduced to the concept of keeping a sleep diary. In addition, high density, nutritious foods and healthy dietary connsiderations were discussed. Participants set personal goals for the following week.

Session 6: Dealing with Emotions in a Healthy Way

Session six included a review of the content from the previous session and a review of the skills-building activities. The number of participants who completed at least part of the skills building activity sheets and attendance was documented. The Session six curriculum reviewed the Thinking, Feeling and Behaving triangle and ABCs of positive thinking. New content included an introduction to mental imagery, emotion regulation

and self-control strategies to manage emotions in a healthy way. Participants identified their anger and anxiety triggers and developing strategies for positively responding to those triggers. Participants were provided stretch bands to practice flexibility exercises at home or at work. Participants then set personal goals for the following week.

Session 7: Coping with Stressful Situations

Session seven included a review of the content from the previous session and a review of the skills-building activities. The number of participants who completed at least part of the skills building activity sheets and attendance was recorded. The Session seven curriculum emphasized the Thinking, Feeling and Behaving triangle and ABCs of positive thinking. New content included strategies to deal with stressful situations such as when being bullied, criticized or left out. Participants then set personal goals for the following week.

Session 8: Pulling it all Together

Session eight included a review of the content from the previous session and a review of the skills-building activities. The number of participants who completed at least part of the skills building activity sheets and attendance was recorded. The session eight curriculum reiterated the Thinking, Feeling and Behaving triangle and ABCs of positive thinking. No new content was introduced this week, rather, this session reviewed previously learned content. Participants were asked to create nutrition and physical activity goals for the next 30 days.

At the conclusion of the session, participants took the online post survey in a computer lab following the study protocol guidelines. In addition, they completed a short

paper questionnaire regarding their experience with the program and curriculum (Appendix F).

Procedure

The study was approved by The Ohio State University's Institutional Review Board (Appendix G), the Wexner Medical Center Health System, and the Ohio State University Nurses' Organization (Appendix H). Final IRB approval was received on July 31, 2018. Participants were consented between August 1, 2018 and October 1, 2018.

Immediately following the consent process, the initial data collection time-point was administered via a computerized survey. To ensure anonymity, participants and non-participants were asked to go to the computer lab for 30 minutes. Those who consented to the study used a link to access their survey. Non-participants could use this time to complete any work-related task such as completing an e-module or check their email. The PI did not attend this session.

After the allotted 30 minutes, the cohort returned to the classroom where they began their seminar experience. Cohorts assigned to the control group received the usual seminar materials including a 30 minute debriefing session where they discussed challenges experienced at work during the past week and provided peer-to-peer support. Cohorts assigned to the intervention group were provided with manuals for the MINDBODYSTRONG program. In all sessions except for the initial week, the two cohorts in the MINDBODYSTRONG intervention group reviewed and discussed their skills-building worksheets and then received the content corresponding to the current session.

Protocol

The protocol is located in Appendix I. Participants completed an electronic survey which included demographic measures of percieved stress, anxiety, depressive symptoms, job satisfaction, healthy lifestyle beliefs and healthy lifestyle behaviors. All participants and non-participants were provided information on the Employee Assistance Program. In addition plans were in place to transport any participant reporting suicidality after completing the PHQ-9 to the emergency department. Finally, any participant scoring ≥10 on the PHQ-9 were referred to the Employee Assistance program, but were able to remain in the study.

Study Fidelity

The PI was trained by MINDBODYSTRONG developers to provide consistent and accurate delivery of the program throughout the study. In addition, the PI delivered the curriculum to NLRNs in an earlier feasiblity study at which time each session was monitored by a trained observer and feedback was provided. Further, the intervention group completed a mid-point quiz following session four to ensure retention and understanding of curriculum content. The PI also documented participation in skills building activities at the beginning of each session.

Measures

The measures used for this study included the following:

Perceived Stress Scale (PSS): This 10-item measure (Appendix J) is the most widely used tool for measuring the perception of stress. The questions focus on feelings and thoughts within the past month. For example “In the last month, how often have you felt

nervous and "stressed?" Answers range from 0 (Never) to 4 (Very Often) of a five-point Likert scale. It has been validated with several populations and shows adequate internal and test-retest reliability (Cronbach's alpha = .84; Cohen et al., 1983).

Generalized Anxiety Disorder scale (GAD-7): The 7-item Generalized Anxiety Disorder scale (Appendix K) is a well validated and reliable tool to measure self-reported anxiety. It shows strong reliability (Cronbach's alpha = .86; Lowe et al. 2008). The questions focus on feelings and actions associated with anxiety within the past two weeks such as "Over the past 2-weeks, how often have you been bothered by feeling nervous, anxious, or on edge?" Answers are measured on a 4-point Likert scale ranging from 0 (Not at all) to 3 (Nearly everyday). A score between 5-9 is considered mild anxiety, 10-14 moderate anxiety and a score 15 and above severe anxiety.

The Patient Health Questionaire-9 (PHQ-9): The PHQ-9 is a nine item, self-administered instrument (Appendix L) that screens individuals for the presence and severtity of depressive symptoms occuring in th past two weeks. Questions ask such things as "Over the past two weeks how often have you had little pleasure in doing things?" Answers are measured on a 4-point Likert scale ranging from "not at all" to "nearly every day." Scores between 1-4 indicate minimal depression, 5-9 mild depression, 10-14 moderate depression, 15-19 moderately severe depression, 20-27 severe depression. This tool has been validated in multiple studies and shows strong reliability (Cronbach's alpha = .92 at the cutoff of 3; Kroenke, Spitzer, Williams, 2003).

Healthy Lifestyle Beliefs scale: This 16 item tool (Appendix N) was adapted from other beliefs scales by Melnyk. It focuses on beliefs about living a healthy life. Questions such as "I am sure that I will do what is best to lead a healthy life" are measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha averages .82 (Hrabe et al., 2017).

Healthy Lifestyle Behaviors scale: Melnyk et al. (2017) developed this 16-item measure (Appendix O) designed to measure healthy lifestyle behaviors. It is scored on a 5-point Likert scale measuring lifestyle behaviors such as "I make healthy food choices" and "I set goals I can accomplish." The Cronbach alpha is reported at .73.

Job Satisfaction scale (JSS): This 7-item scale (Appendix M) was developed to measure how satisfied one is with their job. Questions such as "I find real enjoyment in my job" are answered based on a 5 point Likert scale ranging from 1(Strongly Disagree) to 5 (Strongly Agree). Internal consistency range from .72 to .95 (Price & Mueller, 1983).

Work Absences: Absences were measured by asking participants how many days they missed work since their hire date for personal illness.

Demographic Characteristics: Demographic questionaire (Appendix P) includes questions regarding age, gender, education level, shift, shift length, unit, relationship status, orientation status and number of preceptors.

Table 3. *Measures and Timing of Data Collection*

Construct	Measure (Number of Items)	Time Point
Anxiety	Generalized Anxiety Disorder Scale (7)	T1, T2, T3
Depressive Symptoms	Patient Health Questionnaire (9)	T1, T2, T3
Perceived Stress	Perceived Stress Scale (10)	T1, T2, T3
Healthy Lifestyle Beliefs	Healthy Lifestyle Beliefs Scale (16)	T1, T2
Healthy Lifestyle Behaviors	Healthy Lifestyle Behaviors Scale (7)	T1, T2, T3
Job Satisfaction	Job Satisfaction Scale	T2, T3
Absenteeism	Single question on number of days missed since start date	T2, T3

Chapter 4. Results

Recruitment

Four nurse residency cohorts were hired between July 1, 2018 and September 30, 2018. Potential participants were recruited approximately one month following their hire date during their first nurse residency seminar. Recruitment dates for this study included August 1, 2018, August 7, 2018, September 6, 2018 and October 1, 2018 (Figure 4). The four cohorts were randomly assigned to either the control or the MINDBODYSTRONG intervention group prior to July 1. A total of 105 NLRNs were invited to participate in the study. Of those invited, 93 (87%) signed consent and completed the initial baseline surveys. Prior to completion of the eight week intervention study, four participants, two from Cohort 1, one from Cohort 2, and one from Cohort 3, left the organization due to unsuccessful progress through orientation resulting in an attrition rate of 4.5% for the control group, and 4% for the intervention group. A total of 89 participants completed all study surveys for three time-points.

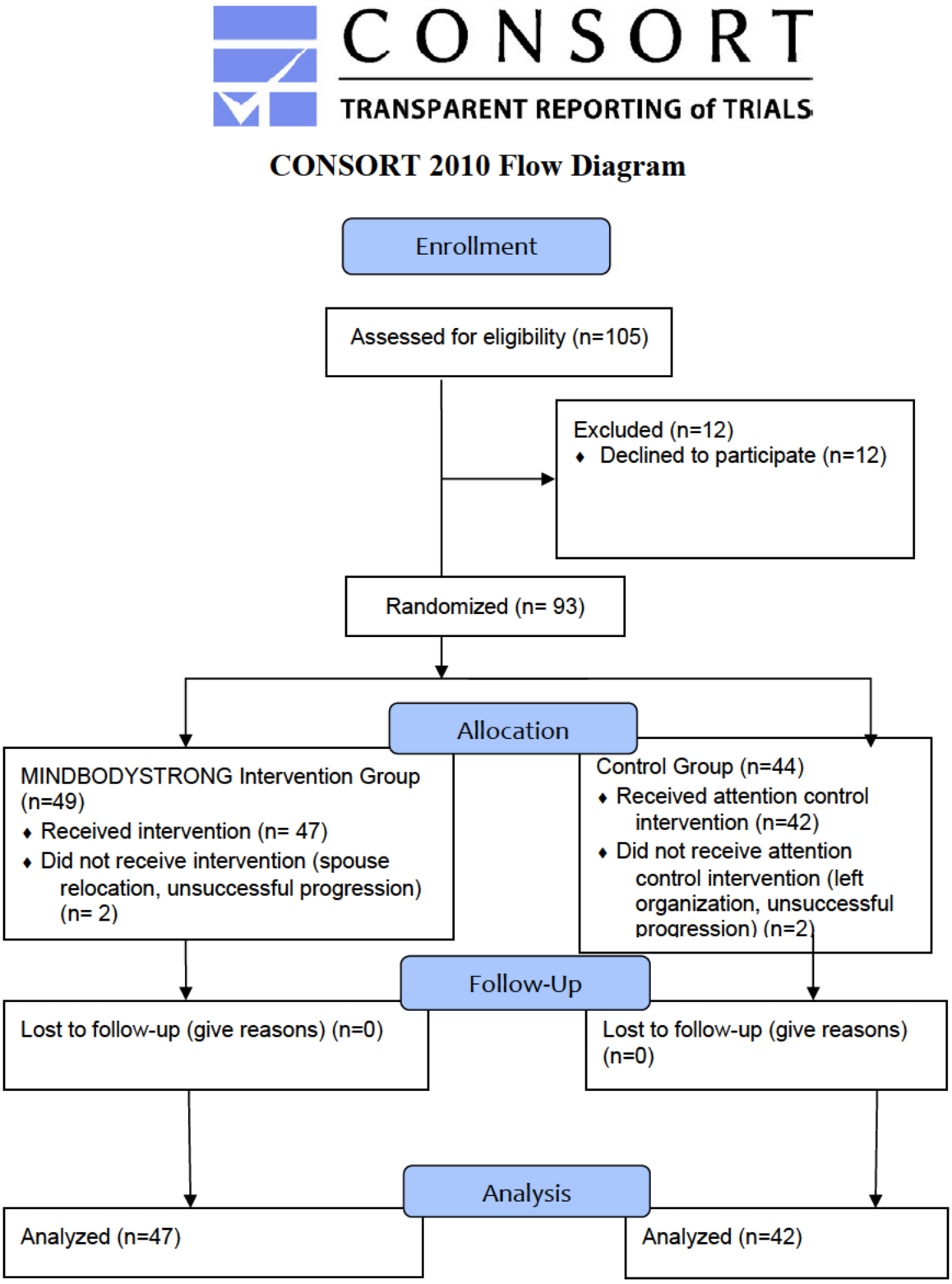

Figure 4. Consort diagram

Demographics

Participants were between the ages of 21 and 50 with a mean age of 24.5 for the control group and 24.3 for the intervention group (Table 4). The majority of participants were female (control group $n = 35$, intervention group $n = 41$). In addition, the majority of the sample were white and non-Hispanic (control group, 97% white, 95% non-Hispanic; intervention group, 87% white and 100% non-Hispanic). Twenty-six percent of both the control and the intervention group reported being previously diagnosed with a mental health disorder, much higher than the general population. The majority of participants earned a BSN in nursing

Table 4. *Demographics Table*

Variable	**Control Group**		**Intervention Group**	
	Frequency	**%**	**Frequency**	**%**
Gender				
Female	35	83%	41	87%
Male	7	17%	6	13%
Ethnicity				
Hispanic	2	5%	0	0%
Non-Hispanic or Latino	40	95%	47	100%
Race				
Asian	2	5%	3	1.5%
Black or African American	1	2%	3	1.5%

White	39	93%	41	97%
Previous Mental Health Diagnosis	11	26%	12	26%
Type of Nursing Degree				
ADN	6	14%	6	13%
BSN	36	86%	40	86%
Masters	0	0%	1	1%
Type of Nursing Unit				
Cardiac	2	2%	4	8%
Critical Care	10	24%	14	30%
Medical/Surgical	21	50%	20	43%
Neuro/Rehab	3	10%	5	11%
Other	6	14%	4	8%

(control group *n* = 36, 86%, intervention group *n* = 40, 86%). Finally, the majority of participants were hired into either a critical care unit or a medical/surgical (med/surg) unit (control group, critical care *n* = 10, 24%, med/surg *n* = 21, 50%, intervention group, critical care *n* = 14, 30%, med/surg, *n* = 20, 43%).

Results

Statistical Assumptions:

Data were gathered from 89 participants from four different nurse residency cohort groups. Two cohort groups (*n* = 42) were in the control group, and two cohort

groups (n = 47) were in the intervention group. The variables of interest, including perceived stress, anxiety, depressive symptoms, healthy lifestyle behaviors, and job satisfaction were measured at three time-points to reflect the scores on these variables at baseline (Time 1), immediately post-intervention (Time 2), and three months post-intervention (Time 3). Healthy lifestyle beliefs were measured at baseline and immediately post-intervention. Work absences was self-reported immediately post-intervention and three months post-intervention. Data were visually examined for accuracy of coding. No missing data were noted. Data from a descriptive analysis were obtained to compare means, standard deviation, skewness and kurtosis (Table 5).

Table 5. *Descriptive Statistics*

	N	Mean Statistic	SD Statistic	Skewness Statistic	Kurtosis Statistic
Time 1 Stress	89	20.09	3.592	.071	1.581
Time 2 Stress	89	12.88	5.090	.378	.450
Time 3 Stress	89	12.74	6.091	.348	.090
Time 1 Anxiety	89	5.44	4.760	1.318	1.688
Time 2 Anxiety	89	4.21	4.749	1.596	2.110
Time 3 Anxiety	89	4.60	4.436	1.368	1.889
Time 1Depression	89	4.54	4.657	1.610	2.641
Time 2Depression	89	3.44	3.790	1.423	1.368
Time 3 Depression	89	4.36	4.493	1.494	2.032
Time 1 Job Satisfaction	89	20.04	2.236	.585	2.11
Time 2 Job Satisfaction	89	22.18	1.93	-.010	.680
Time 3 Job Satisfaction	89	21.78	2.13	-.384	.611
Time 1 Healthy Behaviors	89	59.28	7.715	-.420	1.11

Time 2 Healthy Behaviors	89	60.31	6.25	-.040	.141
Time 3 Healthy Behaviors	89	59.45	6.43	-.116	.360

Skewness and kurtosis fell within the acceptable range of ±2.0 for all variables except Time 2 anxiety, Time 1 depressive symptoms, Time 3 depressive symptoms and Time 1 job satisfaction which were slightly kurtotic (Lomax & Hahs-Vaughn, 2012). The variables were then examined for the assumption of normality. Q-Q plots revealed a reasonably normal curve for all variables, however box plots revealed multiple outliers in all time-points for anxiety and depression. It was imperative that all outliers be retained since they represented participants with elevated mental health outcome scores that may show the true impact of the intervention. In addition, the presence of the outliers did not impact the assumption of normality.

The assumptions of equal variance and sphericity using .05 significance value were then examined for each variable using Levene's Test of Equality of Error Variance and Mauchly's Test of Sphericity. The assumption of sphericity was met for all variables. The assumption of equal variances across all time-points was met for all variables except anxiety and depression. Since a violation of the assumption of equal variance can lead to an increased Type 1 error rate, it was determined that the *anxiety* and *stress* variables would be transformed using a Log 10 transformation prior to running further statistical analysis (Lomax & Hahs-Vaughn, 2012). The transformation of variables resulted in acceptable limits for equal variance for both variables.

Once the transformation was completed, a MANOVA was conducted for all variables at baseline to determine the homogeneity within and between groups. No statistical differences were noted.

Perceived Stress, Anxiety and Depressive Symptoms Results

Research Question 1: What is the effect of the MINDBODYSTRONG program on perceived stress, anxiety and depressive symptoms in NLRNs?

Following the transformation procedure, a repeated measures ANOVA was conducted to determine the change in stress, anxiety and depressive symptoms over the three time-points. There was a significant difference in group means across time-points for stress (F [1, 87] = 9.518, p = .003, n^2 = .099). In addition, there was a significant difference for between-group effect on stress (F [1, 87] = 5.459, p = .022, η^2_p = .059) with the intervention group performing better than the control group for Time 2 (control group M = 13.05, intervention group M = 12.72) and Time 3 (control group M = 15.07, intervention group M = 10.66) (Figure 5). For all time-points, the intervention group's mean perceived stress score trended downward, while the control group had an initial drop in mean score but increased between Time 2 and Time 3.

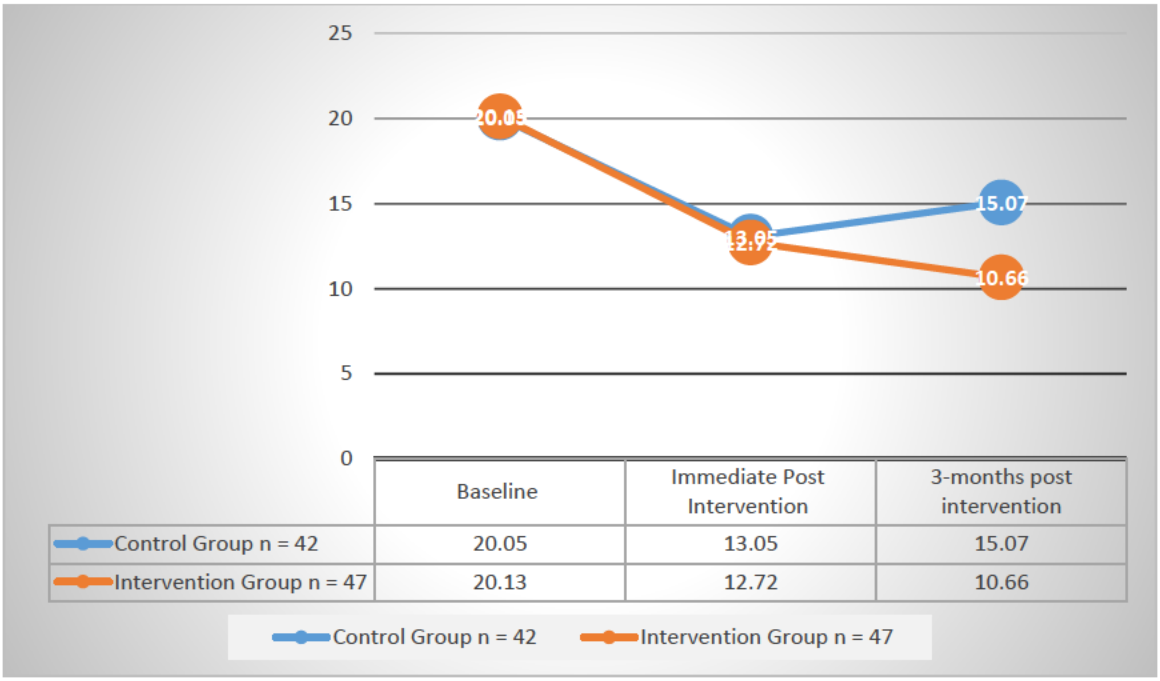

Figure 5. Group Mean Comparison for Perceived Stress

There was also a significant difference in individual scores for anxiety across time (F [1, 87] = 10.40, p = .002, η^2_p = .107) and between-groups scores (F [1, 86] = 17.469, p = <.001, η^2_p = .167). The intervention group reported significantly less anxiety than the control group at Time 2 versus the control group's mean score which increased. While both group's mean score for anxiety increased at Time 3, the intervention group's mean score was significantly lower and fell within the normal limits for anxiety (Figure 6).

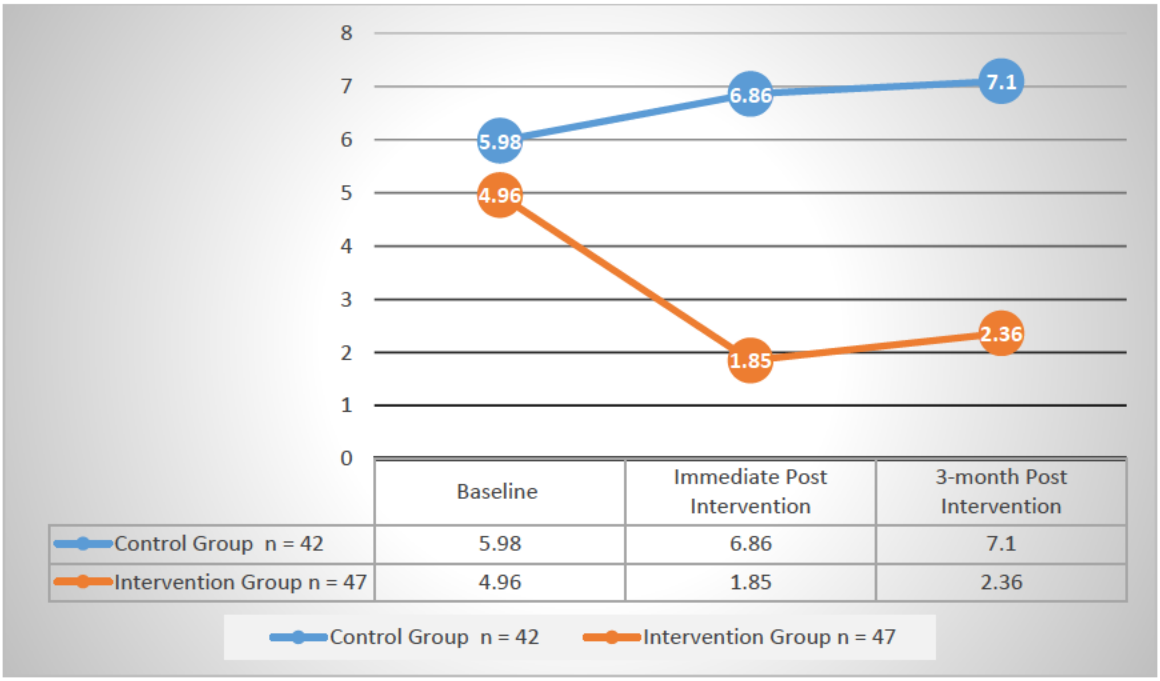

Figure 6. Group Mean Comparison for Anxiety

Similarly, there was a significant difference in mean scores for depressive symptoms (F [1, 87] = 8.59, p = .004, η^2_p = .090) and between-groups effects (F [1, 87] = 15.63, p = <.001, η^2_p = .152). The mean score for the control group trended upward for all time-points (Time 1 M = 4.98, Time 2, M = 5.45, Time 3, M = 6.07) and fell within the mild depressive range throughout the study. Conversely, the mean score for depressive symptoms in the intervention group dropped significantly from Time 1 (M = 4.15) to Time 2 (M = 1.64) and remained in the normal range for depressive symptoms throughout Time 2 and Time 3 (Figure 7).

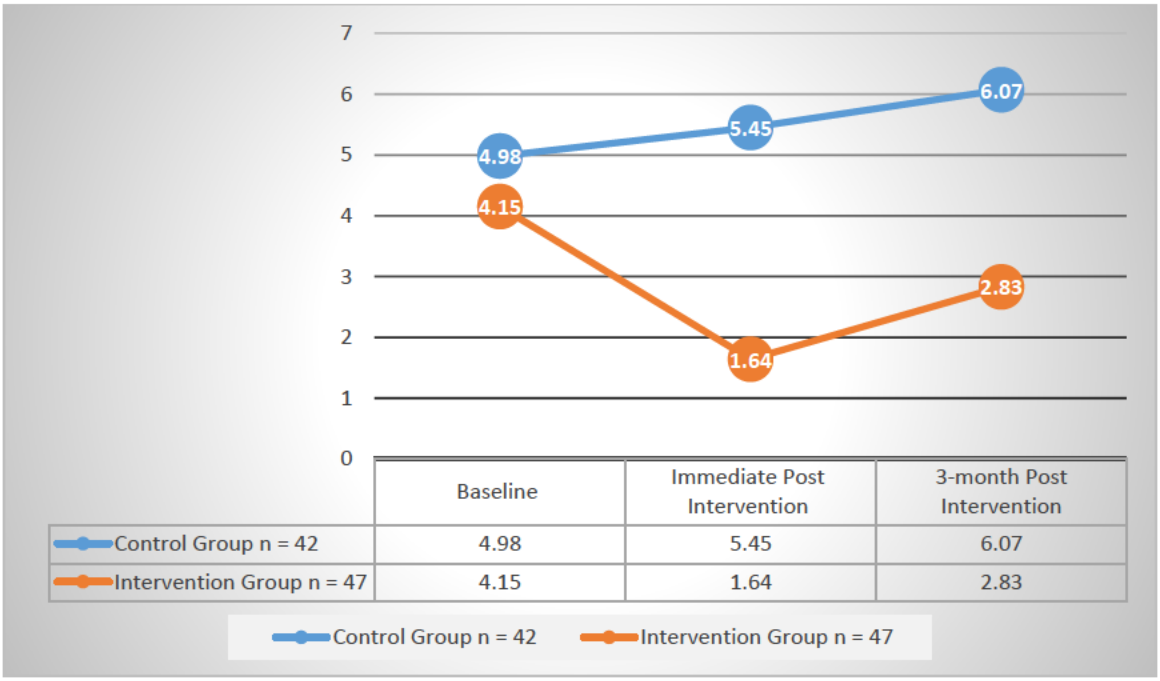

Figure 7. Group Mean Comparison for Depressive Symptoms

In order to test the efficacy of the MINDBODYSTRONG program, independent samples *t*-tests were conducted and Cohen's *d* calculated for effect size (Table 7). Among nurse residents participating in this study (n = 89), there was no statistically significant difference in *perceived stress* scores between the control group (M =13.05, SD = .79) and the intervention group (M = 12.72, SD = .75), (F = .011, $p \geq .05$, CI 11.48-14.61, 11.24-14.21) from Time 1 to Time 2. However, there was a small positive effect (d = .2).

For the variable *perceived stress* from Time 1 to Time 2, there was a statistically significant difference between the control group (M = 15.07, SD = .88) and the intervention group (M = 10.66, SD = .83), (F = 13.21, $p < .001$, CI 13.21-16.82, 9.01-12.31). Further, there was a large positive effect for the intervention group (Cohen's d = 1.84)

For the variable *perceived stress* from Time 2 to Time 3, there was a statistically significant difference between the control group (M =7.10, SD = .58) and the intervention group (M = 2.36, SD = .55), ($F = 35.02$, $p < .001$, CI 1.32-16.82, 9.01-12.31). Further, there was a large positive effect for the intervention (Cohen's $d = 5.56$).

For the variable *perceived stress* from Time 1 to Time 3, there was a statistically significant difference between the control group (M = 15.07, SD .881) and the intervention group (M = 10.66, SD = .832), ($F = 13.26$, $p = <.001$, CI 13.321-16.822, 9.005-12.314). A large, positive effect size (Cohen's $d = 1.83$) was also noted.

Table 6. *Effect Sizes for Mental Health Variables* (* = small effect size, ** = moderate effect size, *** = large effect size)

Variable		Baseline to Post Changes			Post to 3 Mo Post Changes			Baseline to 3 Mo Post Changes		
		M	**SD**	***d***	**M**	**SD**	***d***	**M**	**SD**	***d***
Perceived Stress	**Control**	7.0	3.04	0.2 *	-2.02	0.31	5.51 ***	4.98	3.35	1.83 ***
	Intervention	7.41	0.12		2.06	1		9.47	0.87	
Anxiety	**Control**	0.88	0.28	3.5 ***	0.24	0.66	0.50 **	-1.2	0.94	3.54 ***
	Intervention	3.11	1.6		-0.51	0.41		2.6	1.19	
Depressive Symptoms	**Control**	0.47	0.80	1.8 ***	-0.62	0.53	0.50 **	-1.09	0.27	4.72 ***
	Intervention	2.51	2.26		-1.19	1.59		1.32	0.87	

Next, an independent samples *t*-test was conducted using the variable *anxiety* for the three time-points. For Time 1 to Time 2, there was a statistically significant difference between the control group (M = 6.86, SD = .63) and the intervention group (M = 1.85, SD = .59), ($F = 33.84$, $p < .001$, CI 5.61-8.10, .68-3.03). There also was a small to moderate positive effect for the intervention (Cohen's $d = 3.5$).

For the variable *anxiety* from Time 2 to Time 3, there was a statistically significant difference between the control group (M = 15.07, SD = .88) and the intervention group (M = 10.66, SD = .83), (*F* = 13.21, *p* <.001, CI 5.94-8.25, 1.27-3.45). The Cohen's *d* value (*d* = .50) indicates a moderate positive effect for the intervention.

For the variable *anxiety* from Time 1 to Time 3, there was a statistically significant difference between the control group (M = 7.10, SD = .58) and the intervention group (M = 2.36, SD = .55), (*F* = 35.02, *p* <.001, CI 5.94-8.25, 1.27-3.45) with a large positive effect for the intervention (Cohen's *d* = 3.54).

An independent samples *t*-test was conducted using the variable *depressive symptoms* for the three time-points. For Time 1 to Time 2, there was a statistically significant difference between the control group (M = 5.45, SD = .508) and the intervention group (M = 1.63, SD = .48), (*F* = 29.82, *p* <.001, CI 4.44-6.46, .69-2.59). Further, Cohen's *d* was 1.8 indicating a large positive effect for the intervention.

For the variable *depressive symptoms* from Time 2 to Time 3, there was a statistically significant difference between the control group (M = 6.07, SD = 4.85) and the intervention group (M = 2.83, SD = 3.55), (*F* = .70, *p* <.001, CI 4.78-7.36, 1.61-4.05). There was a moderate positive effect for the intervention at this time point on depression (Cohen's *d* = .50).

For the variable *depressive symptoms* from Time 1 to Time 3, there was a statistically significant difference between the control group (M = 6.07, SD = .650) and

the intervention group (M = 2.83, SD = .614), (*F* = 13.138, *p* <.001, CI 4.78-7.36, 1.61-4.05). The intervention group continued to decrease their depression scores significantly more than the control group three months following the intervention. Further, there was a large positive effect for the intervention (Cohen's *d* = 4.72) suggesting a large practical significance.

Since a large percentage of participants reported having a previous mental health diagnosis, consideration was made for controlling this phenomenon statistically. However, upon further review, both groups were balanced on the number reporting previous diagnosis, and both groups were similar at baseline on all mental health measures. Therefore, a statistical analysis was not conducted for this variable.

Healthy Lifestyle Beliefs and Behaviors

Research Question 2: What is the effect of the MINDBODYSTRONG program on healthy lifestyle beliefs and behaviors in NLRNs?

A MANOVA was conducted to evaluate the change in *healthy lifestyle beliefs* from baseline to immediately post-intervention. There was a significant difference between groups (Λ = .593, *F* [1, 87] = 29.47, *p* = <.001) from Time 1 to Time 2. However, the univariate test failed to capture significance (*F* [1, 87], = .078, *p* = 781). This may be due to a complex relationship between the variables (Pituch & Stevens, 2016). Cohen's *d* indicated a large effect size (5.509) (Table8).

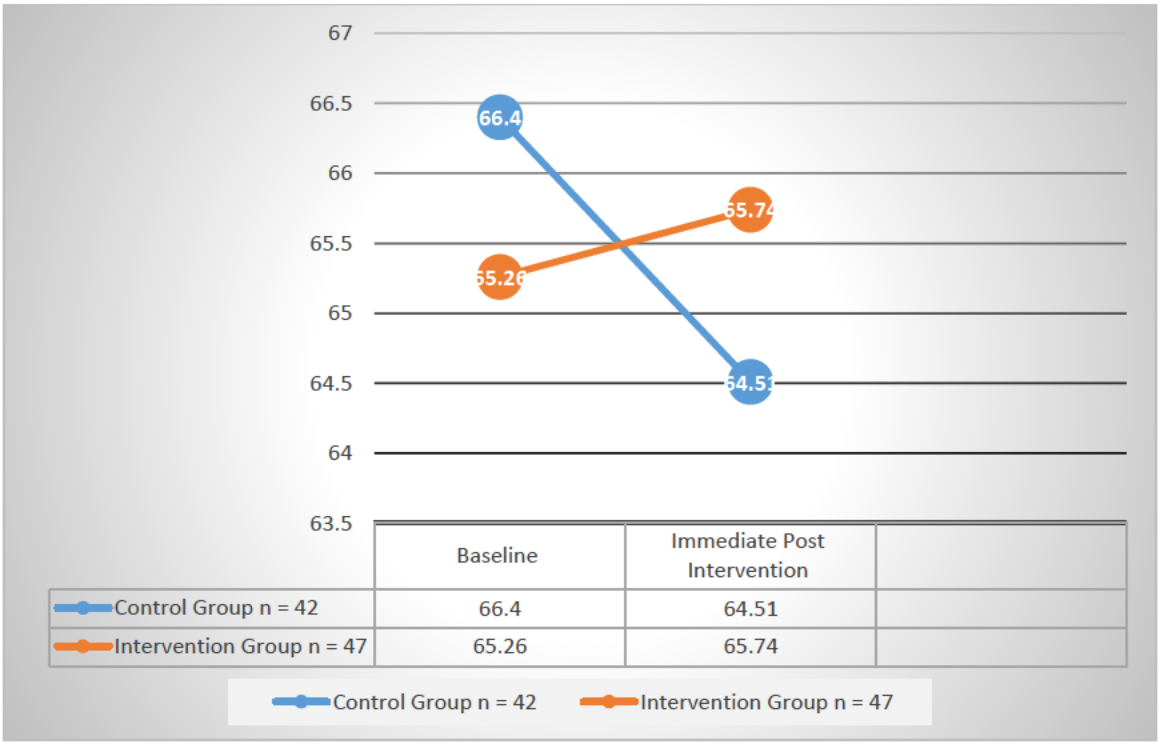

Figure 8. Group Mean Comparison for Healthy Lifestyle Beliefs

Table 7. *Effect size for Healthy Lifestyle Beliefs* (* = small effect size, ** = moderate effect size, *** = large effect size)

		Time 1 to Time 2 Changes			
		N	**M Change**	**SD Change**	**Cohen's *d***
Time 2 Healthy Lifestyle Beliefs	Control	42	-1.14	0.01	
	Intervention	47	1.23	0.6	5.59***

A repeated measures ANOVA was conducted to determine the change in healthy lifestyle behaviors over time. There was a significant difference in individual scores across time-points for healthy lifestyle behaviors (F [1, 87] = 11.86, p = .001, n^2 = .12). In addition, there was a significant between group effect in behaviors (F [1, 87], = 2.54, p = .015, η^2_p = .029). As shown in *Figure 8*, healthy lifestyle behaviors steadily declined

across all time-points for the control group (Time 1, M = 59.18, Time 2, M = 58.27, Time 3, M = 57.34). The intervention group scored significantly higher at all time-points (Time 1, M = 59.38, Time 2, M = 62.2, Time 3, M = 61.4). While the intervention group's mean score at Time 3 dropped slightly, they remained over 4 points higher than the control group.

A one-way MANCOVA was conducted to determine whether there was a statistically significant difference in the intervention on the variable *healthy lifestyle behavior* controlling for baseline healthy lifestyle beliefs. Statistical significance was found for all time-points: Time 1 F [1, 87], p = <.001, η^2_p = .21, Time 2, F [1, 87] = 11.57, p = .001, η^2_p = .12, Time 3 F [1, 87] = 13.33, p = <.001, η^2_p = .14.

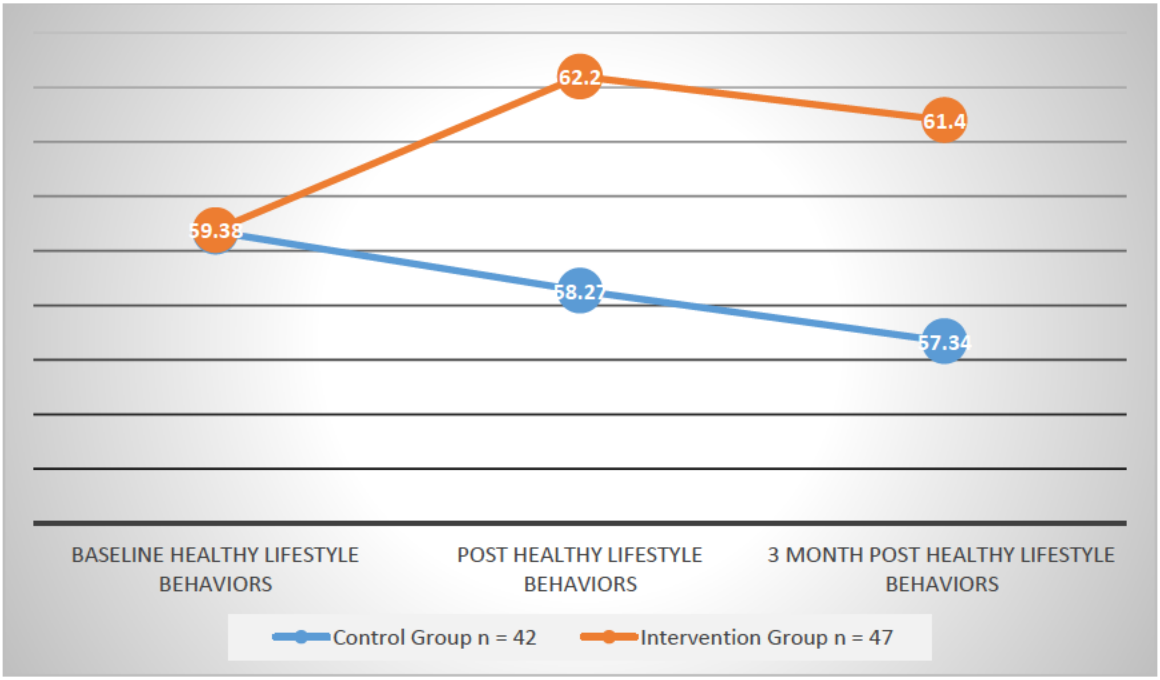

*Figure 9.*Group Mean Comparison for Healthy Lifestyle Behaviors

To test the efficacy of the MINDBODYSTRONG program, independent samples *t*-tests were conducted and Cohen's *d* calculated for effect size (Table 9). Among nurse residents participating in this study ($n = 89$), there was statistical significance in *healthy lifestyle behavior* scores between the control group (M =58.52, SD = 1.20) and the intervention group (M = 61.96, SD = .90), (F [1, 87] = 7.07, p =.01, CI 56.66-60.39, 60.18-63.74) from Time 1 to Time 2.

Table 8. *Effect Sizes for Healthy Lifestyle Behaviors* (* = small effect size, ** = moderate effect size, *** = large effect size)

Variable		Baseline to Post Changes			Post to 3 Mo Post Changes			Baseline to 3 Mo Post Changes		
		M	SD	*d*	M	SD	*d*	M	SD	*d*
Health Lifestyle Behaviors	Control $n = 42$	-1.2	2.5	2.10 ***	-.92	.16	.19*	-2.12	2.39	2.35 ***
	Intervention $n = 47$	2.93	1.24		-.86	.42		2.07	.82	

From Time 2 to Time 3, statistical significance was found between the control group (M = 57.62, SD = 0.96) and the intervention group (M = 61.13, SD = 0.92), (F [1, 87] = 6.99, p = 0.01, CI 55.71-59.53, 59.31-62.96).

Finally, data from Time 1 to Time 3 were examined and statistical significance was found between the control group (M = 57.62, SD 0.96) and the intervention group (M = 61.13, SD = 0.92), (F [1, 87] = 6.99, p = 0.10, CI 55.71-59.53, 59.31-62.96). A large positive effect was found (Cohen's $d = 2.47$) at this time point.

Job Satisfaction

Research Question 3: What is the effect of the MINDBODYSTRONG program on job satisfaction in NLRNs?

A repeated measures ANOVA was conducted to determine the change in *job satisfaction* over time. There was a not a significant difference in scores across time-points for job satisfaction (F [1, 87] = .034, p = .854, n^2 = <.001). In addition, there was no significant difference between group effect in job satisfaction scores (F [1, 87], = 1.30, p = .258, η^2_p = .06). The intervention group performed better on this variable than the intervention with less fluctuation in mean scores (*Figure 9).* However, there was a large positive effect for the intervention. The results show a large positive effect size

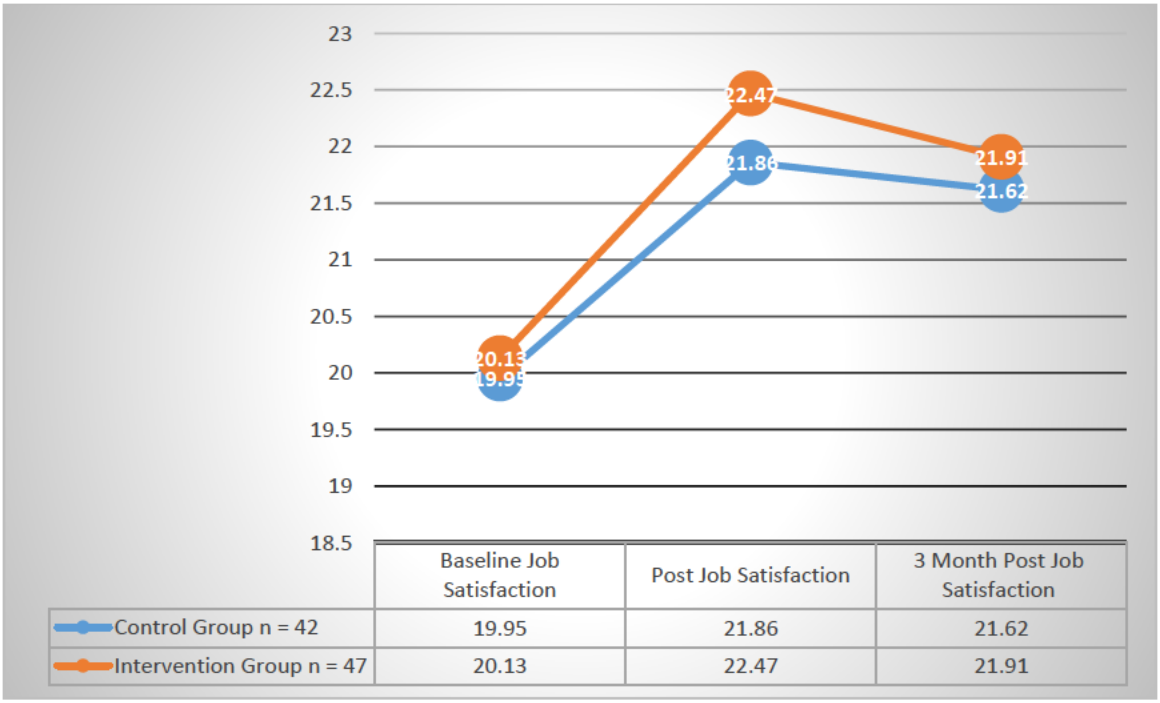

Figure 10. Group Mean Comparison for Job Satisfaction

(d = .98) for job satisfaction for Time 1 to Time 2, a large positive effect size (d = 1.33) from the Time 2 to Time 3, and a small positive effect size (d = .35) for Time 1 to Time 3. This suggests that perhaps the sample size was not large enough to have enough power to capture the significant differences between groups. Further, while the intervention

group's job satisfaction scores remained steady, rising slightly, the control group's scores continued to decline.

Table 9. *Effect Sizes for Job Satisfaction* (* = small effect size, ** = moderate effect size, *** = large effect size)

Variable		Baseline to Post Changes			Post to 3 Mo Post Changes			Baseline to 3 Mo Post Changes		
		M	**SD**	***d***	**M**	**SD**	***d***	**M**	**SD**	***d***
Job Satisfaction	Control $n = 42$	1.91	.62	.98 ***	0.24	0.24	1.33 ***	1.67	.38	.35 *
	Intervention $n = 47$	2.34	.01		0.56	0.24		1.78	.23	

Work Absences

Research Question 4: What is the intervention effect of the MINDBODYSTRONG program on work absences in NLRNs?

A one-way MANOVA was conducted to determine the association between the MINDBODYSTRONG program and the dependent variable *work absences* at Time 2 and Time 3. Multivariate tests show no significant difference between the control group and the intervention group for this time period, (F [2, 86] = .322, p = .725, η^2_p = .01). Results for the between-group effects showed no significance difference between work absences in the control group versus the intervention group, (F [1, 87] = .296, p = .588, η^2_p = .003).

An analysis for effect size was then conducted using Cohen's d to determine the practical significance for *work absences* between the control group and the intervention group. While there was a very small effect size noted, this analysis failed to reach clinical significance for all time points.

Table 10. *Frequency of Days Missed*

	Group	Missed Days	Frequency	Percent
Time 2	Control $n = 42$	None	34	81
		1	8	19
	Intervention $n = 47$	None	40	85
		1	7	15
Time 3	Control $n = 42$	None	38	91
		1	4	9
	Intervention $n = 47$	None	44	94
		1	6	6

Research Question 5a: What is the relationship between healthy lifestyle beliefs and healthy lifestyle behaviors within each of the study groups?

To understand the overall relationship between *healthy lifestyle behaviors* at each time-point, and in relationship to *lifestyle beliefs*, correlations using Pearson's *r* were computed for each of three time-points (Table 8). The results suggest a significant, small to moderate, positive correlation between healthy lifestyle beliefs measured at Time 1 and healthy lifestyle behaviors at Times 2 and 3. Further, baseline behaviors had a significantly moderate, positive relationship to both Time 2 and Time 3 following the intervention (Time 2, $r = .59$, $p = <.001$; Time 3, $r = .63$, $p = <.001$). Time 2 healthy lifestyle behavior had a significantly large, positive effect on healthy lifestyle beliefs at Time 3 ($r = .87$, $p = <.001$).

Table 11. *Healthy Lifestyle Beliefs and Behaviors Correlations*

		Time 1 Healthy Lifestyle Beliefs	Time 2 Healthy Lifestyle Beliefs	Time 1 Healthy Lifestyle Behaviors	Time 2 Healthy Lifestyle Behaviors	Time 3 Healthy Lifestyle Behaviors
Time 1 Healthy Lifestyle Beliefs	*r*		**.975****	**.456****	**.298****	**.320****
	p		**0.000**	**0.000**	**0.005**	**0.002**
Time 2 Healthy Lifestyle Beliefs	*r*			**.475****	**.354***	**.380***
	p			**0.000**	**0.001**	**0.000**
Time 1 Healthy Lifestyle Behaviors	*r*				**.593****	**.626****
	p				**0.000**	**0.000**
Time 2 Healthy Lifestyle Behaviors	*r*					**.874****
	p					**0.000**
Time 3 Healthy Lifestyle Behaviors						

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

Research Question 5b: What is the relationship among healthy lifestyle beliefs and stress, anxiety, depressive symptoms within the study groups?

To understand the relationships among the study variables *healthy lifestyle beliefs, anxiety* and *depressive symptoms*, correlations were computed for each time point using Pearson's *r*. The results demonstrate significant, large, positive correlation between Time 1 beliefs and Time 2 beliefs for both groups (Time 2 $r = .975$, $p = <.001$). Correlations for anxiety and depression at Time 3 were negative, small and non-significant for both groups (Table 12.). When comparing correlations for Time 2 beliefs and healthy lifestyle behaviors at Time 3, the intervention group had a significantly moderate, positive association ($r = .528$, $p = <.001$).

Table 12. *Correlations for Healthy Lifestyle Beliefs and Mental Health Variables by Group.*

Control Group Correlations				
Time 2 Healthy Lifestyle Beliefs	Time 2 Healthy Lifestyle Beliefs	Time 3 Anxiety	Time 3 Depressive Symptoms	Time 3 Healthy Lifestyle Behaviors
	r	-0.056	-0.189	0.276
	p	0.723	0.231	0.063
Intervention Group Correlations				
Time 2 Healthy Lifestyle Beliefs	Time 2 Healthy Lifestyle Beliefs	Time 3 Anxiety	Time 3 Depressive Symptoms	Time 3 Healthy Lifestyle Behavior
	r	-0.098	-0.262	.528**
	p	0.514	0.076	0.000

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Uptake of Content

Finally, a mid-point quiz (Appendix E) on key aspects of the MINDBODYSTRONG program was taken by participants in the intervention group following session four to determine their uptake of the content. The average score for the quiz was 92%. In addition, skills practice sheets were reviewed by the PI weekly to determine the number of participants practicing the learned skills. Eighty-three percent of participants in the intervention group completed all or part of their weekly journals.

Frequency of CBT Skills Used

The intervention group also completed a survey (Appendix F) immediately post-intervention to determine which skills they used most frequently (Table 13). Problem

solving, talking to someone when you have a problem, changing negative thoughts to positive thoughts, and positive self-talk were used most frequently. Examples of comments made by participants included:

"*This program helped me reframe my negative thought so I wasn't always putting myself down."*

"I didn't enjoy doing the skills building sheet at first, but then I began to see how much it was helping me to set weekly goals."

"The least helpful thing for me was imagery. I realize that other people like it, so I was OK with learning it."

"I am taking the stairs more at work and I bring my lunch so I have more healthy choices at work."

"I think this program would be beneficial for all new nurses. Everything is so hard when you start, this program helps you realize that everyone is struggling with the same things and there are ways to make it better."

"I'm glad I work for an organization that cares about its new nurses enough to offer this program."

Table 13. *Cognitive Behavioral Skills Used by the Participants at the end of the 8-Weeks Post- Intervention* (N = 47)

Specific Skill	Frequency	%
Changing negative thoughts to positive thoughts	43	91
Using positive self-talk	43	91
Mindfulness Activities (i.e. yoga, chewing gum or drawing)	37	78
Abdominal Breathing	40	85

Imagery	30	64
Thankfulness	40	85
Goal Setting	39	83
Problem solving	45	96
Talking to someone when you have a problem	45	96

Chapter 5. Discussion

The well-being of clinicians is of increasing concern across the health professions. The nursing workforce, which is the largest of health professions, experiences high levels of stress due to organizational factors including job demands, lack of resources, increasing technology, demands for improved patient experience, safety and cost containment (Bodenheimer & Sinsky, 2014; NIOSH, 2008; Ommaya et al., 2018; Dyrbye et al. 2017). The National Academy of Medicine (NAM) has called for an increase in evidence-based interventions to quell the increase in clinician burnout, depression and suicide. The MINDBODYSTRONG program is a novel adaptation of an evidence-based CBT-based skills building intervention that provides a comprehensive, theory-based approach to address the mental health, healthy lifestyle behaviors, job satisfaction and work absences of NLRNs. Following is a discussion related to the study findings and suggestions for future research.

Mental Health

Aim one for this study was to evaluate the effects of a CBT-based skills building program entitled MINDBODYSTRONG on perceived stress, anxiety, and depressive symptoms in NLRNs.

Perceived Stress: The Time 1 and Time 2 mean scores for perceived stress were similar for both the control and intervention groups. However, while the intervention group's stress scores continued to drop throughout the study and remained lower than the

control group at Time 2 and Time 3, the control group's stress scores increased significantly between Time 2 and Time 3.

For most NLRNs, the period between Time 2 and Time 3 represents the time when they are becoming more independent, increasing their patient responsibilities, and finishing their unit orientation and training. These findings align with the study conducted with new graduate nurses by Brunero and colleagues (Brunero, 2008). It also suggests that NLRNs who participated in the MINDBODYSTRONG program were more successful in managing their stress during this transitional period because of the CBT-based skills that were learned during the program. Since stress is linked to poorer health outcomes in nurses such as obesity, anxiety, depression, sleep disturbances, burnout, absenteeism, not to mention poor patient satisfaction and medical errors, this is an important finding (Ross et al., 2017; Chou et al., 2015; Teh et al., 2015; Hall et al. 2016; Melnyk et al. 2018). It may be possible to slow or eliminate this trend by providing NLRNs with the tools provided in the MINDBODYSTRONG program to improve their healthy lifestyle choices early in their career.

Anxiety: Both the intervention and the control group's mean scores were in the mild anxiety range on the GAD-7 measure at baseline. The control group's mean anxiety scores continued to increase across all time points. Conversely, the intervention group's mean score dropped significantly into the normal range for anxiety between Time 1 and Time 2. Although the intervention group's anxiety score rose slightly between Time 2 and Time 3, their mean anxiety scores remained within the normal range for anxiety for both time points. This suggests the MINDBODYSTRONG program is effective in

reducing anxiety for NLRNs. This finding aligns with a large body of evidence supporting the efficacy of CBT in treating both major and acute depressive disorders and anxiety disorders (Beck, 1979; Flynn & Warren, 2014; Bolognesi et al., 2014).

Depressive Symptoms: At baseline, both the control and the intervention group scored just below the cutoff for mild depression. At Time 2, the control group had increased their mean score into the mildly depressed category, while the intervention group significantly dropped its mean score by 2.5 points into the none or minimal depression category. At Time 3, both group's mean depression scores increased, however, the intervention group remained in the none or low depression category. This finding suggests that the MINDBODYSTRONG program has positive effects on depressive symptoms as cognitive-behavioral skills are taught in the program.

One descriptive statistic from this study worth noting was the fact that 26% of NLRNs recruited reported a previous mental health diagnosis. This finding is in line with other research that indicates nurses have twice the rate of depression compared to the general population (Morrissy et al., 2013; Ruggiero, 2005; National Academy of Medicine, 2017; Melnyk et al., 2018; Letvak, 2012). While specific diagnoses were not determined, it does beg the question whether new nurses enter the profession with higher rates of depression, or does the nature of the nursing profession elevate the risk for depression for those never diagnosed. Another consideration is whether depressive symptoms begin during nursing school, or do students entering nursing school have a higher than normal rate of depression compared to other students. While these questions were not asked specifically for this study, they are an important consideration when

determining when to initiate an evidence-based intervention, such as the MINDBODYSTRONG program, with future nurses.

This study found small to moderate negative correlations between Time 1 and Time 2 beliefs and anxiety and depression for the control group. The negative correlation existed for anxiety and depression for the intervention group only at Time 1, prior to receiving the MINDBODYSTRONG program. This supports the CBT theory regarding the benefits of changing negative thinking, or beliefs, to improve anxiety and depression. It also supports the MINDBODYSTRONG for Healthcare Providers model's assumption that personal beliefs mediate between the MINDBODYSTRONG program and the outcome variables.

Healthy Lifestyle Beliefs and Behaviors:

Results from statistical analysis indicated a strong positive correlation between participant's beliefs at baseline and their healthy lifestyle behaviors at Time 2 and Time 3. The intervention group performed better on lifestyle behaviors at both Time 2 and Time 3, while the control group's scores fell throughout the study period. This indicates a probable mediating effect of personal beliefs in the MINDBODYSTRONG Model (*Figure 2)*. It also corresponds with earlier research used to develop this program for NLRNs (Hart-Abney et al.; Melnyk et al., 2016; Hoying, & Melnyk, 2016; Hoying et al., 2016). This suggests that the MINDBODYSTRONG program has a positive influence on helping participants change their beliefs regarding lifestyle habits to improve their overall health and well-being.

The healthy lifestyle behavior scores for both the control and the intervention group were virtually equal at baseline. The control group's healthy lifestyle behavior scores significantly decreased over both Time 2 and Time 3 compared to the intervention group whose scores significantly increased at Time 2 and remained steady at Time 3. This is an important finding since it aligns with the skills learned during the MINDBODYSTRONG program where participants practice stress reducing strategies, problem solving skills, healthy eating habits and physical activity. The intervention group's significantly higher scores suggest that the MINDBODYSTRONG program had a positive effect on the participants in that group. Scores from the mid-point quiz as well as feedback from the end of program questionnaire suggest that the program was well-received and well understood.

Job Satisfaction

Job satisfaction is closely aligned with turnover in NLRNs (Brewer et al. 2012), Effective, evidence-based interventions are needed to improve job satisfaction among new nurses (Edwards et al., 2015). Results for this study show no significant differences between job satisfaction scores in the control group and the intervention group, however, the intervention group's scores on the JSS remained steady throughout all time points (*Figure 9*). The control group's Time 1 score was below that of the intervention group but increased to match that of the control group at Time 2. At Time 3, the control group's JSS score dropped by over 2 points compared to the intervention group. Despite non-significant statistical findings for job satisfaction, there was a large, positive effect size

for the intervention from Time 1 to Time 2 and from Time 2 to Time 3 suggesting that the MINDBODYSTRONG program was influential in maintaining stable scores for job satisfaction in the intervention group. This effect also may be related to participation in the nurse residency program, therefore additional time points and a larger sample size is needed to determine the true effect of the intervention.

Work Absences

Nursing research links stress, anxiety, depression and chronic health conditions with increased work absences (Howard & Potter, 2014; Roelen et al. 2014; Kottitz et al., 2017). Absenteeism is also negatively related to quality of care and medical errors (Davey et al., 2009; Roelen et al., 2014) and positively correlated to staff turnover (Daouk-Oyry, Anouze, Otake, Dumit, Osam, 2014).

This study showed no significant differences in reported absenteeism between the control group and the intervention group. This was due to a floor effect since so few days were missed by either group (Table 13). One explanation for this is that NLRNs were still in their probationary period and therefore less likely to call off work. New employees at this organization were considered "at will" employees during their probationary period, and could be terminated for missing work. However, there was a very small positive effect for the intervention. More time is needed to determine if the MINDBODYSTRONG program can improve the absenteeism rates for NLRNs.

Strengths and Limitations

The eight session MINDBODYSTRONG program is comprehensive in its approach to well-being. The curriculum provides participants with a wide range of tools to manage their stress, overcome barriers, embrace change, create positive self-talk, and care for their minds and their bodies. The eight weekly sessions allows incorporaton of CBT skills that enables participants to develop new, healthy habits that can use in all areas of their lives.

There are several strengths and limitations to the current study. This novel approach to improving the mental health and healthy lifestyle behaviors of NLRNs is based on strong evidence. Cognitive behavioral skills-building interventions are shown to improve the mental health of young adults, and strength and dosage have been tested in multiple, similar populations with success (Hart-Abney et al., 2018; Melnyk et al., 2016; Hoying, & Melnyk, 2016; Hoying et al. 2016; Melnyk & Morrison-Beedy, 2019). In addition, fidelity of the intervention was maintained through extensive training of the researcher and manualization of the intervention. Receipt of the intervention was verified by checking for completion of the skills-building activity sheets weekly, a mid-point test, and an evaluation at the end of the intervention. Participants in the intervention group completed their skills-building activty sheets at a high rate, and were interactive during the sessions. In addtion, an enactment of the treatment skills were measured at three month post-intervention to determine participant's use of the learned CBT-based skills (Melnyk & Morrison-Beedy, 2019).

The study design is another strength of this study. A randomized controlled trial is considered the gold standard in research design since it allows for testing cause and effect relationships (Melnyk & Morrison-Beedy, 2019). In addition, the control group and the intervention group size were balanced and very similar demographically at baseline, increasing confidence that the MINDBODYSTRONG program caused the changes in variable scores. Another strength of this design was the control group acted as the attention control group since they received a structurally equivalent program via the nurse residency program seminars. This, along with multiple time points and an extremely low attrition rate allowed us to infer that the effects are the result of the MINDBODYSTRONG intervention (Melnyk & Morrisong Beedy, 2019). In addition, the study instruments used for this study were well established as well as reliable and valid.

Limitations of this study include limited ability to generalize to the larger population of NLRNs. The majority of the sample were white, female nurses who earned a Bachelor of Science degree in nursing. This may not be representative of the population, therefore, the intervention results may vary in a more diverse population, particularly with male nurses or nurses from other cultures. In addition, this study was conducted at a large, academic medical center with an existing robust nurse residency programs. Nurses working in smaller institutions or institutions who lack a residency program may react differently to the study parameters.

Another consideration is the use of higher level analysis such as Hierarchical Linear Modeling and Path analysis to examine more complex relationships within and between groups. Larger, multi-site studies that are fully powered are also needed to

determine the scope of impact the MINDBODYSTRONG program can have on NLRNs across different settings.

Another limitation of this study was possible reactive effects of the experimental setting. For example, since the PI was also the Nurse Residency Director, the participants may have responded differently having this knowledge. This effect was mitigated by blinding the PI to the data collection process.

Since participants completed study measures at three time points, the testing process may have been an internal threat. However, since the intervention group's scores for most variables improved over time compared to the control group, it is likely that the MINDBODYSTRONG program rather than the testing effect made the difference (Melnyk & Morrison-Beedy, 2019).

Future Research

The initial feasibility and acceptable study followed by this two group randomized controlled pilot study was an excellent way to evaluate the effectiveness of the MINDBODYSTRONG program on the mental health, healthy lifestyle behaviors, job satisfaction and work absences of NLRNs. Multi-site studies that involve different types of organizations are needed, including healthcare settings with or without nurse residency programs. Additional time points should be added to appropriately examine the sustainability effect of the MINDBODYSTRONG program on healthy lifestyle behaviors, absenteeism and job satisfaction over time. Additional variables that are prevalent in nursing research such as burnout, medical errors, presenteeism and incivility also could be positively impacted with this CBT skills-building program. In addition,

utilization of more complex statistical analysis to examine the intricate relationships and pathways between variables is an important consideration.

The intervention group may benefit from the addition of "booster" sessions, to reinforce their skills. Since many nurse residency programs last between 6 and 12 months, skills-building and goal setting could continue throughout their residency program.

Finally, the MINDBODYSTRONG program's eight weekly sessions are designed to provide participants time to develop healthy habits and positive thought processes. Delivery of eight consecutive weekly sessions may be challenging for some organizations and nurse residency programs. Further research is needed to establish the return on investment this program provides through healthier staff, fewer medial errors, decreased absenteeism, turnover and burnout among NLRNs. In addition, alternative program delivery methods such as live streaming content for multiple sites and use of smart devices such as cell phones to elicit feedback or provide reminders and prompts about skills-building activities should be considered.

Conclusion

The MINDBODYSTRONG program demonstrated excellent potential as a nurse-residency-based intervention for NLRNs. Participants were engaged in the program and provided positive feedback regarding its benefit. The intervention group scored consistently better for all variables compared to the control group. This study aligns with NAM's call for evidence-based solutions for clinician well-being and further studies are

needed to determine the effect of the MINDBODYSTRONG program on NLRNs in a variety of settings.

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Appendix A. CBT Synthesis Table

Author/ Date	Setting	Design	Sample	Intervention	Variables	Key Findings
Askey-Jones, 2018	Five mental health facilities in England	Effectiveness study	69 mental healthcare workers (15% were nurses)	8-weekly Mindfullness-based CBT sessions with three timepoints	Burnout, Mindfullness	Significant difference in mean scores for emotional exhaustion, depersonalization with large effect sizes
Darby & Beavan,2017	Austrailia	Qualitative interviews 3 and 21 months post Mindfulness Integreated CBT program	n=6 healthcare practitioners including 1 nurse	8-week Mindfulness-Integrated CBT program two time points 3 and 21 months following intervention	Questions were asked about entries made in workbook during program participation	Four themes: 1. difficulty concentrating due to external stressors 2. equanimity, or calmness most beneficial 3. benefits endured with practice 4. differences between psychologists and social workers. Nurse not mentioned
Carter et al., 2013	Non-profit hospice in Western U.S.	Descriptive	9 Hospice nurses	2-weekly one hour **sessions,** measures at baseline, three and five weeks post intervention	Sleep quality, depressive symptoms, narrative reflections on impact ofsleep quality on self-care practices	50%-70% of participants met or exceeded their goals to enhance sleep at all time points. Only 10% successfully changed their routine and only 20% incorporated relaxation techniques into routine. Outcomes were correlated with number of deaths experienced by nurse

Appendix B. Pre-education Letter

Pre-education program cover letter

Subject: #mindbodystrong for Healthcare Professionals Study

Dear Colleague:

It is my pleasure to work with you in the Nurse Residency program as your Residency Coordinator. One of the goals of this program is to expose you to concepts that will benefit you and your professional growth. With that in mind, we are asking you to participate in a study that measures health beliefs, healthy behaviors, stress, anxiety, depression, absenteeism and job satisfaction in newly licensed registered nurses. You will be asked to complete a series of surveys at five different times: at the beginning of your program, after completion of the #mindbodystrong curriculum, and three months, 6 months and 12 months after completing the #mindbodystrong curriculum. The surveys will take approximately 30 minutes to complete and the data will help us plan education and skills building activities tailored specifically to meet the needs of the Nurse Residency program. The information you provide will help us evaluate how completion of the #mindbodystrong program impacts newly licensed registered nurses' health behaviors, stress, anxiety, depression, absenteeism and job satisfaction.

Your participation in this study is voluntary. You can refuse to participate at any time. If you choose not to participate in the study, there is no penalty, and neither your employment nor your participation in the Nurse Residency program are at risk. The possible benefits of participating in this research are that you will learn healthy coping skills and be contributing to the overall body of knowledge to improve the transition from nursing student to professional nurse. Because some surveys ask about your recent emotions, participation may bring up feelings of anxiety or depression. If this occurs, you can be referred to the Employee Assistance program, your care provider, or the person/agency of your choosing for assistance.

The survey data will be coded; therefore, the investigators will not be able to know who provided the data. The survey results will be kept on an encrypted computer locked in my office at The Ohio State University. Although confidentiality of data collected cannot be guaranteed in online research, confidentiality will be protected by encryption of data and storage on a secure server. The results of this study may be used in reports, presentations, or publications, but your name will not be used. Data from this survey will be used in aggregate form only.

Any questions you have concerning the research study or your participation in the study will be answered by Dr. Bernadette Melnyk at 1585 Neil Ave., Columbus Ohio 43210, 614-688-0953.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

Thank you for your participation, I am confident it will make a difference in the educational program that we plan and deliver.
Sincerely,
Marlene Sampson, MSN-Ed, RN
Nurse Residency Coordinator
The Ohio State Wexner Medical Center

Appendix C. Consent Form

The Ohio State University Consent to Participate in Research

Study Title: #mindbodystrong for Healthcare Professionals: A Pilot Study for Newly Licensed Registered Nurses

Researcher: Dr. Bernadette Melnyk

This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate.

Your participation is voluntary.

Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate. If you decide to participate, you will be asked to sign this form and will receive a copy of the form.

Purpose: The purpose of this study is to evaluate the effects of integrating the #mindbodystrong for Healthcare Professionals curriculum into the Nurse Residency program on the healthy lifestyle beliefs, healthy lifestyle behaviors, anxiety and depressive symptoms, stress, absenteeism, and job satisfaction of newly licensed registered nurses.

Procedures/Tasks: Participants will complete a series of surveys at five time-points: at the beginning of the residency program, at the completion of the #mindbodystrong curriculum, and three months, 6 months and 12 months after completing the #mindbodystrong curriculum.

Duration:

You will participate in eight 30-minute sessions during your residency seminars. Additionally, your will complete a total of five surveys—during your first cohort seminar, at the completion of the eighth session, 3-months, 6-months and 12-months post study. Each survey will take approximately 20 to 30 minutes for a total study time commitment of 6.5 hours. You may leave the study at any time. You may skip any

questions you do not wish to answer in the surveys. If you decide to stop participating in the study, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled. Your decision will not affect your future relationship with The Ohio State University.

Risks and Benefits: The possible benefits of participating in this research are that you will learn healthy coping skills and be contributing to the overall body of knowledge to improve the transition from nursing student to professional nurse. Because some surveys ask about your recent emotions, participation may bring up feelings of anxiety or depression. If this occurs, you can be referred to the Employee Assistance program, your care provider, or the person/agency of your choosing for assistance.

Confidentiality:

Efforts will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law. Also, your records may be reviewed by the following groups (as applicable to the research):

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Ohio State University Institutional Review Board or Office of Responsible Research Practices;
- The survey data will be coded therefore, the investigators will not be able to know who provided the data. The survey results will be kept on an encrypted computer locked in my office at The Ohio State University. Although confidentiality of data collected cannot be guaranteed in online research, confidentiality will be protected by encryption of data and storage on a secure server. The results of this study may be used in reports, presentations, or publications, but your name will not be used. Data from this survey will be used in aggregate form only.

Incentives: There are no financial or tangible incentives for participation.

Participant Rights:

You may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled. If you are a student or employee at Ohio State, your decision will not affect your grades or employment status.

If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may have as a participant in this study.

An Institutional Review Board responsible for human subjects research at The Ohio State University reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

Contacts and Questions:
For questions, concerns, or complaints about the study, or you feel you have been harmed as a result of study participation, you may contact **Dr. Bernadette Melnyk at 1585 Neil Ave., Columbus Ohio 43210, 614-688-0953**.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

Signing the consent form

I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form**.**

Printed name of subject	**Signature of subject**
Employee #_____	_____ **AM/PM**
	Date and time
Printed name of person authorized to consent for subject (when applicable)	**Signature of person authorized to consent for subject (when applicable)**
	_____ **AM/PM**
Relationship to the subject	**Date and time**

Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Printed name of person obtaining consent	**Signature of person obtaining consent**
	AM/PM
	Date and time

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Ever wish you had someone to lean on for professional advice and support? The Ohio State Employee Assistance Program (EAP) is here to help you and your dependents with all types of life challenges that affect your health, family, or job— no challenge is too serious or too simple.

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- Grief and Loss
- Identity Theft Support
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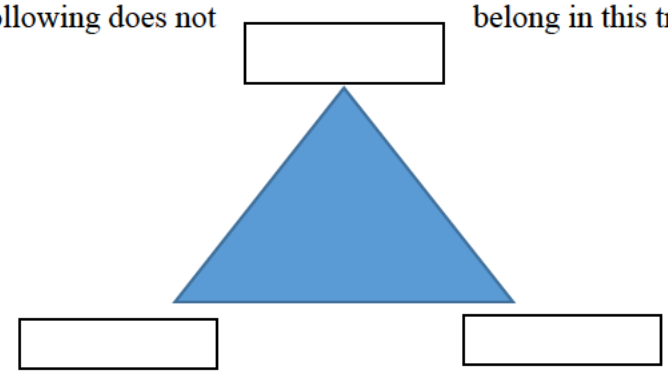
- Substance Abuse
- Work Challenges
- And Much More!

Confidential e-mail: EAP@osumc.edu

Appendix E. Midpoint Quiz

Midpoint Content Check Quiz

1. Which of the following does not belong in this triangle?



   a. Thinking
   b. Believing
   c. Feeling
   d. Behaving
2. The ABCs that describe our thinking processes include all but:
   a. Consequence
   b. Behavior
   c. Activating event
   d. Belief
3. Which of the following is ***NOT*** an example of automatic thinking?
   a. All or nothing thinking
   b. Catastrophizing
   c. Magnification/minimization
   d. Positive self-talk
4. Which of the following is ***NOT*** an example of signs of anxiety?
   a. Excessive worry
   b. Calmness
   c. Trouble concentrating
   d. Irritability and anger
   e. Insomnia
   f. Excessive fatigue
   g. Physical aches
5. True or False: Positive self-statements are used to change a negative thought into a positive thought.

6. All of the following are healthy ways to deal with stress, negative thoughts and feeling ***except***?
    a. Eating 6 fruits and vegetables per day
    b. Drinking 8 glasses of water per day
    c. 30 minutes of physical activity per day
    d. Drinking 3 alcoholic beverages after your shift

Appendix F. Post-Intervention Questionnaire

#mindbodystrong for Healthcare Providers Post-Intervention Questionnaire

Thank you for participating in the first phase of the #mindbodystrong for Healthcare Providers. Below is a short questionnaire about your experience with the program. Your answers will help guide further development and administration of this program.

1. What did you find the most helpful about the #mindbodystrong for Healthcare Providers curriculum?

2. What did you find was the least helpful about the #mindbodystrong for Healthcare Providers curriculum?

3. What behaviors have you changed as a result of participating in this study?

4. Would you recommend providing this program to other nurse residents?

5. Please circle the Cognitive Behavioral skills you used regularly or found helpful during this study:
    a. Changing negative thoughts to positive thoughts
    b. Using positive self-talk
    c. Mindfulness activities such as abdominal yoga, chewing gum or drawing
    d. Abdominal Breathing
    e. Imagery
    f. Thankfulness
    g. Goal setting
    h. Problem solving

i. Talking to someone like a friend or co-worker when you have a problem

Appendix G. IRB Approval Letter

THE OHIO STATE UNIVERSITY

Behavioral and Social Sciences Institutional Review Board

300 Research Administration building
1960 Kenny Road
Columbus, OH 43210-1063

orrp.osu.edu

07/31/2018

Study Number: 2017B0255
Study Title: #mindbodystrong for Healthcare Professionals: A Pilot Study with Newly Licensed Registered Nurses

Type of Review: Amendment #8

Review Method: Expedited

Request to amend the research dated June 18, 2018 (change study intervention/title to #mindbodystrong, extend research to add control group and increase number of participants to 150; add curriculum instrument; revise objectives to examine absenteeism rather than resiliency; add survey completion at 6- and 12-month time points; remove Brief Resilience Scale instrument; revise protocol, consent form, and pre-education cover letter to reflect these changes).

Date of IRB Approval: 07/31/2018
Date of IRB Approval Expiration: 06/12/2019

Dear Bernadette Melnyk,

The Ohio State Behavioral and Social Sciences IRB **APPROVED** the above referenced research.

As Principal Investigator, you are responsible for ensuring that all individuals assisting in the conduct of the study are informed of their obligations for following the IRB-approved protocol and applicable regulations, laws, and policies,

including the obligation to report any problems or potential noncompliance with the requirements or determinations of the IRB. Changes to the research (e.g., recruitment procedures, advertisements, enrollment numbers, etc.) or informed consent process must be approved by the IRB before implemented, except where necessary to eliminate apparent immediate hazards to subjects.

This approval is issued under The Ohio State University's OHRP Federal wide Assurance #00006378 and is valid until the expiration date listed above. ***Without further review, IRB approval will no longer be in effect on the expiration date.*** To continue the study, a continuing review application must be approved before the expiration date to avoid a lapse in IRB approval and the need to stop all research activities. A final study report must be provided to the IRB once all research activities involving human subjects have ended.

Records relating to the research (including signed consent forms) must be retained and available for audit for at least 5 years after the study is closed. For more information, see university policies, Institutional Data and Research Data.

Human research protection program policies, procedures, and guidance can be found on the ORRP website.

Daniel Strunk, PhD, Chair
Ohio State Behavioral and Social Sciences IRB

Appendix H. Permission to Survey Nurses from Ohio State University Nurses Association

Thank you! Please proceed with your project.

Jessie

Jessica Frymyer RN, BSN, CNOR
Perioperative Nursing-UH
OSUNO Board of Directors, President
(c) 614-580-1868
jessieosu@hotmail.com

_____

From: Sampson, Marlene
Sent: Tuesday, September 18, 2018 9:35 AM
To: Frymyer, Jessica
Subject: RE: study protocol/irb

You bet! I've attached the protocol and it is definitely aggregate data that I am blinded to.

-----Original Message-----
From: Frymyer, Jessica
Sent: Tuesday, September 18, 2018 8:37 AM
To: Sampson, Marlene <Marlene.Sampson@osumc.edu>
Subject: RE: study protocol/irb

Hi Marlene!

I remember talking to you about this but I don't see an email where I was sent questions, etc that would involve my nurses.

Our stipulations are that data is used in aggregate only and participation is voluntary.

If you have copies today of your "plan" (I'm sure there is an official name for it!), I can look it over prior to ONA presentation.

~jess

Jessica Frymyer RN, BSN, CNOR
Perioperative Nursing-UH
OSUNO Board of Directors, President

(c) 614-580-1868
jessieosu@hotmail.com

_____

From: Sampson, Marlene
Sent: Monday, September 17, 2018 10:15 AM
To: Frymyer, Jessica
Subject: FW: study protocol/irb

Hi Jessie,

I have looked through my archived emails, but can't find one that is specifically from you stating that you ok'd me doing my research for my dissertation. It is the one teaching new nurses coping skills to deal with their stress. Could you send me an email stating something about you and ONA support my efforts with the study "Intervention Effects of a Cognitive Behavioral Skills Building Program on Newly Licensed Registered Nurses"?

Thank you so much!!

Marlene Sampson MSN-Ed, RN
Associate Director
Nurse Residency and Central Orientation
The Ohio State Wexner Medical Center
600 Ackerman Rd. Suite 2017
Columbus, OH 43202
Phone: 614.366.1204
Fax: 614.366.2544

Appendix I. Study Protocol

Research Protocol: #mindbodystrong for Healthcare Professionals: A Randomized Control Pilot Study for Newly Licensed Registered Nurses

Aims:

Specific aim 1. Determine the effects of the #mindbodystrong on NLRNs' healthy lifestyle beliefs, healthy lifestyle behaviors, anxiety and depressive symptoms, stress, absenteeism, and job satisfaction compared to the control group.

Specific aim 2. Examine the relationship between the study variables.

Research Question: What is the effect of the #mindbodystrong on NLRN's healthy lifestyle beliefs, healthy lifestyle behaviors, mental health outcomes (i.e. decreased anxiety, decreased depressive symptoms and decreased stress levels), absenteeism and job satisfaction compared to the control group.

Overview of the Design: This is a pre-and-post-test randomized control study that will test the effects of the #mindbodystrong program on the healthy lifestyle beliefs, healthy lifestyle behaviors, anxiety, depression, stress, absenteeism and job satisfaction for NLRN. Participants will include newly licensed registered nurses participating in a nurse residency program. Participants in the intervention group will receive an 8 session multi-component educational and Cognitive Behavior Skills Building program including sleep hygiene, nutrition and physical activities along with the standard nurse residency curriculum. The control group receive the standard nurse residency curriculum only. The co-PI will deliver the intervention with support from the research team. In addition to baseline assessments, outcomes will be measured immediately post-intervention and 3 months, 6 months and 12 months post-intervention in order to assess effects of the program. Nurse Residents will receive the #mindbodystrong program in the Summer 2018.

Sampling: All NLRN hired at the Health System at the Wexner Medical Center during the study period will be eligible for participation. The Nurse Residency Program is required for all newly hired registered nurses, and the #mindbodystrong Program will be incorporated into the current curriculum for the intervention group.

Setting: The Health System at the Wexner Medical Center is a 962 bed academic medical center in the Midwest. It hires approximately 250 NLRN annually. These new nurses participate in a 6 month residency program as part of the hiring process.

Inclusion and Exclusion Criteria:

Inclusion Criteria: All newly licensed registered nurses hired during the study timeframe will be eligible for the study.

Exclusion Criteria: No NLRN hired during the pilot timeframe will be excluded except those who decline participation in the study.

Recruitment: Research team members will introduce the study during the first week or orientation. Written and verbal information about the study will be provided to the NLRN. All NLRN in the intervention group will receive the #mindbodystrong intervention, however, only those providing consent will complete the study instruments.

Measures:

Rationale for the Study Instruments: Instruments for the study have construct validity and excellent internal consistency reliabilities. They will measure healthy lifestyle beliefs, healthy lifestyle behaviors, depressive and anxiety symptoms, stress levels, resiliency, and job satisfaction. A demographic questionnaire will also assess demographic variables and lifestyle behaviors (e.g. daily consumption of fruits and vegetables, weekly minutes of physical activity, average hours of sleep per night, alcohol consumption, and regular and social smoking).

Demographic questionnaire: Demographic data will be collected with a questionnaire at baseline. Examples of the items for the NLRN include: (a) age, (b) gender, (c) race/ethnicity, (d) educational level, and (e) work unit type. These variables will serve as potential covariates in the analyses.

Healthy Lifestyle Behavior scale: (Melnyk, 2003) (HLBS) (proposed mediator of the effects of the intervention on outcomes) is a 16-item instrument that was adapted from other Beliefs scales used by the PI in multiple prior studies. This scale draws out beliefs about various facets of maintaining a healthy lifestyle (e.g. “I believe that I can be more active” and “I am sure that I will do what is best to lead a healthy life”).

Participants respond to each item on a Likert scale that ranges from 1 “strongly disagree” to 5 “strongly agree. NLRN will complete this measure pre-intervention and immediately post-intervention.

Health Lifestyle Belief scale: is a 39-item instrument designed to measure overall health and well-being of participants. This scale draws out specific health behaviors such as physical activity, hours of sleep per night, servings of fruits and vegetables, and alcohol consumption and smoking.

Patient Health questionnaire (PHQ-9): The Patient Health questionnaire (PHQ-9) is a self-administered version of the PRIME-MD diagnostic questionnaire used for common mental disorders. Specifically, the PHQ-9 is the depression module which scores each of the 9 DSM-IV criteria. Participants respond to each item on a Likert scales that ranges from 0 "not at all" to 3 "nearly every day."

Generalized Anxiety Disorder Screener (GAD-7): Developed originally to detect generalized anxiety disorders, the 7 item Likert GAD-7 scale is as useful screen of other anxiety related disorders such as PTST, social anxiety and panic disorders. The self-administered measure ranges from 0 "not at all" to 3 "nearly every day." Participants will complete this measure pre-intervention and then immediately post-intervention.

Perceived Stress scale (PSS): (Cohen & Mermelstein, 1983) is the most widely used instrument for measuring the perception of stress in one's life. This10 item instrument was designed to determine how unpredictable, overwhelming and uncontrollable they find their lives. Participants respond to each item on a Likert scale that ranges from 0 "never" to 4 "very often." Participants will complete this measure pre-intervention and immediately post-intervention and 3 months post-intervention.

Job Satisfaction scale: (Price & Mueller, 1986) The Price and Mueller's job satisfaction scale measures generalized job satisfaction. This is a 7 item, 5-point Likert scale ranging from "strongly disagree" to "strongly agree."

Procedure: The co-PI was trained on the #mindbodystrong intervention and will be delivering the intervention. The training for the #mindbodystrong intervention included: (a) background on the theoretical framework and CBSB, (b) review of each of the #mindbodystrong sessions with accompanying homework activities, (c) role plays for skills building with NLRN, and (d) review of documentation to complete in the intervention diary after each session. The PHQ-9 will be scored immediately after completion and any nurse who reports suicidal ideation or severe depressive symptoms will be referred immediately t our EAP for evaluation and a referral letter sent to their primary core provider. Anyone in immediate danger of suicide will be taken to the emergency room

First Study Contact (Week 0): NLRN hired into the medical center will be informed of the study during Central Nursing Orientation. The study will be explained verbally and with written materials by members of the research team.

All of the NLRN will receive the #mindbodystrong intervention, however, only those giving consent will complete the study instruments. Those NLRN who gave consent will complete the initial study instruments. Any participant scoring ≥10 on the PDQ-9 will be referred to the Employee Assistance program, but may remain in the program.

Weeks 1-8: The #mindbodystrong intervention will be delivered to the intervention group in the residency cohort setting by the co-PI trained in the intervention . Content of the 8 session intervention program will be over a 8 week period of time. The control group will receive the standard residency content also provided by the co-PI.

Week 4: A short quiz will be given to the intervention group to assess understanding of the content at the mid-point of the study.

Post-intervention Assessment: Following the 8th session of the #mindbodystrong intervention, the co-PI will administer the post-intervention follow-up study instruments, questions about lifestyle behaviors (i.e. physical activity, fruit and vegetable intake, sleep, smoking, and alcohol use) to both the intervention and the control in order to determine if participants found the program helpful. In addition, study instruments will be repeated at 3 months, 6 months and 12 months post-intervention.

Analysis Plan:

Descriptive statistics for all demographic variables will be completed..

Effect sizes will be calculated to determine the magnitude of effect for #mindbodystrong on the outcome variables. A paired t-test will be conducted to determine change over time from baseline to post-test for anxiety, depression, stress and professional satisfaction. Pearson's *r* correlations will be calculated to analyze relationships among all variables. Finally, repeated measures ANOVA will be conducted to examine within-group mean differences.

Appendix J. Perceived Stress Scales

Perceived Stress Scale- 10 Item

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, please indicate with a check how often you felt or thought a certain way.

1. In the last month, how often have you been upset because of something that happened unexpectedly?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

2. In the last month, how often have you felt that you were unable to control the important things in your life?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

3. In the last month, how often have you felt nervous and "stressed"?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

4. In the last month, how often have you felt confident about your ability to handle your personal problems?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

5. In the last month, how often have you felt that things were going your way?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

6. In the last month, how often have you found that you could not cope with all the things that you had to do?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

7. In the last month, how often have you been able to control irritations in your life?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

8. In the last month, how often have you felt that you were on top of things?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

9. In the last month, how often have you been angered because of things that were outside of your control?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

This scale can be found in:

Cohen, S., Kamarck, T., Mermelstein, R. (1983). A global measure of perceived stress. Journal of Health and Social Behavior, 24, 385-396. Link to full-text (pdf)

Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapam & S. Oskamp (Eds.), The social psychology of health: Claremont Symposium on applied social psychology. Newbury Park, CA: Sage. Link to full-text (pdf)

Updated July 8, 2008

Appendix K. Generalized Anxiety Disorder 7-item scale

Generalized Anxiety Disorder 7-item (GAD-7) scale

Over the last 2 weeks, how often have you been bothered by the following problems? Not at all sure, Several days, Over half the days, Nearly every day

1. Feeling nervous, anxious, or on edge 0 1 2 3
2. Not being able to stop or control worrying 0 1 2 3
3. Worrying too much about different things 0 1 2 3
4. Trouble relaxing 0 1 2 3
5. Being so restless that it's hard to sit still 0 1 2 3
6. Becoming easily annoyed or irritable 0 1 2 3
7. Feeling afraid as if something awful might happen 0 1 2 3

Add the score for each column + + +
Total Score *(add your column scores)* =

If you checked off any problems, how difficult have these made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all _____
Somewhat difficult _____
Very difficult _____
Extremely difficult _____

Source: Spitzer RL, Kroenke K, Williams JBW, Lowe B. A brief measure for assessing generalized anxiety disorder. ***Arch Inern Med.*** 2006;166:1092-1097.

Appendix L. Patient Health 9-item Questionnaire

NAME:_____ Date:_____

Over the last 2 *weeks,* how often have you been bothered by any of the following problems?

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, hopeless	0	1	2	3
3. Trouble falling asleep	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite—being so figety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself	0	1	2	3

Add columns	+	+	+

Total Score

10. If you checked off *any problems,* how *difficult* have these problems made it for you to do your work, take care of things at home, or get along with other people?	Not difficult at all _____ Somewhat difficult _____ Very difficult _____ Extremely difficult

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PHQ-9 Patient Depression Questionnaire

For initial diagnosis:

1. Patient completes PHQ-9 Quick Depression Assessment.
2. If there are at least 4 □s in the shaded section (including Questions #1 and #2), consider a depressive disorder. Add score to determine severity.

Consider Major Depressive Disorder
- if there are at least 5 □s in the shaded section (one of which corresponds to Question #1 or #2)

Consider Other Depressive Disorder
- if there are 2-4 □s in the shaded section (one of which corresponds to Question #1 or #2)

Note: Since the questionnaire relies on patient self-report, all responses should be verified by the clinician, and a definitive diagnosis is made on clinical grounds taking into account how well the patient understood the questionnaire, as well as other relevant information from the patient.

Diagnoses of Major Depressive Disorder or Other Depressive Disorder also require impairment of social, occupational, or other important areas of functioning (Question #10) and ruling out normal bereavement, a history of a Manic Episode (Bipolar Disorder), and a physical disorder, medication, or other drug as the biological cause of the depressive symptoms.

To monitor severity over time for newly diagnosed patients or patients in current treatment for depression:

1. Patients may complete questionnaires at baseline and at regular intervals (eg, every 2 weeks) at home and bring them in at their next appointment for scoring or they may complete the questionnaire during each scheduled appointment.
2. Add up □s by column. For every □: Several days = 1 More than half the days = 2 Nearly every day = 3

3. Add together column scores to get a TOTAL score.
4. Refer to the accompanying **PHQ-9 Scoring Box** to interpret the TOTAL score.
5. Results may be included in patient files to assist you in setting up a treatment goal, determining degree of response, as well as guiding treatment intervention.

Scoring: add up all checked boxes on PHQ-9

For every □ Not at all = 0; Several days = 1; More than half the days = 2; Nearly every day = 3

Interpretation of Total Score

Total Score Depression Severity
1-4 Minimal depression
5-9 Mild depression
10-14 Moderate depression
15-19 Moderately severe depression
20-27 Severe depression

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Appendix M. Job Satisfaction scale

Job Satisfaction: Participants' satisfaction in their jobs will be measured by a subscale of the Price and Mueller's job satisfaction scale that measures generalized satisfaction. This is a 7 item, 5-point Likert scale with established validity and reliability. Item scores are summed with a range of scores from 7 to 35. Internal consistency coefficients range from .72-.95 (Price & Mueller, 1986).

The questions below are about how you feel about your job. Please indicate which answer most closely represents your opinion.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I find real enjoyment in my job.	1	2	3	4	5
I consider my job rather pleasant	1	2	3	4	5
I am often bored with my job.	1	2	3	4	5
I am fairly well satisfied with my job.	1	2	3	4	5
I definitely dislike my job.	1	2	3	4	5
Each day on my job seems like it will never end.	1	2	3	4	5
Most days I am enthusiastic about my job.	1	2	3	4	5

Appendix N. Healthy Lifestyle Beliefs scale

Healthy Lifestyle Beliefs Scale

Please fill in the circle for your response.
(Mark one answer for each item.)

		Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1.	I am sure that I will do what is best to lead a healthy life.	1 O	2 O	3 O	4 O	5 O
2.	I believe that exercise and being active will help me to feel better about myself.	1 O	2 O	3 O	4 O	5 O
3.	I am certain that I will make healthy food choices.	1 O	2 O	3 O	4 O	5 O
4.	I know how to deal with things in a healthy way that bother me.	1 O	2 O	3 O	4 O	5 O
5.	I believe that I can reach the goals that I set for myself.	1 O	2 O	3 O	4 O	5 O
6.	I am sure that I can handle my problems well.	1 O	2 O	3 O	4 O	5 O
7.	I believe that I can be more active.	1 O	2 O	3 O	4 O	5 O
8.	I am sure that I will do what is best to keep myself healthy.	1 O	2 O	3 O	4 O	5 O
9.	I am sure that I can spend less time watching TV.	1 O	2 O	3 O	4 O	5 O
10.	I know that I can make healthy snack choices regularly.	1 O	2 O	3 O	4 O	5 O
11.	I can deal with pressure from other people in positive ways.	1 O	2 O	3 O	4 O	5 O
12.	I know what to do when things bother or upset me.	1 O	2 O	3 O	4 O	5 O
13.	I believe that people in my support system will help me to reach my goals.	1 O	2 O	3 O	4 O	5 O
14.	I am sure that I will feel better about myself if I exercise regularly.	1 O	2 O	3 O	4 O	5 O
15.	I believe that being active is fun.	1 O	2 O	3 O	4 O	5 O
16.	I am able to talk to the people in my support system about things that bother or upset me.	1 O	2 O	3 O	4 O	5 O

Appendix O. Healthy Lifestyle Behaviors scale

Healthy Lifestyle Behaviors

	Please fill in the circle for your response. ***(Mark one answer for each item.)***	**Strongly Disagree**	**Disagree**	**Neither Agree Nor Disagree**	**Agree**	**Strongly Agree**
1.	I make healthy food choices.	1 O	2 O	3 O	4 O	5 O
2.	I exercise on a regular basis.	1 O	2 O	3 O	4 O	5 O
3.	I exercise with my family, friends or co-workers. .	1 O	2 O	3 O	4 O	5 O
4.	I limit television viewing to 2 hours per day or less.	1 O	2 O	3 O	4 O	5 O
5.	I eat fresh fruits and vegetable snacks every day.	1 O	2 O	3 O	4 O	5 O
6.	I say something positive to my family, friends or co-workers every day.	1 O	2 O	3 O	4 O	5 O
7.	I eat low-fat foods in my diet every day.	1 O	2 O	3 O	4 O	5 O
8.	I drink only one sugared drink a day (for example, regular soda or juice).	1 O	2 O	3 O	4 O	5 O
9.	I choose water as a beverage instead of a sugared drink at least once a day.	1 O	2 O	3 O	4 O	5 O
10.	I set goals I can accomplish.	1 O	2 O	3 O	4 O	5 O
11.	I eat at least three meals a week with my family.	1 O	2 O	3 O	4 O	5 O
12.	I do not add salt to my foods.	1 O	2 O	3 O	4 O	5 O
13.	I eat broiled or baked foods instead of fried foods.	1 O	2 O	3 O	4 O	5 O
14.	I talk about my worries or stress every day.	1 O	2 O	3 O	4 O	5 O
15.	I do what I should do to lead a healthy life.	1 O	2 O	3 O	4 O	5 O
16.	I do healthy things to cope/deal with my worries and stress.	1 O	2 O	3 O	4 O	5 O

Appendix P. Initial Demographics Questionnaire

Initial Demographic Questionnaire:

1. Employee ID#
2. Start Date
3. Age
4. Gender
    a. Female
    b. Male
5. Ethnicity
    a. Hispanic or Latino or Spanish Origin
    b. Not Hispanic or Latino or Spanish Origin
6. Race
    a. American Indian or Alaska Native
    b. Asian
    c. Black or African American
    d. Native Hawaiian or Other Pacific Islander
    e. White
7. Degree
    a. ADN
    b. BSN
    c. Grad Entry
    d. Masters

e. Other

8. Department/Specialty
    a. Med/Surg
    b. Critical Care/PCU
    c. Ross
    d. Brain and Spine
    e. Dodd
    f. Harding
    g. OR
    h. ED
    i. Women & Infant
9. What is your current unit?
10. What is your current shift?
    a. Days
    b. Nights
    c. Rotating shifts
11. How many hours do you primarily work per shift?
    a. 8 hours
    b. 10 hours
    c. 12 hours
12. What is your relationship status?
    a. Single

b. In a relationship

c. Engaged

d. Married

e. Divorced

f. Other

13. How many children do you have under the age of 21?

14. Are you the primary caregiver for anyone?

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