THE CATHOLIC UNIVERSITY OF AMERICA

An evidence-based application of a stress reduction pilot project on first semester-associate degree nursing students

AN EVIDENCE-BASED PRACTICE PROJECT

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For the Degree
Doctor of Nursing Practice

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By
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An Evidence Based Application of a Stress Reduction Pilot Project on First Semester Associate Degree Nursing Students: An Evidence-Based Practice Project

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Despite the increased popularity and available offerings for associate degree nursing (ADN) programs in the United States, an insufficient number of entry level registered nurses are available. Due to insufficient entry level registered nurse representation, the number of available trained caregivers are lacking to meet the demands of the U.S.’s aging population. Researchers, such as Jeffreys (2007a, 2007b, 2015), have noted that high attrition rates among first semester nursing students have resulted in empty classroom seats, thus resulting in fewer nursing graduates. High stress levels are a common identified factor, which impacts attrition and graduation rates in academically rigorous programs, specifically those that require simultaneous participation in clinical and didactic areas. Associate degree nursing programs are often community based, thereby allowing for increased participation of among non-traditional students who often have pre-existing financial and family obligations.

Systematic reviews of studies on stress reducing interventions performed between 1981 and 2013 (Galbraith & Brown, 2011; Guillaumie, Boiral, & Champagne, 2016), identified multiple stress reduction approaches that aid in effectively preparing ADN students for the stressors associated with nursing programs. Such methodologies include guided imagery, meditation, laugh therapy, biofeedback, diaphragmatic breathing, and mentoring programs. The purpose of this project was to decrease first semester ADN student stress levels, through implementing an intervention that taught freshman students three different evidence-based stress reduction methodologies. The three selected evidence-based stress
reduction methodologies were deemed as appropriate by the project director, as these interventions were situationally dependent (thus catering to the needs of various students) and dependent on the amount of student time allotted. The PICOT question that guided this project was, “What were the effects of a stress management intervention program (consisting of diaphragmatic breathing – DB, guided-imagery – GI, and student mentoring – SM) among first-semester nursing students enrolled in a community college nursing program?” The Project Director designed the project, which utilized the expertise of fourth-semester nursing students who presented an in-service, to freshman nursing students, regarding information that they believed would improve first year student successes during the beginning of the student’s nursing journey. Following the in-service, freshman participants were invited to participate in an intervention. Informed consent and demographics data were obtained following the in-service, from freshman students who chose to participate in the eight-week stress management intervention project. During the intervention, freshman students were instructed on the use of DB and GI, and assigned to a senior student mentor, who they interacted with for eight-weeks. The function of the student mentor was to reinforce strategies learned during the in-service and to provide support to the assigned freshman student through communicating via text message, phone call, or email.

Perceived stress levels and coping methods (i.e., how often the student experienced certain behaviors/feelings) data were collected using the Perceived Stress Scale (PSS) and Brief Cope Inventory (BCI), prior to instruction on DB, GI, and assignment to a senior mentor. Post-intervention, the aforementioned information was collected for analysis. Pre- and post-test data were analyzed and reported on through the use of descriptive findings (means and standard deviations) for the PSS and BCI subscales. To evaluate the perceived
degree of helpfulness of the three different intervention strategies, participants ranked the
degree of helpfulness of each intervention. A ranking and compiling of results performed on
17 participating freshmen found the highest number of participants (n=11) reported the
student mentor experience as the most helpful of the three interventions. Mentor contact with
students, ranged from four to 85 times (including texts), with the reported amount of time
spent by the mentor in contacting, texting, or speaking with the freshman student ranging
from 45 to 870 minutes. Eleven of the 17 participants reported the DB intervention as the
second most helpful intervention, noting a reported frequency of use ranging from zero (one
respondent) to ten times (two respondents). Guided imagery was the least frequently used
intervention among all participants, with frequency of use being zero (n=2), to sixteen times
(n=1). In response to the question, “Were there any areas in which you found having a
mentor to be particularly helpful,” comments included; “found it very beneficial to have a
cheerleader particularly following quizzes and exams”, “great to have someone give advice
on how to cope with nursing school,” to the more practical “very helpful to have someone
give tips on what books to take to which class, and how to study for the different courses.”
Furthermore, greater than 75% (n=13) of the participants noted that they would participate in
a mentorship program, if again provided the opportunity.
This evidence-based project by Sharon M. Choma fulfills the requirement for the doctoral degree in Doctor of Nursing Practice approved by Janice Agazio, PhD, CRNP FAANP, FAAN, as Director, and by Petra Goodman, PhD, WHNP-BC, FAANP, and Cheryl Harrow DNP, FNP-BC as Readers.

Janice Agazio, PhD, CRNP, FAANP, FAAN
Director

Petra Goodman, PhD, WHNP-BC, FAANP
Reader

Cheryl Harrow, DNP, FNP-BC
Reader
Dedication

I have been blessed with many excellent role models who have instilled the importance of learning within me. My first role model was my mother, Harriette Barden, who, despite my objections, insisted that I receive twelve years of Catholic education. Only when I became an adult did I fully appreciate how much my mother sacrificed for my education. Those formative years of Catholic school provided me with the foundation necessary to become a lifelong learner. From being encouraged by a nun through her unending kindness, to being told by my algebra teacher that “girls can’t grasp math, let alone algebra” all, in some way, instilled a deep desire within me to prove that girls can do math and can even comprehend statistics. I truly believe that every person, regardless of his/her age, should continue to learn and grow.

This project is dedicated to my Aunt, Connie Szabo. Aunt Connie showed me the importance of being a strong woman, even in a society where strength was not always considered a virtue.
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Dr. Goodman, I would like you to know how much I appreciate all of your and recommendations and statistical expertise. Your kindness and support was greatly appreciated.

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Chapter 1. Nature and Scope of the Problem

Introduction

The 21st century has experienced a shift in the health care needs of the American public. The American population is aging, and by 2030 it is anticipated that 20% of the population will be comprised of individuals 65 years of age and older (Institute of Medicine, 2010). Our current healthcare system has been based on acute care needs such as treatment of emergently occurring illnesses and injuries, which dominated the 20th century. However, today, the healthcare needs of our population are, and will continue to be, dominated by chronic conditions, which are partly due to the aging population, as well as to obesity related complications (Institute of Medicine, 2010).

In order to meet the healthcare requirements of the aging population, there needs to be a greater number of nursing school graduates than those who are currently entering the workforce (Harris, Rosenberg, & Grace-O’Rourke, 2014). The Bureau of Labor Statistics (2017) estimates that 3.2 million Registered Nurse’s (RN) will be needed by 2024. This is an increase of 16% or 439,00 over the 2.7 million in the workforce in 2014 (Bureau of Labor Statistics, 2017). Unfortunately, high nursing program attrition rates have greatly impacted the rate of graduation among nursing students and remains a concern for many schools of nursing (Harris et al., 2014). According to Fraher, Belsky, Gaul and Carpenter (2010) regarding attrition from ADN programs in North Carolina, only 58% of students entering ADN programs manage to complete the degree. Nontraditional students who comprise a large percentage of ADN program populations, are at increased risk for attrition due to multiple factors (Harris et al, 2014; Jeffreys, 2007a, 2007b; Rudel, 2006). Some of the factors demonstrated to increase the risk of attrition in nontraditional students include: being older,
ethnically diverse, and entering college with varying levels of academic ability, as well as increased stressors such as financial strain, employment obligations and family responsibilities (Jeffreys, 2007b; Rudel, 2006). Additional contributing factors are the high levels of stress and anxiety frequently experienced in challenging academic programs which are felt to impede students mental and physical health (Reeve et al., 2013) as well as negatively impact student’s academic ability and increase attrition (Goff, 2011; Jeffreys, 2007b). In order to meet the healthcare needs of the United States, a greater understanding of the multifactorial causes of attrition is needed.

The academic demands of nursing programs, in addition to the challenge of clinical rotations and complex family demands, frequently result in high levels of anxiety and depression in nursing students (Jeffreys, 2007a; Kelly, 2017; van der Riet, Rossiter, Kirby, Dluzewska, & Harmon, 2015). Failure to address these high levels of psychological distress results in students not completing their chosen course of studies (Jeffreys, 2007a; Jeffreys, 2015; Stallman, 2010). In two-year associate degree programs, nursing students are more likely to be non-traditional students and therefore have the added burden of working (full or part time), thereby increasing stressors (Moscaritolo, 2009). Decreased free time further reduces students’ access to normally utilized sources of emotional and social support, such as visiting with family or friends, as well as diminishment of the ability to participate in physical stress relieving activities (Chernomas & Shapiro, 2013). Reeve et al. (2013) noted that supportive relationships can help decrease stress, yet with less free time (as noted above), this supportive resource is often not an option for the non-traditional community college student.
Significance of the Problem

According to the Bureau of Labor Statistics’ Employment Projections (2017), 649,100 replacement nurses will be needed by 2024 to meet the healthcare needs of the U.S. population. The American Association of Colleges of Nursing (2017) projects “this will bring the total number of job openings for nurses’ due to growth and replacements to 1.09 million by 2024” (p 2). Production of a sufficient number of nursing graduates to meet this projected need will require the combined effort of all nursing schools across the U.S.

To compound the shortage of nursing problem, overall attrition rates from Schools/College’s of Nursing, which include ADN programs, remains extremely high. According to Fraher et al. (2010), despite modifications to admission policies, only 58% of students who enter ADN programs will attain their degree. Multiple risk factors such as employment greater than 16-20 hours per week (Rochford, Connoly & Drennan, 2009), lack of social support (Rudel, 2006), and failure in any beginning nursing course (Jeffreys 2007a) have been linked to increased rates of attrition.

Demir, Demir, Bulut, and Hisar (2014) noted that first-year nursing students do not often have insight regarding stressors that are common to the nursing profession and therefore, these students have difficulty coping with the rigors of nursing school, particularly the unexpected stressors incurred during the first semester. According to Moscaritolo (2009), the initial clinical practice setting may be the most stressful period of nursing students’ careers, and although it is not realistic or desirable to drastically eliminate the stress experienced in the clinical practice setting, nursing programs can more effectively address student’s anxieties using evidence-based interventional strategies. High anxiety levels in the clinical environment often result in decreased learning ability, thus impacting a student’s
chance of critically processing new concepts (Melincavage, 2011; Moscaritolo, 2009). When challenges are encountered by students early in the program, these challenges may influence the students’ decisions to persist, fail, drop out, or withdraw from their nursing programs (Jeffreys, 2007a; Melincavage, 2011). Stress impedes the nursing student’s academic outcomes, thereby potentially affecting attrition rates (Jeffreys, 2007b).

Stress is frequently cited as a risk factor contributing to attrition (O’Donnell, 2009). According to O’Donnell (2009) nursing students frequently experience levels of emotional distress sufficient to result in eventual program withdrawal. A prospective correlational survey conducted by Por, Barriball, Fitzpatrick, and Roberts (2011) examined emotional intelligence (EI) and its relationship to stress, coping, well-being and performance in nursing students. Emotional intelligence as identified by Por et al. (2011, citing Bar-On) is the combination of skills utilizing empathy, self-awareness, motivation, self-control and the ability to skillfully navigate relationships. The results of the study by Por et al. (2011) indicated that EI was positively related to well-being ($p<0.05$), problem-focused coping ($p<0.05$) and perceived competency in the student nurse ($p<0.05$) with EI negatively related to perceived stress ($p<0.05$). According to Por et al (2011) the direct correlation between high EI and low stress demonstrates the benefit of incorporating EI into nursing curriculums, with the potential to reduce attrition and increase student satisfaction (Por et al., 2011).

Nursing students face high levels of stress and anxiety unique to that of students in other areas of study, which is often attributed to programs requiring simultaneous curricula in the didactic and clinical settings (Crary, 2013; Jeffreys, 2007a; Reeve et al., 2013). Such high levels of stress and anxiety are felt to inhibit the learning process and increase attrition (Delaney et al., 2016; Goff, 2011; Jeffreys, 2007a; Turner, & McCarthy, 2017). An accurate
assessment of actual attrition numbers in nursing students is difficult to obtain for multiple reasons including: the lack of an actual definition for attrition as well as the numerous forms of attrition which include: academic failure, the inability to cope with rigorous program demands, personal or family circumstances requiring withdrawal, and financial concerns (O’Donnell, 2009). Regardless of the difficulty identifying specific causes of attrition, educators and students alike frequently report high levels of stress as factors contributing to withdrawal prior to program completion (Delaney et al., 2016; Jeffreys, 2007b; O’Donnell, 2009; Turner & McCarthy, 2017).

Although attrition is generally acknowledged as being multifactorial, possibly one of the best methods of understanding the reasons for withdrawal can be obtained from qualitative studies performed on students who have left nursing programs. A case study by O’Donnell (2009) explored the reasons for voluntary student attrition within a large school of nursing in the United Kingdom. The case study design was selected in an attempt to identify the chronological progression of the multiple reasons for voluntary attrition (O’Donnell, 2009). Ninety students who had voluntarily withdrawn from nursing programs over a three-year period, were contacted by letter and requested to participate in the study, with 15 electing to participate. O’Donnell (2009) utilized a semi-structured qualitative interview method when interviewing the 15 participants. According to O’Donnell (2009), the study population reported the academic demands of the pre-nursing program were felt to be excessive and created significant distress and the inability to cope, with negative effects on their generalized wellbeing resulting in voluntary program withdrawal. O’Donnell (2009) suggested that nursing students who need formal, instructional support, despite experiencing significant emotional distress, are less likely to seek support from instructors or school staff and
reported being more likely to seek advice from peers.

The Problem

Associate Degree Nursing students experience stress due to high academic demands. The effect of this stress may potentially affect academic performance and result in attrition. It is not practical or desirable to eliminate most of the stressors encountered by first-year nursing students, especially since some level of stress can enhance the learning process (Gibbons, Dempster, & Moutray, 2011). Nonetheless, the American College Health Association’s Health Assessment (2015), reported that over 46.5% of undergraduate students expressed that academics, within the last 12 months, had been traumatic or very difficult to handle. Additionally, 15.9% of respondents reported feeling so depressed that it made it difficult for them to function. Finally, 19.5% of respondents reported feeling overwhelming anxiety (American College Health Association, 2015). As previously noted, some level of increased stress is beneficial to the learning process (termed eustress), though unregulated stress can affect behavioral patterns and can influence disease risks, which can even result in long-term changes that impact emotional, physiological, and behavioral responses, thereby making individuals increasingly susceptible to disease (Cohen, Janicki-Deverts, & Miller, 2007).

Nursing students are often unable to recognize the effects of high levels of stress, which significantly contributes to academic failure (Capp & Williams, 2012). Furthermore, students are also less able to effectively identify strategies to successfully manage stressors (Capp & Williams, 2012). Unfortunately, the beginning student frequently has unrealistic expectations of what is required for the successful completion of a nursing program, and often lacks the ability to navigate resources that are available (Jeffreys, 2015). A qualitative
study using grounded theory was undertaken on a sample of undergraduate nursing students to examine the reasons for program withdrawal (Wells, 2007). The sample included eleven nursing students who left baccalaureate nursing programs in the United States. Semi-structured phone interviews conducted with participants identified that student attrition was the result of combined cumulative stressors in three different areas which included: academic, social, and/or stressors external to the program (Wells, 2007). According to Wells (2007) two or more stressors had the potential to result in the decision to leave the program, or if the student did not withdraw and the combined stressors continued, they frequently resulted in academic failure resulting in involuntary program departure.

**Definition of Terms**

A term used throughout this paper requiring clarification and definition is “nontraditional student.” The two-year community college ADN nursing population is primarily composed of a nontraditional student population. Nontraditional students are students who meet one or more of the following criteria: 1) aged twenty-five or older, 2) commuter, 3) enrolled part-time, 4) male, 5) member of an ethnic and or racial minority group, 6) speaks English as a second language, 7) has dependent children, 8) has a general equivalency diploma, and/or 9) requires remedial classes (Jeffreys, 2004; Jeffreys, 2007a). An additional term requiring clarification is that of “psychological stress.” For the purpose of this project, psychological stress occurs when individuals perceive environmental demands as surpassing his/her individual capacity for adaptation (Cohen et al., 2007). Diaphragmatic breathing (DB) is considered a form of deep breathing, used for eliciting a stress/relaxation response (used during types of meditation, yoga, and progressive muscle relaxation) (Harvard Health Publishing, 2018). The term guided imagery (GI) was also used in this study. Guided
imagery is considered a form of self-regulation, during which a state of deep relaxation is achieved using progressive muscle relaxation (PMR), allowing the participant to be guided to actively create visual images to reduce anxiety (Weydert et al., 2006). Any reference to the term mindfulness has been defined as “a state of consciousness that focuses an individuals’ attention and awareness on the present moment and developing a non-judgmental, conscious awareness of the moment-to-moment experience of one’s environment, thoughts, feelings, and actions” (Morledge et al., 2013, p 4). According to Ford (2015, citing Hunt & Ellison) peer mentoring may be defined as a relationship between two students (a mentor and mentee), who are similar in age and status (Bulut, Hisar & Demir, 2010). Any reference to peer mentoring for this project will refer to the assignment of a senior nursing student volunteer, to a first-semester nursing student stress management project participant.

**PICOT Statement**

- **Population:** First-semester Associate Degree Nursing (ADN) students from a Midwestern community college.
- **Intervention:** Stress-management intervention program.
- **Comparison:** The baseline perceived levels of stress/anxiety of first-semester students in a community college nursing program prior to implementation of an evidence-based stress management intervention program.
- **Outcome:** To evaluate the perceived levels of stress/anxiety among first-semester nursing students, eight-weeks after the implementation of an evidence-based in-service/intervention program, which teaches stress management skills (DB, GI, and assignment to a senior student mentor).
• Timeframe to achieve the outcome: The population was given a pre-intervention survey to identify stressors prior to the intervention (instruction on DB, GI, and assignment to a peer-mentor). Eight-weeks post-intervention, the group was re-tested using the same survey instruments to determine whether there had been a reduction in perceived levels of stress since the pre-intervention measurements.

**Model to Guide Project**

The process model selected for this project was the Johns Hopkins Nursing Evidence-Based Practice Model (JHNEBPM). This model utilizes a problem-solving approach for clinical decision-making and is accompanied by user-friendly tools such as the 18-step Practice Model, which is divided into three sections (see Appendix A), and the evidence and quality of research guide used to evaluate existing research (see Appendix B). The guide that was provided with the JHEBPM assisted in a detailed application of the model throughout the project (Johns Hopkins Medicine, 2017). The model which consists of 18 steps, guides the user through project implementation and is broken down into three stages of activity: Practice Question (consisting of five steps), Evidence (consisting of five steps) and Translation (which is broken down into the eight remaining steps). Since the Johns Hopkins Model is copyrighted, the PI was required to complete an online registration process prior to obtaining approval for use. This process was completed resulting in compliance with the copyright requirements (see Appendix P).

The first stage of the Johns Hopkins Nursing Evidence-Based Practice Model (JHNEBPM) guides the user in developing the evidence-based practice question and consists of five-steps to assist in the process. Below, the researcher has identified the first stage of the Johns Hopkin’s model which uses five steps to address the practice question.
Recruiting an interprofessional team. For the purpose of this project, the interprofessional team consisted of the following individuals: the project director, the participating nursing schools’ faculty members, the site coordinator for both schools nursing programs, the schools’ nursing program director, and the project director’s capstone committee academic advisor. Two additional groups were required. One consisted of a group of senior nursing student volunteers who acted as mentors to the project participants. The remaining group consisted of the first semester nursing student volunteers who participated in the project intervention, as well as pre- and post-intervention testing.

Develop and refine the EBP question. The practice question identified states, “What is the effect of a stress management intervention/in-service program (consisting of DB, GI, and assignment to a senior student mentor) on first-semester nursing students in a community college nursing program?” The effect of the intervention/project was determined by comparing pre-intervention and post-intervention scores using the Brief Cope Inventory (Carver, 1997) and Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988). An additional means of identifying participants’ perceived level of helpfulness of the three stress relieving interventions was necessary and this was accomplished by asking participants to rank the three interventions (see Appendix G). Participants also had the ability to provide a brief narrative account of the mentoring experience. The additional questions were developed by the project director (Appendix G).

Define the scope of the EBP question and identify stakeholders. Following a literature review, three stress reduction techniques were selected to use as an intervention to assist in reducing stress among first-semester nursing students at a local community college. The evidence-based intervention was delivered several days before the beginning of the first-
semester of the nursing program. The participants had already completed the pre-requisite courses allowing entry into the clinical and didactic portion of the nursing program. While the intent was to identify elevated levels of stress related to a more demanding curriculum than that experienced with pre-requisite classes only, having already received their course schedules for both clinical and didactic portions of the program, as well as having purchased all required texts and supplies was felt to be have sufficiently increased the student’s level of stress to warrant measurement. It was felt important to introduce the interventions during the early period of program entry, since according to Harris, Rosenberg, and Grace-O’Rourke (2014) the early implementation of stress management interventions is critical to a successful transition to allow students sufficient time to become adept at the newly learned interventions. The selected interventions were based on supporting literature that identified interventions that have frequently shown decreased levels of stress and are easily learned in a short period of time. Additionally, the interventions were selected since students could frequently use these methods throughout the semester, the methods were cost effective, and the methods consisted of techniques the students could use independently prior to, during, and/or after stress producing activities (e.g., tests or clinical rotations).

The stakeholders included: first-semester nursing students and their families, the participating nursing school faculty and administration, and the senior nursing management students who served as student mentors.

**Determine responsibility for project leadership.** Leadership for the project was the responsibility of the project director. This was in co-operation with the school’s nursing program coordinator who assisted the project director in the development of the proposed
intervention program, and the participating schools’ nursing program director. Additional oversight was provided by the project director’s capstone program committee advisor.

**Scheduled meetings.** The first meeting took place with the participating school’s nursing/administration faculty to assess the school’s buy-in for the proposed project (Johns Hopkins Medicine, 2017), to identify recommendations based on anticipated freshman student numbers for the upcoming freshman class and existing class size, and to identify potential senior management class volunteer participants. A second meeting took place with the senior management student volunteers and project director to explain the proposed project/intervention. The senior mentor volunteers were instructed on the mentoring role and instructed that they would need to attend all of the presentations provided during the schools’ bootcamp/inservice, since much of their role was to re-inforce to the freshman students the strategies being presented at the school’s boot camp/in-service. The schools’ presentations included: time management and studying strategies, test-taking strategies with samples of NCLEX style questions with rationales provided, available campus resources, and acceptable use of social media for the professional. During this meeting the eight-week mentoring project was explained with the role limitations of the senior student mentor clarified. One additional meeting date with the senior student volunteers took place to address any further questions regarding the mentoring role.

The boot camp/in-service took place several days prior to the beginning of the first semester of classes. Following the boot camp/in-service presentation, a brief explanation of the stress intervention/mentoring project was provided to the freshman students, with the attendees invited to stay and participate following a brief break. Following the break, additional instruction was provided to returning participants, with signed/informed consent
obtained prior to the administration of the Perceived Stress Scale (PSS) and Brief Cope Inventory (BCI). The stress reduction in-service then took place, with the student mentors assigned following the DB and GI instruction exercises. Freshman student participants then met with their assigned senior mentors (pairing occurred using similarities identified using the demographic sheet information such as age, marital status and number of pets if any) to exchange contact information. The freshman students were informed that part of the project included a post-intervention re-measurement scheduled to take place in eight-weeks.

Reminders of the re-measurement were posted in the skills lab (for the second project group at the larger campus, the date was announced by the freshman instructors) two-weeks prior to the re-measurements. Freshman nursing students who attended the boot camp/in-service and project/intervention were invited to participate in the re-measurement. On the date of the re-measurement, the participants were provided a repeat explanation of the project purpose and voluntary participation was highlighted. In addition, the project director provided an explanation of the measurement tools. The re-measurement took place following the eight-week exams. Following completion of the re-measurement surveys, the students were then asked to rank the perceived degree of helpfulness of the three different stress reduction methodologies, as well as the frequency each had been used and had the option of providing a narrative comment regarding the mentoring program.

The second stage of the JHNEBPM consisting of five steps is considered the evidence portion of the model. These five steps included the following categories. Discussion is provided on each.

**Conduct internal and external search for evidence.** An informal internal review of the program was undertaken through discussion with a variety of instructors, to determine the
need for an intervention. An initial literature review was performed early in project
development to identify the feasibility of conducting an intervention using multiple
relaxation techniques during a single in-service. A more in-depth literature review was then
undertaken following discussion with the nursing program administration, to identify what
specific stress reduction methods have supporting evidence for reducing levels of stress and
increasing coping behaviors in beginning nursing students.

**Appraise the level and quality of each piece of evidence.** One of the tools provided
with the JHNEBP model is a guide to assist the researcher with evaluating the level of
evidence as well as the grade of research (see Appendix B). The evidence level guide allows
the user to rate research as Level I, which includes experimental and randomized controlled
trials (RCTs) and systematic reviews of RCTs, with or without meta-analysis. Level II
includes quasi-experimental studies and systematic review of a combination of RCTs and
quasi-experimental studies only, with or without meta-analysis. Level III includes non-
experimental studies, and systematic review of a combination of RCTs, quasi-experimental
and non-experimental studies, or non-experimental studies only, with or without meta-
analysis, and qualitative studies. The Quality guide allows division into three levels of quality
which include: Level A- high quality, Level B- good quality, and level C- which is low
quality or containing major flaws. Further guidance is provided under each guide to allow the
user the ability to identify which level most accurately characterizes the report being
evaluated. The Evidence and Quality guide was used throughout the chapter two literature
review and assisted in the selection of the proposed intervention/program.
Summary

A review of the PICOT statement, organizational analysis and first five steps of the JHNEBPM was performed. This review identified a strong likelihood of successful implementation of an evidence-based project at the proposed community college nursing program. It was felt that successful project completion would require the assistance of the program director to assist the project director in contacting student participants and coordinating project presentation and testing dates. The project specifics were developed based on recommendations from the nursing administrative staff of the participating school where the project was to be performed.
Chapter 2: Review of the Literature

Search Strategy

A review of the literature was performed using key search words and phrases including: stress/anxiety in nursing students, nursing student coping behaviors, stress intervention strategies, guided imagery, diaphragmatic breathing, student mentoring and mindfulness. Searches included various combinations of the above terms, as well as the Boolean term “AND”. A search of Medline, the Cumulative Index of Nursing and Allied Health Literature (CINAHL), and PubMed, yielded numerous quasi-experimental, non-experimental, and qualitative studies, two systematic reviews of randomized controlled trials (RCTs), two meta-analysis of RCTs, three individual RCTs, and one meta-synthesis. Search parameters included studies within the last seven years, and publication in English.

Additional studies were obtained from reference lists of qualifying studies. Each study was graded according to the JHNEBP appraisal tool for level/strength of evidence (Newhouse, Dearholt, Poe, Pugh, & White, 2007; see Appendix B).

Summarize the Individual Evidence

Individual studies were evaluated for strength of recommendations and appropriateness for inclusion into the proposed project. These studies were grouped according to study designs, as well as according to the type of intervention used. Studies were then evaluated using the JHNEBP Evidence Level and Quality Guide. Studies meeting Level I evidence, and Quality guide of, A-high quality were provided a higher level of consideration when selecting stress interventions to include in the project design.

Stress reducing interventions. A meta-analysis by Regehr, Glancy, and Pitts (2013) evaluated studies performed on university students examining the effectiveness of stress
reduction interventions. Studies eligible for inclusion required that participants be assigned to experimental or control groups by either random allocation or a parallel design cohort. Single group designs were not included in the analysis but were shown in the summary of studies. The tools used to measure stress and anxiety levels were identified, as well as how secondary outcomes were measured. Twenty-four studies were included in the analysis representing 1,431 students. While most students were from the United States, studies from other countries included Switzerland, Jordan, England, Scotland, and Iran. The interventions included a broad range of methodologies such as: bio-feedback, mindfulness-based stress reduction, visual imagery, cognitive behavioral training, progressive muscle relaxation, mindfulness-based coping strategies, and multi-modal stress management. The length of interventions ranged from a single 45-minute session, to a total of 17 hours, over seven sessions.

The meta-analysis was structured to identify whether there were changes in primary outcomes (self-reported anxiety levels), as well as secondary outcomes (self-reported depression and cortisol levels as measured by salivary levels), between pre-intervention to post-intervention periods (Regehr et al., 2013). The data analysis of this review identified data as being continuous and analyzed by determining the standard mean differences (SMDs) between the treatment and control groups, according to the reported means and standard deviations for each group with data recorded using comprehensive meta-analysis software version 2.0 (Regehr et al., 2013). According to Regehr et al. (2013), the SMDs allowed for comparisons to be made between studies which utilized different measurement instruments (e.g., the State Trait Anxiety Inventory vs. Perceived Stress Scale) which measure perceived states such as anxiety. The SMDs were then determined by calculating for Hedges’ g, which
according to the author is considered more reliable than Cohen’s $d$ since it adjusts for small sample bias. Interventions were divided into three categories, with studies not appropriate for inclusion in those categories omitted from analysis. The categories were grouped into: art-based interventions, psycho-educational, and cognitive/behavioral/mindfulness-based interventions.

Regehr et al. (2013) reported that twenty-four studies comprising 1431 participants contained sufficient information to allow for meta-analysis. Data was pooled for analysis for self-reported outcomes for anxiety from studies using cognitive, behavioral, and mindfulness-based interventions, with results identifying significance for treatment against the control group (Standard Difference in Means [SMD] point estimate -0.77; 95% CI [-0.88 to -0.58], with heterogeneity as assessed by the $I^2$ as moderate at 29.4%). The author further identified that cognitive, behavioral and mindfulness-based approaches were independently evaluated for their impact on anxiety. Results from the 16 cognitive behavioral interventions (SDM -0.77; 95% CI [−0.97 to -0.57]; $P = 43\%$) and for the nine studies using mindfulness-based interventions (SDM -0.73; 95% CI [-1.00 to -0.45]; $P = 36.9\%$) results demonstrated significant improvement over that of the controls. According to the author despite the different measurement approaches of the various studies the existence of a moderate degree of heterogeneity shows considerable similarity (Regehr et al., 2013).

According to Regehr et al. (2013), the findings support that cognitive, behavioral, and mindfulness interventions are effective in reducing anxiety, regardless of differences in approach, the methodology of intervention used, or the length of treatment. Overall, this Level I, Grade A meta-analysis identified that stress-relieving interventions, regardless of type, are effective in reducing anxiety, depression and cortisol response (Regehr et al., 2013).
The authors concluded that in consideration of the high rates of anxiety, depression and stress reported by university students, it would be beneficial to both schools and students to provide access to such interventions. By providing access to stress reducing interventions, it is possible that the results of these interventions will result in widespread benefits for both students and schools in addition to reducing potential mental health issues that impact attrition (Regehr et al., 2013).

Galbraith and Brown (2011) performed a quantitative systematic review with a narrative synthesis to determine what types of stress interventions are most effective in reducing stress in student nurse populations. Studies were categorized by design, method, and effect, with robustness and trustworthiness of the analysis determined through discussion/agreement between researchers. A search of the literature yielded 186 studies when evaluated for inclusion criteria resulted in 17 qualifying studies. Study sizes ranged from ten to 853 participants, and designs included quasi-experimental, non-randomized experimental, pre-test/post-test with no control, experimental with no control, and experimental. Twelve of the studies were conducted in the United States, one in Canada, two in the United Kingdom, and one in Iran. The study divided the interventional methods into the categories: curriculum development (consisting of implementing a problem-based curriculum to increase clinical relevance of course content and decrease student distress), relaxation, imagery, desensitization, breathing techniques, music, cognitive re-appraisal, exercise, hypnosis, meditation, study skills, GI, biofeedback, yoga, time management, nutrition, coping, and problem-solving skills. To allow for analysis, Galbraith and Brown (2011) further divided interventions into one or more, of three targeted stress reduction areas which consisted of: reducing the intensity/number of stressors (target 1), cognitive re-
appraisal of stressors (target 2), or more effective methods of coping with stressors (target 3). Most studies consisted of a combination of intervention strategies (averaging from one to five) and occurred over a period of 16 hours (delivered over two weeks) to 27 weeks (the study utilizing curriculum development).

In the review, only the study by Jones and Johnston (2006), addressed the reduction in intensity/number of stressors through curriculum change (target 1). Jones and Johnston (2006) concluded that although the problem-based curriculum cohort reported experiencing improved coping abilities, the actual result showed increased rates of absence due to reported sickness, as well as poorer academic performance when compared to another cohort taught with traditional means. Six of the studies’ interventions addressed only target three (more effective ways of coping with the effects of stress) and did so through a combination of techniques. All six of these studies included interventions using either relaxation/meditation, or breathing exercises (Galbraith & Brown, 2011). Six studies used interventions involving targets two and three (cognitive re-appraisal and more effective methods of coping with stressors). All studies in this group included traditional relaxation training. Two studies in this group combined relaxation with imagery. Only three studies involved interventions addressing targets one, two and three, however, all three were noted to include relaxation techniques, with two including imagery (Galbraith & Brown, 2011). According to Galbraith and Brown (2011), the diversity of studies prevented the ability to draw a valid comparison between interventions. This was considered a Level I, Grade A Quality of Evidence study, with the authors concluding that interventions incorporating cognitive appraisal of maladaptive cognitions and relaxation were most successful, however, care should be taken
not to undertake such programs with the expectation of improved academic success
(Galbraith & Brown, 2011).

A meta-analysis conducted by Turner and McCarthy (2017) examined twenty-six
study interventions that could reduce stress and anxiety among nursing students. Turner and
McCarthy (2017) adopted the same structure for categorization of interventions as Galbraith
and Brown’s review (2011), which divided articles as: focused on stressors, having a focus
on physiologic or psychological coping skills to reduce the consequences of stress, or focused
on cognitive reappraisal of stressors. This analysis examined literature published since
Galbraith and Brown’s 2011 review. Twelve of the studies focused on curriculum
development to reduce stressors, which included a variety of strategies. The various
curriculum development approaches included: assignment to the same hospital for most
clinical courses, as opposed to rotating to multiple sites; using Personal Digital Assistants
(PDAs) as a reference tool while at clinical sites; patient simulations using Human Patient
Simulations (HPS) in a clinical laboratory setting; high-fidelity home-health care simulations;
peer-assisted learning relationships in clinical settings; peer-assisted collaborative learning
which included assignment to a senior nursing student; mentoring programs using graduate
students as mentors, and a semester-long wellness course designed to improve students self-
confidence.

Seven of the studies examined physiological or psychological coping methods of
stress management to reduce the consequences of stress. These studies included relaxation
techniques with facilitator coaching, biofeedback-assisted relaxation training which included
diaphragmatic breathing, progressive muscle relaxation, and autogenic training. Several
studies used a combination of approaches, while one employed stress reducing methods from
all three categories which included: curriculum development, deep breathing and progressive relaxation, and reflective re-appraisal.

Turner and McCarthy (2017) concluded that limitations identified in the review were nearly identical to those experienced by Galbraith and Brown (2011) with most of the studies using small samples, not representative of the population, and lacking diversity. Despite these limitations, many reported statistical significance. As in the Galbraith and Brown review, Turner and McCarthy reported the wide variation in stress reduction intervention designs made comparisons difficult. The author’s recommendation is for future research to include larger samples, as well as longitudinal studies to identify the presence of long-term effects. This study was well designed, with each study individually reported on, and was rated as Level I, Grade A. Although several of the studies identified statistical significance for the reported levels of perceived stressors, Turner and McCarthy noted that many of the studies demonstrated conflicting results (2017).

**Mindfulness-based interventions.** A mixed methods systematic review on the effects of mindfulness-based interventions in nurses was performed by Guillaumie, Boiral, and Champagne (2016). The review included RCTs, quasi-randomized controlled trials, one group pre-post-studies, mixed-methods and qualitative studies (Guillaumie et al., 2016). Non-intervention studies were excluded; however, the authors identified that in view of the lack of existing controlled studies, uncontrolled studies were included to insure a comprehensive understanding of the current research. This review examined studies undertaken between 1980 and 2014, on work-related stress of nurses and nursing students. A total of 147 studies were originally reviewed, with 32 studies meeting inclusion criteria, which was identified as being relevant and available in full text. The studies included 17
controlled designs, 11 pre- post- test designs, and four qualitative studies. Guillaumie et al. (2016) defined mindfulness as mental training occurring through a variety of ways, that intentionally results in the participant focusing on an inner object such as the present moment, or the individuals breathing. The review reported that two research assistants extracted the data using a pilot tested form, with the quality of studies evaluated for methodological quality using the Mixed-Methods Appraisal Tool (MMAT). Seventy-five percent of the studies were performed in the U.S. with sample sizes ranging from 5 to 300, and half used an RCT design. The most frequently used interventions included: relaxation, meditation, and mindfulness-based stress reduction (MBSR) programs. According to the authors, meta-analysis of the RCTs suggest that mindfulness-based interventions may be effective in reducing state anxiety with significant mean reductions seen post intervention (standardized mean difference [SMD] = -0.78, 95% CI [-1.39 to -0.18]) and at follow up (SDM= -0.80, 95% CI [-0.12 to -0.18]), with post intervention depression scores (SDM=0.51, 95% CI [-0.78 to 0.18]), and trait anxiety at follow up reported as (SDM= -0.50, 95% CI [-0.95 to -0.04]). Qualitative studies were reported to show improvements in calmness, and improved behaviors in complex/stressful situations with both patients and co-workers (Guillaumie et al., 2016). The authors identified the limitations of the review as being the small number of RCTs, which prevented a meta-analysis on several variables. This was a well-designed Level I review, with quality of evidence rated as A. The study provided support for the selection of a mindfulness-based intervention for the proposed project.

**Student mentoring.** A study about the effects of a student mentoring program was done by Kim, Oliveri, Riingen, Taylor, and Rankin (2013). This randomized controlled trial included 51 undergraduate students and consisted of an experimental group (n=34), and
control group (n=17). The purpose of the study was to determine whether a graduate to undergraduate student mentoring program reduced anxiety, or improved student satisfaction or academic outcomes in first semester students in a baccalaureate nursing program. The program included informal face to face interactions, telephone calls, e-mails, and planned meetings to provide emotional support, socialization, and role modeling behaviors.

Instruments included the State-Trait Anxiety Inventory (Cronbach’s alphas .92 for the state anxiety subscale and .90 for the trait subscale), the Baccalaureate Student Self-Efficacy Questionnaire consisting of twelve subscales (Cronbach’s alphas ranged from .97 to .99), and an investigator-developed student satisfaction survey focusing on nursing as a career choice survey. Content validity was established prior to use (Guillaumie et al., 2016). According to the authors, the positive effect of the mentoring program only became evident when compared to the control group. Results indicated that the experimental group had significantly lower trait anxiety than the control group (adjusted mean difference = -5.02, p = .01). In addition, the experimental group had significantly higher course performance than the control group (adjusted mean difference = 2.39, p = .04) and higher satisfaction with nursing as a career choice than the control group (adjusted mean difference = 1.38, p = .002). The study concluded that mentored students had lessened levels of trait anxiety, higher levels of academic performance, and increased satisfaction as compared to the non-mentored control group (Kim et al., 2013). This was a Level II study, with quality of evidence graded as A.

Peltz and Raymond (2016) performed a descriptive cross-sectional study of ADN students to determine the impact of mentoring on persistence (defined as program completion or continuation). The study was performed on a convenience sample of ADN students recruited for an online survey throughout the state of Michigan. A priori power analysis
identified the minimum number of participants required, using a medium size effect of \( f=0.25 \), power 0.80, and alpha of 0.05. An email was sent to 22 nursing leaders of ADN programs throughout the state requesting they forward an e-mail to program participants (consisting of current ADN students) that included a brief study description and link to the informed consent and electronic survey. Based on enrollment estimates, the e-mail was forwarded to 1,950 ADN students from nine different programs across the state. The actual return yielded 283 surveys, which following removal of those with missing key data elements, resulted in 249 being included in the study. All participants who returned surveys, met one or more criteria for being a nontraditional student as defined by Jeffreys (2007a).

Basic demographics included: enrollment status (part time or full time), the number of dependent children, whether English was a second language, completion of high school or GED, and ever having failed a nursing course. The College Student Mentoring Scale (CSMS) was used to measure the domains of mentoring, with the instrument reportedly demonstrating good internal consistency and content validity. Cronbach alpha coefficients for the subscales ranged from .866 for the existence of a role model subscale, to .909 for degree and career support (Peltz & Raymond, 2016). The student’s involvement in mentoring relationships (questions did not specify who performed in the role as mentor) was measured in four ways: any reported contact with a mentor, the total number of contacts, the extent to which the student depended on the mentor for emotional encouragement/support, and the overall experience with mentoring (Peltz & Raymond, 2016).

A noteworthy finding was that involvement with a mentor differed by gender, enrollment status and a history of course failure. There were no significant results in the three measures of involvement in a mentoring relationship by age, race or ethnic background,
English as a second language, number of children at home, or whether the student had a high school diploma as opposed to GED. There were statistically significant differences in involvement by gender, enrollment status, and history of course failure. The authors reported that men more frequently met with the mentor (M=25.71, SD=24.37) as compared to women (M=11.38, SD=18.51) (t[166] = 0.002, p = .022, and part-time students were significantly more likely to meet with a mentor (90.2%) than full time students (77.5%) (χ^2[1] = 4.601, p = .032), however, the frequency of meeting with mentors was significantly lower in the full-time students (M=106.29), than in part-time students (M=123.35) (p = .048). An additional finding was that students who had previously failed a nursing course were more likely to meet with a mentor (91.5%) than those who never failed a course (77.3%) (χ^2[1] = 5.715, p = .017). Another significant finding was that women (M=2.24, SD=0.84) scored higher than men (M=1.83, SD=0.65) on psychological and emotional support (t[247] = -2.631, p = .009). Women also scored significantly higher (M=2.30, SD=0.90) than men (M=1.88, SD=0.69) on the measure of academic support (t[247] = -2.533, p = .012), which Peltz and Raymond interpreted as showing women perceived less psychological and academic support than men. According to the authors, the more psychological and emotional support experienced by the student, the more likely they were to believe they would be successful in the program. Peltz and Raymond’s (2016) study on the non-traditional two-year nursing student was considered a level III, quality B study based on the JHNEBPM guide, however, it was felt important to include since it was one of the few performed on the non-traditional student population.

Research on peer mentoring has been shown to result in positive effects for both the less experienced student, and mentor as well, with mentored students reporting lessened anxiety and student mentors reporting increased feelings of competence and self-confidence.
(Ford, 2015). Ford (2015) performed a quasi-experimental study using a pretest-posttest design to measure the effects of a peer mentoring experience on the self-concept of senior students. Instruments used for data collection included a short demographic survey, with Cowin’s 36-item Nurse Self-Concept Questionnaire (NSCQ) used to score six subscales, before and after peer mentoring sessions. Instrument internal reliability was reported as Cronbach’s alpha 0.83 to 0.93 for the various subscales. All 43 senior-level students agreed to participate. The experience took place at an extended care facility where second-semester students underwent their first clinical experience. The objectives for the senior students were to practice delegating, and evaluating the sophomore student’s skills, as well as to coach, teach, and support the students during the clinical experience.

Appropriate analysis was performed with Pearson’s correlation used to determine relationships for age, gender, or ethnicity, with each subscale, as well as paired t tests to identify any change in means. Significant correlations were observed between gender and Staff Relations ($r = 0.321$, $p = 0.043$), and Knowledge ($r = 0.383$, $p = 0.015$) subscales prior to mentoring. Post-mentoring, there were no significant correlations. The mean scores for Staff Relations prior to the experience was 43.94 (SD = 2.99) for female students, and 42.40 (SD = 5.32) for male students, which was a significant difference ($t[38] = 2.089$, $p = 0.043$). Following the peer-mentoring sessions, there were no longer significant differences observed in the mean scores for females and males. On the Knowledge subscale, before the peer mentoring experience occurred, the mean score for males was 38.60 (SD = 3.435) with females scoring higher, with a mean score of 42.51 (SD = 3.175). Following the mentoring intervention, there was no longer a significant difference in mean scores between male and female students. The author identified this as an unexpected finding, attributing the difference
to the fact that males in the clinical setting often feel less confident in their knowledge and roles. The fact that these differences were no longer observed following the experience indicates the positive contribution to the student’s self-concept following the mentoring experience. This study supports the importance of assisting students to develop a strong self-concept and that mentoring programs have the potential to assist in this process (Ford, 2015). This was a well-designed, Level II, A quality study using the JHNB guidelines.

**Stress management/relaxation/guided imagery.** Stephens (1992, citing Lazarus) identified that while some degree of anxiety stimulates learning, extreme levels impede the ability to learn with a “curvilinear relationship” (p. 314) between the two. It is widely acknowledged that nursing students experience significant stress which commonly occurs in a curriculum requiring simultaneous participation in clinical and didactic programs. This awareness has led to studies targeting interventions to reduce levels of anxiety in nursing students.

One such targeted study was undertaken by Speck (1990), who performed a quasi-experimental post-test design study on first-semester nursing students from a Midwestern university, to determine whether GI lessened the anxiety associated with performing injections. The study consisted of 26 nursing students registered in three different skills laboratory sections. A control group of ten students was randomly selected from the three sections, with the remaining 16 students allocated to the experimental group. During the fourth week of the semester, the State-Trait Anxiety Inventory (STAI) was used to collect self-reported anxiety with Biodot Stress Dots used to measure physiologic stress, and additional anxiety measures recorded for the students’ performance times and scores (Speck, 1990). Pre-intervention scores were obtained from both groups with no differences between
the trait or state scores identified. During the seventh week of the semester, both groups received instruction for injection administration from the same instructor. The experimental group additionally received GI instruction using an audio cassette tape which progressed through the stages of relaxation, the process of focusing on the anxiety-producing procedure (injection) and ended with visualizing successful completion of the task. In the eighth week both groups performed the skill, with the experimental group listening to the GI cassette prior to performing the task. Both groups completed the STAI scale, and received biodot readings prior to performing the skill, with the performance of both groups timed and scored.

Differences in the group means of the experimental and control groups for baseline state anxiety scores was 4.01, with differences in trait scores reported as 1.40. This was in contrast to the differences in post-treatment mean scores for state anxiety of 9.30. No differences were observed in physiologic scores with the Biodot stress dots \( (p = 0.677) \). Students who used GI prior to performing their first-injection however, reported having lower levels of anxiety, with a measurably significant statistical difference from the control group \( (p = 0.0008) \). Using the JHNEBP Quality and Evidence guide, this was a Level II, grade B study due to the small sample size.

A RCT on the effectiveness of an online stress management program was undertaken by Morledge et al. (2013). This twelve-week, internet based, stress management program randomly allocated participants into three groups. One group was provided access to an internet-based stress management program (ISM), a second group was provided access to the same internet-based stress management information with the addition of an online message board (ISM+), and a control group who received no access to the stress management information, but had expressed an interest in joining the online program (control). The ISM+
group was provided with online support, which consisted of a board leader posting pre-specified discussion threads to generate interest, however, the leader was instructed not to provide additional advice (Morledge et al., 2013). All participants completed questionnaires at baseline, eight, and twelve weeks, as well as weekly activity logs. Participants received e-mail reminders if questionnaires/logs were not completed. The program consisted of new meditation themes each week, with the focus being the ability to develop mindfulness, which was defined as bringing the participants’ attention to the present moment. The use of breathing techniques was stressed in all the meditations, with weekly guided meditations provided. Participants were encouraged to practice five times per week. Six different outcome measures were administered and included the: Perceived Stress Scale (PSS), the Mindfulness Attention Scale, the Adult Self-Transcendence Inventory, the Psychological Well-Being-Self-Acceptance Subscale, the Subjective Vitality Scale, and the RAND 36-Item Short Form Health Survey. The authors did not report the validity or reliability of the individual measurement tool, however, did identify that sample size estimate was based on data from previous studies estimating the difference and standard deviations of each of the six scales (Morledge et al., 2013). This method identified that 102 patients per group were required to provide 80% power, to determine differences between groups. Appropriate analyses were used including linear mixed-effects models to determine outcome changes, with the effect of each intervention compared to the control group, at weeks eight and twelve. Student’s t tests were used for other analyses. To allow for the anticipated high dropout rate common in online studies, the authors reported that 700 participants were enrolled to ensure study completion.
Study outcomes reported that ISM participants experienced statistically significant reductions in stress for four of five outcome comparisons in both the ISM and ISM+ groups, as compared to the control group at week eight, with improvement sustained through week twelve (Morledge et al., 2013). Baseline levels of stress using the PSS were reported as 23.05±6.61, which is significantly higher than the U.S. average (13.7±6.61 for females, and 12.1±5.9 for males). The control group demonstrated a statistically significant difference from baseline scores as compared to the ISM and ISM+ groups in perceived stress at 8 weeks (adjusted mean = -3.46, 95%CI[-4.48,-2.43], p < 0.0001) and at 12 weeks (adjusted mean = -3.43, 95%CI[-4.47,-2.40], p < 0.0001); in mindfulness at 8 weeks (adjusted mean = 0.35, 95%CI[0.24, 0.47], p < 0.0001) and at 12 weeks (adjusted mean = 0.40, 95%CI[0.28, 0.52], p < 0.0001) and in mental health at 8 weeks (adjusted mean = 3.36, 95%CI[1.60, 5.13], p = 0.0002) and at 12 weeks (adjusted mean = 3.33, 95%CI[1.54, 5.12], p < 0.0003). The results indicate that a long-term internet-based stress management program with or without an online message board has the potential to effectively reduce stress in a broader segment of the population than can be provided in a face to face program, in a cost-effective manner (Morledge et al., 2013). Using the JHNEBP appraisal tool, this was a Level I study, with quality of evidence rated as B due to the lack of identified validity of measurement scales.

A study by Stephens (1992) using a quasi-experimental, pretest/posttest, control group design was conducted on first-year nursing students to identify the effectiveness of audiotaped imagery to reduce anxiety. First year female nursing student (n=159) volunteers were randomized into three groups; two experimental groups, and one non-treatment control. Group one was provided with an audiotape, developed by Stephens, on imagery alone and instructed to use the tape 15 minutes daily for five days, then three times a week for three
weeks. They were instructed they may listen to the tape during other activities such as driving. Group two was provided with the same instructions, but this groups’ tape also included five minutes of progressive relaxation. The relaxation period was limited to five-minutes to increase compliance due to the increased time commitment required, making the total listening time 20 minutes. They were instructed to use the tape only when sitting alone in a quiet place. The control group did not receive a tape. The Spielberger State-Trait Anxiety Inventory (A-State) was used to measure the anxiety levels of the participants.

To compare the treatment effect to the control group, a one-way ANCOVA was performed on the post-test A-State scores, with pre-test A-State scores used as a covariate (Stephens, 1992). The results indicated the covariate was significantly associated with the dependent variable (F[1,93] = 9.394, \( p = .003 \)), with the effect of the treatment group also significant (F[2,93] = 18.699, \( p = .001 \)). The overall findings indicated the imagery treatment had a significant effect on the reduction of students’ anxiety, but the additional five minutes of relaxation had no increased effect. Stephens (1992) reported that such a short period of relaxation may not have been sufficient to demonstrate an effect, however, any increased amount of time spent on relaxation could have resulted in less compliance. It was believed that students would be more likely to use the tape if able to do so concurrently with other activities since time is a major consideration in this population (Stephens, 1992). Based on the JHNEBP tool, this was a Level II, B quality study.

**Synthesize Overall Strength and Quality of Evidence**

Each study was assessed for overall strength and quality of evidence with guidance in rating recommendations provided through use of the JHNEBP tool (Johns Hopkins Medicine, 2017) (see Appendix B). The meta-analysis of RCTs provided the basis for the interventions
chosen for this project. The systematic review by Galbraith and Brown (2010), identified that interventions which provide the most effective skills for coping with stressful situations, in addition to being the most frequently taught, often involve interventions which teach relaxation methods. Regehr et al. (2013) identified that studies on cognitive, behavioral and mindfulness-based interventions which focus on stress reduction, have been shown to significantly reduce the symptoms of anxiety. The findings by Regehr et al. (2013) were consistent with the outcome of Stephens (1992) study, which found the use of relaxation techniques and GI to be effective in reducing the levels of test-anxiety. Research has shown GI to be a cost effective, easily learned skill suitable for incorporation into nursing programs (Speck, 1990; Stephens, 1992). Randomized control trials completed by Kim et al. (2013) and Peltz and Raymond (2016) on student mentoring demonstrated that mentored students often experience lessened levels of anxiety, and increased program satisfaction. Ford (2015) reported that mean scores for all six dimensions of self-concept were significantly higher following a peer mentoring experience in senior nursing students who served as mentors to lower level nursing students. The mindfulness-based interventions (defined as mental training through a variety of methods which include focusing on an inner object such as the present moment or breathing) when reviewed by Guillaumie et al. (2016) showed positive effects on anxiety and depression, with the qualitative studies reporting increased feelings of inner calmness and improved communication styles during stressful periods with patients and co-workers. The Moreledge et al. (2013) study offered support that an (online) eight-week Mindfulness-Based Stress Reduction program was able to effectively reduce stress. Turner and McCarthy’s (2017) literature review of various intervention strategies on stress and anxiety in the student nurse population was nearly identical to the findings of Galbraith
and Brown (2011), showing that wide variation in study design and low methodological rigor made study comparisons difficult. Turner and McCarthy (2017) did find statistically significant findings for interventions focusing on reducing stressors through curriculum design and/or improving students’ coping skills.

**Summary**

According to Galbraith and Browns’ (2011) review, relaxation instruction and other learned behavioral interventions can reduce stressors in nursing students. The evidence from this review suggests that a combination of approaches (cognitive reappraisal and relaxation) is most likely to result in improved levels of stress (Galbraith & Brown, 2011), even though in teaching multiple strategies, it becomes difficult to attribute causation to the individual intervention. The above studies, as well as the meta-analysis and combined reviews provided the basis for the selection of GI, DB and student mentoring for use in this project.
Chapter 3: Methodology

Introduction

Based on the literature review, as well as discussions with faculty members regarding the needs of both the program and students, an intervention was created to assist in reducing the high levels of stress among first semester nursing students. The project director developed a stress reduction program, for first-semester nursing students, which included diaphragmatic breathing (DB) techniques and the use of guided-imagery (GI), as well as the assignment of first-semester nursing students to a fourth-semester senior nursing mentor.

First-semester nursing students learned about the selected interventions (i.e., DB and GI), during an in-service/intervention, which began several days before classes started. The third portion of the JHNEBPM, the Translation based section, consists of eight steps which guided the remaining stages of the project. The first step of the translations phase consists of examining the appropriateness of the recommendations.

Determining Fit, Feasibility, and Appropriateness of Recommendations for Translation Path

To determine the appropriateness of the project, as well as to assess the needs of the college, the project director conducted an organizational analysis. For the purpose of this study, the project director conducted a thorough needs analysis of the college to further understand the organizational environment, as well as to understand details about the student population. The subsections below detail information about the conducted organizational analysis, which was determined through conducting a SWOT analysis.

Analysis of the organization. As noted by Sewell, Culpa-Bondal, and Colvin (2007), the success of nursing students is a source of pride for all stakeholders. Stakeholders who
take interest in the success of nursing students include, but are not limited to nursing students, and the nursing school (the faculty members and administration).

**The strengths of the organization/program.** The nursing academic calendar and scheduling of courses and clinicals allows for implementation of this project without disruption to courses and clinicals. Nursing faculty and leadership recognize that first-year students experience stress due to incorporation of enrollment in a nursing program into their lives, which are frequently already burdened with other demands such as employment and family obligations. In an effort to address these concerns and facilitate smooth entry into the first-semester of nursing classes, the main campus nursing program initiated a four hour “Boot Camp/Inservice” which is held prior to the beginning of the freshman nursing students first semester. The nursing faculty/administration agreed to implement the same program at the smaller campus and allow the project director to perform the proposed stress management project following the schools’ inservice, acknowledging the potential benefit that stress management interventions may provide to student participants (volunteers) in addition to the schools’ inservice.

- A large number of full-time faculty, who teach at the institution appreciate the importance of incorporating evidence-based practice (EBP) methodologies to enhance/improve the program.

  Decreasing stress levels has the potential to positively impact the number of freshmen through decreased attrition rates (Sewell, Culpa-Bondal, & Colvin, 2007). Lessening attrition has the ability to increase the numbers of students completing the program and achieving licensure.
The weaknesses of the organization/program. The School of Nursing students have an extremely demanding schedule to ensure completion of the required number of hours each semester. It was known that any changes to the scheduled date of the planned project/intervention would require waiting until the following semester to repeat the project/intervention, thereby delaying completion of the project due to lack of additional days of availability.

- Insufficient attendance at the project/intervention following the schools’ “Boot Camp/Intervention” on the smaller campus resulted in the need to repeat the project the following semester delaying completion.

- Completing the project/intervention a second time at the main campus involved communicating with and the co-operation of additional and new instructors/staff than at the smaller campus, creating gaps in communication, which potentially resulted in fewer project participants during re-measurement.

The opportunities of the organization/program. The increased awareness of stress across nurses, inclusive of nursing students, has focused efforts on evidence-based strategies to reduce stress. National efforts have resulted in widespread attention to this issue and to address the psychological health of nurses. Therefore, this represents an opportune time for implementation of such a project.

The threats of the organization/program. A major concern involved in the completion of this project was the potential lack of buy-in from the current administration. Although many of the faculty had recently completed Doctorates in Nursing and/or Education, having an outsider (adjunct staff) come into an existing program and make recommendations/requests had the potential to not be well received. In addition, for long-
term sustainability, availability of resources can affect continuity of the practice. Limited funding and staff/faculty could impact the Schools of Nursing’s commitment to the project.

**Create an Action Plan**

After reviewing the strengths and weaknesses of the school, a plan was devised to teach three separate evidence-based strategies. The selected stress reducing strategies had demonstrated effectiveness in regard to reducing stress levels among nursing student populations. It was felt that teaching several techniques, which the students could use (depending on the time allotted) and need (depending on current situation), would provide the greatest likelihood of use and would increase usage benefits.

Several days before classes began, the college offered an in-service to incoming first-semester nursing students. The school’s “Strategies for Success Boot Camp/In-service” consisted of evidence-based learning strategies to overcome commonly encountered learning barriers among beginning nursing students. Presentations during this boot camp/in-service were made by senior nursing management class students. The senior students provided the presentation in partial fulfillment of community service hours required for graduation.

Student presentations included content about the following: effective studying strategies/time management, test taking skills, acceptable use of social media, and available campus resources. The stress management interventions (DB, GI, and student mentoring) were taught by the project director and were presented following the college’s in-services. Students were provided the option to voluntarily participate in the presentations on the stress management interventions. The objective for the mentoring role was clearly defined by the project director, who explained that mentors were to provide informational support to the freshman students, to reinforce the content provided during the in-service, and to encourage
use of the stress management (DB and GI) techniques taught by the project director. The project director and site coordinator held several instructional meetings regarding the mentoring role prior to the scheduled in-service/intervention with the senior mentor volunteers to ensure a thorough understanding of the role.

Secure Support and Resources to Implement Action Plan

The college’s nursing program site coordinator/facilitator for this project attended the project planning meetings and was present during the in-service. However, to ensure participant anonymity, no teaching staff was present during completion of the informed consent documents, PSS or BCI administration, the DB or GI instruction, or during the mentoring assignment. Faculty members were present in the buildings where these activities were taking place, to answer any questions or address problems, however, none were encountered.

The nursing department secretary, at the direction of the site coordinator/facilitator, sent out emails four-weeks prior to the beginning of the semester, inviting first-semester students to an in-service offered by the school. One week later, the nursing department secretary sent a separate email to the same group of students, inviting them to participate in the Stress Management project. Students were also advised that light refreshments would be provided, following the in-service, by the project director. Refreshments were offered as an enticement to stay and listen to the presentation.

Implementation of an Action Plan

Four weeks before the in-service, the school sent an email to students that encouraged their attendance at the boot camp/in-service. While not mandatory, attendance was strongly encouraged by the school. Three weeks before the proposed intervention, the same first-
First-semester nursing students were advised that the intervention would consist of learning DB and GI techniques and would involve being assigned to a senior student mentor for the first eight-weeks of the program. Students were also informed, in the email, that attendance was optional and lack of participation in the intervention portion, scheduled to follow the schools’ in-service, would not impact their grade.

On the day of the in-service, following the boot camp provided by the college, the first-semester students received a brief overview of the proposed evidence-based Stress Reduction Pilot project. The overview of the project explained DB, GI, and the student mentoring program. The students were then invited to participate in the project following a short break. On return, those who chose to attend the project information session, were instructed on all aspects of informed consent, including: the purpose of the project, procedures, possible benefits to be obtained, and advised that participation in the intervention/mentoring program was strictly voluntary. Students were informed of potential discomforts or risks, and that there was no monetary compensation. Participants were advised that the faculty would not know who did or did not participate and that any benefit obtained from participation would be from improved coping/stress management behaviors. They were then invited to participate.

Informed consent was obtained prior to participation in any of the interventions. The students completed a demographics sheet (see Appendix E) to allow pairing to a student mentor (see Appendix F) based on similar characteristics (such as marital status, age,
employment, gender, number of children and pets, etc.), as well as to allow matching of pre-
and post-intervention measurement surveys (see Appendix G). The PSS/BCI surveys, and
demographic sheets did not contain the student’s name, thereby allowing for anonymity.
However, to allow identification/matching of the pre- and post-intervention surveys, all
participant documents were identified using a unique identifier which consisted of the last
four digits of the students’ identification number. This omitted the first two-numbers of the
students’ identification number, making identification through the schools’ enrollment lists
via computer impossible to perform. Students were informed the demographic sheet,
research consent forms, and PSS/BCI forms would be kept in a secured area by the project
director and would destroyed five years after completion of the project.

Attendees were provided with contact information for the project director in the event
there were questions regarding the project and were informed that if they chose not to
participate, or withdraw at any time, it would not affect their grade. Participants were also
informed that a re-measurement of stress and coping behaviors would take place in eight-
weeks, using the same measurement surveys as those completed prior to the intervention, in
addition to a post- intervention survey consisting of two questions (see Appendices C, D, and
G). Students were advised the re-measurement was also voluntary. Following completion of
all pre-intervention surveys (informed consent, demographics, PSS, and BCI), instructions
were provided about DB and GI. The students were provided a brief overview by the project
director regarding how DB and GI is performed and were next instructed that a professionally
prepared CD of DB and GI exercises/meditations would be played with audio instructions
prompting them to actively participate in the two meditations. Active student participation
was encouraged throughout the meditations with participants prompted by the project director to follow the instructions and participate in the meditations as instructed by the CD.

The DB instruction was facilitated by the project director, through use of a professionally prepared compact disc (CD) developed by the Cleveland Clinic Foundation (CCF) as part of an evidence-based online stress management program (see Appendix K). The meditations which were provided to the project participants during the inservice/intervention are on the CCF StressFreeNow CD (Cleveland Clinic Wellness.com, ©2015). The stress management program is offered by the Cleveland Clinic Foundation’s Wellness Program (Cleveland Clinic Wellness Program, StressFreeNow, 2018, Copyright © ClevelandClinicWellness.com). The program was developed based upon an RCT, created by Morledge et al. (2013), through examining the feasibility of an online program for stress management.

Students were informed that the exercises/techniques were not a replacement for medical diagnoses or treatment for any psychological or medical condition. Students were also advised that if discomfort, pain, and/or increased anxiety/psychological distress was encountered, that the exercise/technique should be stopped, and a licensed medical provider should be contacted for treatment. Prior to beginning the DB/GI exercises, both freshman participants and senior mentors were informed the exercises were also available for download onto their smartphones. Participants were instructed to go to their phones App store search bar and enter Cleveland Clinics StressFreeNow (Cleveland Clinic Wellness Program, ©2018. Stress Free Now Meditations. App). Phone access allowed students to utilize the professionally developed exercises, which were created based upon evidence-based research, during the next eight weeks of the study. To ensure they had no difficulty downloading the
stress management meditations, as well as to serve as a reinforcement for using the exercises, a reminder letter was sent to each freshman project participant, via email, through the senior mentors instructing students about how to download the DB/GI exercises (see Appendix N). This reminder email provided the freshman participants with information in writing and also allowed senior mentors to follow up with freshman students to determine whether a student had encountered any problems or concerns during the first week of classes. Each senior mentor had previously downloaded the app during a meeting with the project investigator prior to the project/intervention, to allow sufficient time to familiarize themselves with the website in the event a freshman student had questions regarding the website or app.

The first presentation (DB) was the ten-minute meditation, “Mindful Breath- Day” which was provided using the StressFreeNow CD (ClevelandClinicWellness.com, ©2015, side 1, track 2) (see Appendix N). This meditation instructed the user to find a quiet place, and either sit comfortably or lie down, and proceeded to guide the user on how to perform a body scan with eyes closed, thus encouraging the participant to release tension (first in the toes then working up to the head). The meditation continued to guide the user through slow, methodical, diaphragmatic breathing patterns, while instructing on proper and incorrect techniques. The instructions took place with sounds of nature and music in the background, while describing the sensations being experienced during the activity. The instructor (on the CD) continuously reminded the user to refocus on breathing and emphasized that distraction was normal. Toward the end of the meditation, the meditation provided less instruction, with only the background music and nature sounds present, thereby allowing the user to independently use the techniques learned earlier in the exercise.
Following the DB meditation, students were instructed about GI using the meditation, “Guided Imagery” also on the Stress Free Now CD (ClevelandClinicWellness.com, ©2015, side 1, track 5) The GI meditation consisted of a 19-minute, guided relaxation exercise that instructed the user to imagine a beautiful nature scene, while allowing them to experience the described sights and audio sounds of the CD. The user was instructed to lie, or sit comfortably, while being guided by a soothing voice with music and the sounds of nature present in the background. The participants were instructed to begin using the deep breathing exercises that were learned during the first activity, while instructions were strategically interspersed with periods of quiet, while the participant focused on breathing and the sound of the instructor’s voice. The user was guided to visualize a warm oceanfront with the smell and feel of a warm, wooden walkway beneath their feet. The CD then guided the user to slowly experience the scene unfolding before them and included sounds and the feelings of warmth and serenity, while continuing to guide the user’s breathing. The instructions were provided at a slow pace, thereby allowing the listener to experience the setting, while incorporating the recently learned instructions such as DB. The two meditations combined lasted approximately 30-minutes. Students were informed about the benefits of using the meditations. Furthermore, it was recommended that meditations be done a minimum of four to five times per week, as recommended on the StressFreeNow CD “Welcome” instructions (ClevelandClinicWellness.com,©2015, side 1, track 1). The frequency of participant use allowed students to develop the skills taught during the sessions, so that when faced with stressful situations, throughout the upcoming semester, they would be skilled at using the techniques when needed.
At the end of the in-service, freshman students were assigned to one of the senior nursing students, who had been in-serviced on appropriate mentoring behaviors as part of the instruction received during meetings with the project investigator (see Appendix L). The freshmen participants were advised that the role of the senior student mentors was to provide support, additional information, and to continue to reinforce the strategies learned during the schools’ in-service and stress management interventions provided during the project/in-service. They were instructed the mentors would be available by phone, text, or e-mail with time constraints limited to normal waking hours. Freshmen students then met with their assigned student mentors, during an informal 30-minute face-to-face meeting, which followed the in-service.

Freshman students were advised that the purpose of the senior student mentors was not to assist them with studying, projects, or for practicing lab skills, but rather to function as an informational/support person. Freshmen students were advised that mentors may answer questions about test taking strategies; however, students were not allowed to ask mentors to recall specific test questions/responses. The mentors were to provide strategies for applying the information learned to situations/scenarios rather than relying on memorizing facts.

After the first-semester students were advised about the limitations of the mentors, they were required to sign a contract of intent to honor the limitations of the mentor as part of the demographics sheet. The mentors had previously signed contracts as part of their demographic sheet (used to match to the assigned freshman for similar traits) identifying the same limitations. The seniors however, used their actual signature so the project investigator was able to contact them periodically if needed. Each freshman student was assigned to two senior mentors, both with as many similar demographics to the freshman as possible. A
second mentor was assigned, so that if one of the mentors for any reason was not able to complete the eight-week project, or was not able to be reached, the freshman participant had a second mentor to serve as a backup who they had already met and were familiar with. This was to ensure that in the event a senior student was not able to continue in the mentor role, the freshman student was able to continue in the project. Freshman students then met with both mentors and exchanged contact information prior to leaving the in-service/intervention.

The mentoring agreement continued for eight-weeks. The freshman participants were informed they were not obligated to contact the mentor, if they felt it was unnecessary, but were informed they would later be asked to report the number of times they contacted each mentor during the post-intervention re-measurement meeting. The senior mentors were also instructed to maintain a log identifying the number of times they were contacted by the student, and the approximate amount of time spent on each contact. The senior students were required to turn the completed logs in to receive credit for participation in the program, which was applicable toward the community service hours required by senior students for graduation.

Eight- weeks following the in-service, the freshman nursing students who attended the boot camp/in-service were invited to participate in the re-measurement. The reason for re-measurement was explained prior to administration of the BCI and PSS. Changes in the pre-and post- PSS and BCI scores of the intervention group were made by matching the last four digits of the student identification numbers provided on the demographic sheets, research consent sheets, PSS, and BCI survey sheets. The freshman students were also asked to complete a post-intervention survey sheet to rank the degree of helpfulness of the three different interventions (DB, GI, and mentoring program; see Appendix G). They also had the
opportunity to provide a narrative statement on the mentoring program (what aspects of it they found most helpful), and to identify approximately how many times they contacted their mentor.

To allow evaluation of outcomes following the evidence-based practice intervention a quantitative design using pre- and post-test survey instruments was used. Although it is difficult to ascribe causation to an intervention without a control group or randomization, it is often the only means of evaluating an interventions impact (Terry, 2015). The expected outcome was that following a stress reduction intervention, there would be a decrease in the perceived levels of stress.

Design

To allow comparison between the various behaviors being surveyed such as perceived stressors and coping behaviors, a descriptive design using pre- and post- survey instruments was used. The expected outcome was that following a stress reduction intervention, there would be a decrease in the perceived levels of stress. Due to the anticipated small number of participants (less than 20), the actual number in attendance determined the method of analysis. Although participation was strongly encouraged, a much smaller number attended the smaller satellite campuses’ in-service, with only nine of 21 freshman students attending. Of that number, only five elected to participate in the Stress Management Intervention/Mentoring program. The project was repeated on the larger campus of the same school the following semester. The second presentation at the main campus yielded 46 project participants. However, only 12 of those who originally participated in the original stress management in-service project, returned and participated in the eight-week re-measurement despite the majority having participated throughout the
semester in the mentoring program. This provided a total of 17 student participants in both pre- and post-intervention testing and program participation. The low number of participants (n=17) necessitated the use of descriptive tests for analysis. Since the sample size was too small for inferential analysis, only descriptive statistics were completed.

**Strengths and weaknesses of the design**

All students were allowed the opportunity to participate, with all participation strictly voluntary for both freshman participants and the senior mentors. Mentors were assigned based on matching of similar demographic characteristics, as this was considered an important factor in freshman participation for the mentoring portion of the intervention. Since it was anticipated to be difficult to definitively identify whether any one intervention had a more significant impact than the other two, the overall outcomes were further evaluated based on the student’s perceived level of the degree of helpfulness. This was done using a post-intervention survey (see Appendix G), in which the students were asked to rank their perception of which of the three interventions (DB, GI, or mentoring) they perceived to be the most helpful. They also received time logs to list the frequency of using the DB/GI exercises, and reason or circumstances precipitating their use. To limit the amount of paperwork required by the freshman and to increase compliance, freshman students were only asked how many times they contacted their mentor. Since the senior students were required to maintain a time log to receive credit for their community service project participation hours, they were required to maintain a log identifying the number of contacts with their assigned student, the reason for being contacted, and approximately how long they spent with the student during each contact. The logs were collected at the end of the eight-week project. When a discrepancy between the two logs was identified, the more detailed of
the two was used. The more detailed of the two logs (freshman and mentor logs) was consistently found to be the mentor’s logs.

**Sample**

The sample population consisted of first-semester nursing student volunteers from a local community college. All students enrolled in the first-semester of classes in the actual nursing program (participants must have already completed program pre-requisites and have been in a concurrent clinical rotation) were invited to participate. Students who were re-taking the first semester of the program also qualified for inclusion. Graduates of other programs including those with licensure in other health care specialties such as licensed practical nurses (LPNs), and emergency medical technicians (EMTs) qualified for inclusion. However, since prior clinical experience may have contributed to a lessened level of stress in a beginning RN student, particularly in the clinical environment, participants were asked to identify any previous program experience on the demographic survey. This information was considered when examining significant differences in PSS or BCI scores. Another consideration was that students who had been in similar programs, may have chosen not to participate in the program being offered, since they did not anticipate significant levels of stress on entering a similar type of program.

**Procedures**

Four weeks before the in-service was provided to the first-semester students, the nursing programs’ fourth-semester nursing management class student volunteers were educated on the information to be presented to the students by the project director (DB, GI, and mentoring project participation) as well as the information to be provided during the school’s boot camp. The boot camp/in-service included evidence-based strategies related to
academic success with the information approved prior to presentation by the senior management class instructor and program coordinator. The role of the senior student mentors was to reinforce the concepts presented at the boot camp/in-service throughout the semester and serve as a student resource person. The senior student mentors received credit for participating in the project in the form of community service hours required for graduation. The mentors were required to attend the complete boot camp/in-service, to be aware of the content that had been presented during the schools’ in-service, and additionally attended an instruction meeting on mentoring skills (see Appendix L). The mentors were additionally required to be present during the entire project/intervention in-service (DB, GI, and mentoring program/presentation), to ensure their understanding of the DB and GI meditations in the event any freshman students had questions regarding them.

**Instruments**

The measurement of perceived stressors in first-year students required the use of survey tools with proven reliability and validity. As identified by Polit (2010), reliability denotes the “dependability or accuracy with which an instrument measures the attribute it is designed to measure” (p. 217). According to Polit (2010), reliability coefficients should be a minimum of .70 to be considered acceptable. The survey tools selected for use were evaluated for reliability with further discussion on each tool provided.

According to LoBiondo-Wood and Haber (as cited in Terry, 2015), the DNP researcher is often undertaking a time-limited capstone project, and should if possible avoid developing an original instrument, and instead select an existing instrument with demonstrated validity and reliability. When researching the measurement tools chosen for this project, assessing the tools for validity was an important consideration. Both tools chosen
were used in similar studies within comparable populations and felt to be representative of the population/behaviors that were being measured in this project. Both tools’ reliability and validity were evaluated and an important consideration in their selection for use.

**Perceived Stress Scale**

The PSS (Cohen & Williamson, 1988), is a copyrighted, psychological tool, widely used for the measurement of perceived levels of stress, that has been translated into over 30 languages, and is applicable to a variety of populations, with the items reportedly easy to understand, and response alternatives simple to comprehend (see Appendix C). Although the PSS is a copyrighted tool, permission for use of the scale is unnecessary when used for nonprofit academic research, or nonprofit educational purposes (Cohen, Kamarck, & Mermelstein, 1983). When completing the PSS, participants are asked to rate questions on a scale from 0 (never) to 4 (very often), regarding the past two-week period (Hintz, Frazier, & Meredith, 2015). Scores are then totaled with possible scores ranging from 0-40. According to the authors, since the PSS is not intended to be a diagnostic instrument, there are no cut-offs provided to classify levels of stress, but instead scores should be used for comparison between subjects in the sample group (Cohen, 1994; Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988). However, in general, higher scores indicate higher levels of perceived stress (Cohen, Kamarck & Mermelstein, 1983). The total score is calculated by determining the sum of all ten questions, with the four positively worded items (questions 4, 5, 7 and 8) reverse scored.

The PSS has demonstrated concurrent validity in college student populations showing positive correlations with measures of stressful life events, depressive symptoms, social anxiety, physical symptoms, and health care visits (Cohen, Kamarck, & Mermelstein,
Lee (2012) performed a review of articles evaluating the psychometric properties of the PSS. According to Lee (2012), the Cronbach’s alpha of the PSS-10 was >.70 in all 12 studies in which it was evaluated, with test-retest reliability of the PSS-10 performed in four studies, with all four studies exceeding the criterion of >.70.

**Brief Cope Inventory**

The second data collection instrument selected was the Brief Cope Inventory (BCI), which is an abbreviated version of the original 64 item COPE Inventory by Carver developed in 1989 (see Appendix D). Since its development, the abbreviated version has proven useful in health-related research and student populations (Carver, 1997). The shorter form was developed to minimize the time demands made on participants felt to already be experiencing stressors, such as life-threatening illness, natural disasters, and challenges such as difficult exams in student populations (Carver, 1997). The BCI consists of 14 scales, with two items per scale. Some scales were reportedly omitted from the original form because they were not found to be useful in previous work. Additional changes include the inclusion of a new scale on self-blame. The new scale was added, as it was felt to reliably predict poor adjustment under stress (Carver, 1997). According to Carver (1997), despite the scales being only two items each, their reliabilities all meet or exceed the value of .50 which is felt to be the minimally acceptable level (Meyer citing Nunnaly, 2001), and except for the sections on venting, denial, and acceptance, all exceed .60 for internal reliability. Carver identifies that there is “no such thing as an overall score” for the BCI. The intent of the scale is not to identify a passing score, determine “adaptive” or “maladaptive” composites, or generate an “overall” coping index, but rather to examine each score independently to determine the existence of a relationship to other variables (Carver, 1997). The BCI was chosen to allow a
comparison between the various coping strategies of individuals, as well as to and compare overall post-intervention scores to determine evidence of change in the group, as well as to allow comparison between smaller groups such as those who work, or men as compared to women.

An additional reason for selecting the BCI was that time required for completion of the questionnaire is minimal, which could potentially impact the number of students agreeing to participate. However, the reliability of the measurement tools used was felt to be equally important. Of concern was the low reported alpha levels for the scales measuring venting (α=.50), denial (α=.54), and acceptance (α=.57) (Carver, 1997). According to Meyer (2001, citing Nunnaly), the minimally acceptable level for coefficient alpha is 0.50, however, other sources report that an alpha below 0.70 suggests limited applicability (Polit, 2010). The study by Meyer (2001) reported the internal consistency of the BCI’s adaptive coping scales as being considerably higher than the maladaptive coping scale (0.81 vs. 0.48). Meyer (2001) reported that removing the two maladaptive coping scales (substance use and self-distraction), resulted in an increased alpha (0.57) to a minimally acceptable range.

To evaluate the psychometrics of the BCI, Carver (1997) evaluated data from 168 adult survivors of Hurricane Andrew. An exploratory factor analysis using an oblique rotation to allow correlations among factors revealed nine factors which account for 72.4% of the variance, with internal coefficient consistency of all scales acceptable, although some coefficients were between .50 and .60 (Carver, 1997). Since most of the BCI subscales were obtained from the original full Cope Inventory (Carver, Scheier & Weintraub, 1989), the reliability and validity of the original tool also deserves review. The original Cope scales reportedly “demonstrate strong convergent and discriminant validity as they correlate in
expectable but nonredundant patterns with theoretically related scales, including self-esteem, hardiness, Type A, trait anxiety and optimism” (Meyer, 2001, citing Carver, p. 268).

According to Carver et al., (1989) the Cope scales validity is further supported by the finding that scales do not strongly correlate with social desirability. The BCI has been widely used with successful translation into other languages reporting good psychometric properties with use regardless of the format (i.e., dispositional or situational) (Clark, Bormann, Cropanzano & James, 1995; Yusoff, Low & Yip, 2010).

The BCI is a non-copyrighted tool, easily available to any level of researcher, with the user encouraged to use any or all sections appropriate for the project needs. The BCI consists of 28 questions which are scored using a four-point Likert type scale with responses ranging from: 1 for “I haven’t been doing this at all”, two representing “I’ve been doing this a little bit”, three identifying “I’ve been doing this a medium amount”, to 4 for “I’ve been doing this a lot” (Carver, 1997, pp. 2-3). There are two questions on each of the following areas associated with coping: self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame (Carver, 2007). According to Carver (2007), there is no overall score, but rather each scale (composed of two questions on each of the above areas of coping behaviors) should be examined separately, with the relationship to other variables considered.

After obtaining informed consent and completing the demographics surveys, the PSS and BCI surveys were administered. The pre-and post-BCI and PSS, demographic surveys, and informed consents were provided by the project director. There were no costs or fees associated with obtaining permission to use either of the scales. Students completed the post-
intervention re-measurement survey (see Appendix G) eight-weeks after the intervention. This survey was anonymous, and results were shared with the school to assist in future program development.

**Evaluation of Outcomes**

As interpreted by Poe and White (2010), this step in the JHNEBPM serves a dual purpose. It serves as the impetus for quality improvement internally to improve practice, and accountability externally to decrease practice variations and allow comparison to benchmarks and make improvements (Poe & White, 2010). When evaluating outcomes, post-intervention data, which has been collected is compared to baseline data (pre-intervention) to determine whether the change (intervention) should be implemented (Newhouse, Dearholt, Poe, Pugh & White, 2007).

**Data.** All data were entered in SPSS 25 using password protection. All hard copy documents which include consent forms, the PSS, the BCI, and demographics sheets were kept in a locked cabinet in a secured area of the project director’s home. Following completion of the project, all data and consents will be maintained in a secured area of the project director’s home for a period of five years, after which time they will be destroyed.

**Descriptive statistics.** According to Terry (2015), when quantitative data have been collected, descriptive statistics can be generated. Descriptive statistics are used to provide information regarding the sample, and the measures used to describe that sample (Terry, 2015). Descriptive statistics include measures of central tendency and dispersion for interval and ratio variables and frequency distributions for ordinal and nominal variables (Terry, 2015). The descriptive analysis included variables such as: age ranges, marital status,
number of students employed, hours worked, and whether they are a returning or first-time student.

**Protection of Human Subjects**

According to Terry (2015), as identified in the Department of Health and Human Services Guidelines there are five categories considered exempt from IRB review. The proposed project met the criteria for the category: research/projects involving surveys and tests which are anonymous, and the participant is not able to be identified. IRB approval was received from both the project director’s school, and the participating school for the project, with the project deemed as exempt under 45 CFR 46.101 (2) (b) (see Appendices M and N). To maintain anonymity, all project documents were identified with the participant’s unique identifier – the last four digits of their student identification number. At no time did school personnel have access to any of the participants’ project documents since they were not provided with lists of attendees or student identification numbers. Additionally, instructors were not present during the Stress Management/Mentoring Inservice or eight-week re-measurement, to identify which students had participated in the project.

**Summary**

The measurement tools were selected based on previous use in similar studies, as well as the length of time required for survey completion. This population often feels time pressured, and if the initial or post-intervention measurement was anticipated to take more than five to ten minutes to complete, it was felt this would negatively impact participation, particularly attendance at the re-measurement meeting. The PSS has consistently demonstrated reliability and validity and has been used to measure the perceived levels of stress in similar populations. The BCI was selected to allow the ability to easily compare pre-
and post-intervention scores, as well as the fact that it has been effectively used in student populations. Outcomes for both the PSS and BCI were evaluated to examine each score/scale independently and examine its’ relationship to other variables by comparing the means between pre- and post- intervention scores to determine the magnitude of change.
Chapter 4. Data Analysis and Results

This DNP project was conducted at a Midwest community college. The community college has two locations and the PI used both of the college’s campuses. The satellite campus and the larger suburban main campus were the locations for this project. All students who participated in this project/intervention were enrolled in their first-semester of classes in the community college’s nursing program. Participants needed to have already completed program prerequisites and were required to be enrolled in their clinical rotation to be eligible for participation. Students re-taking their first-semester of the nursing program were also eligible to participate in this project.

All program registrants received notification of the schools’ morning boot camp/in-service. All in attendance were invited to participate in the intervention/project which followed the in-service. Of the nine in attendance at the colleges’ boot camp/in-service at the smaller campus, only five attended the informational session on the intervention/project, and of those five, all agreed to participate. At the eight-week re-measurement meeting, all five of the project participants attended the session. At the larger main campus presentation, 90 participants attended the boot camp/in-service. Of those participants, 46 attended the informational in-service session regarding the stress project. All of those completed demographics sheets, the PSS and BCI surveys, participated in learning the DB and GI intervention and were then assigned to a senior student mentor. Of the 46 total pre-intervention participants, 12 returned for the post-eight-week re-measurement. The final number of project participants who attended both the pre-intervention measurement, intervention in-service, and post-intervention re-measurement totaled 17 project participants.
Results/Evaluate Outcomes

Participants.

*Freshman student participants.* Seventeen students participated in this project during pre- and post-measurement. As noted in Table 1, 16 (94.1%) females and 1 (5.9%) male participated. Most participants were between the age of 18-28 years old, single, employed (14 worked < 36 hours per week, 2 > 37 hours per week,), did not have children, and had a varied household size. The number of pets ranged from zero to nine. Demographic information was collected to pair freshman students to mentors who had similar interests.

All participants were enrolled full-time in the community college’s nursing program. Most of the participants had no prior semester attempts, all attended boot camp and eleven had previously obtained degrees, with most of those being non-medical degrees \( (n = 6) \) and five being medical based degrees \( (n = 5) \). On contacting the mentor, none of those who returned for the post-intervention re-measurement reported not contacting the mentor at all, 15 contacted the mentors one to five times, none reported contacting the mentors from six to ten times, and two contacted the mentors eleven to 15 times.
Table 1

*Freshman Student Demographics and Reported Frequency of Contacting Mentors*

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**Senior mentor demographics and reported frequency of contact.** As seen in Table 2, a total of 20 senior student mentors participated in this project. All student mentor participants were female \((n = 20, 100.0\%)\). Most participants were between 18-28 years of age \((n = 10, 50\%)\). Most were single, employed (<12 hours per week), did not have children, and had a varied number of household residents which ranged from two to seven. The number of pets ranged from zero to three. Most participants had no prior semester attempts and had degrees, with the largest percentage of degrees being medical based degrees \((n=8, 40\%)\).

In addition to the presented demographic information about student mentors, the reported frequency of mentor contact is provided in Table 2. Of the 20 mentors, nine mentors were contacted 1-10 times, eight mentors were contacted 11-20 times, and three mentors were contacted more than 21 times. The time spent, overall, during these mentor-mentee contacts ranged from 75 to 870 minutes. The data on time spent with the mentee (e.g., freshman student) include the time involving all of the students the mentor was assigned to, so data also included those freshmen students who did not attend the post-intervention re-measurement but participated in the mentoring project throughout the first eight-weeks. These data were collected to identify how frequently the freshman students who attended the intervention utilized the mentors, regardless of whether they returned for post-measurement.
Table 2

Senior Mentor Demographics and Reported Frequency of Contact Record

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**Other degrees/certifications**

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**Prior semester attempts**

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**Number of times contacting/ contacted by student**

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**Total time/min. spent w/student**

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Data Analysis

One group of freshman nursing students was surveyed, with all having participated in the schools’ boot camp and Stress Management/In-service (DB, GI, and mentoring). The group was surveyed pre- and post-intervention. The post-intervention re-measurement took place eight weeks after implementation of the project.

Psychometrics. Multiple power analyses identified sample size prevented the use of inferential statistics, therefore the PSS and BCI results were analyzed and reported on using descriptive statistics. This occurred through comparison of pre-intervention mean scores and standard deviations, with post-intervention means and standard deviations. As recommended by Carver (1997) each scale of the BCI was examined separately to explain its’ relationship to other variables. Similarly, in keeping with Cohen, Kamarck and Mermelstein’s (1983) recommendations, pre-intervention PSS mean scores and standard deviation scores were compared with post-intervention scores to identify changes.

BCI. The BCI consists of 28 questions, which are scored using a four-point Likert type scale. Responses range from, 1 for “I haven’t been doing this at all,”, to 2 representing “I’ve been doing this a little bit”, with 3 for “I’ve been doing this a medium amount”, to 4 “I’ve been doing this a lot” (Carver, 1997, pp. 2-3). Each BCI scale is comprised of two questions (items) as follows: Self-distraction (Items 1 and 19), Active Coping (Items 2 and 7), Denial (Items 3 and 8), Substance Use (Items 4 and 11), Use of Emotional Support (Items 5 and 15), Use of Instrumental Support (Items 10 and 23), Behavioral Disengagement (Items 6 and 16), Venting (Items 9 and 21), Positive Reframing (Items 12 and 17), Planning (Items 14 and 25), Humor (Items 18 and 28), Acceptance (Items 20 and 24), Religion (Items 22 and
27), and Self-Blame (Items 13 and 26). Means and standard deviations for subscales of the BCI pre-intervention and eight-week post-intervention timeframe can be seen in Table 3.

Table 3

*Mean & Standard Deviation Scores for BCI Sub-scales Pre- and Post- Intervention*

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<td>1.42</td>
</tr>
<tr>
<td>Acceptance</td>
<td>6.06</td>
<td>1.71</td>
</tr>
<tr>
<td>Religion</td>
<td>4.41</td>
<td>2.09</td>
</tr>
<tr>
<td>Humor</td>
<td>4.24</td>
<td>2.02</td>
</tr>
<tr>
<td>Positive reframing</td>
<td>6.24</td>
<td>1.44</td>
</tr>
<tr>
<td>Self distraction</td>
<td>5.76</td>
<td>1.56</td>
</tr>
<tr>
<td>Active coping</td>
<td>5.71</td>
<td>1.26</td>
</tr>
</tbody>
</table>

Following Carver’s (1997) recommendation to examine the findings by identifying comparisons within the group, the BCI subscale scores pre-intervention when compared to
post-intervention demonstrated the following. The mean scores for the negative coping behaviors scales including: Denial, Substance Use, Venting, Self- Distraction, Behavioral Disengagement and Self Blame, all showed a decrease in mean scores at eight- weeks post-intervention (see Table 4). This indicates an overall decrease in the use of maladaptive coping responses.

The Denial scale showed a decreased mean score post-intervention indicating a lessening of saying to myself “this isn’t real” or “I’ve been refusing to believe this is happening” (pre- intervention M = 2.71, SD = 1.2; post- intervention M = 2.29, SD = 0.59). The Substance Use score in response to “I’ve been using alcohol or other drugs to help me get through it” decreased post-intervention (pre- intervention M = 2.65, SD = 1.54; post-intervention M = 2.59, SD = 1.18). The use of Venting as a coping behavior post-intervention in response to the question “I’ve been frequently expressing negative feelings” also showed decreased use post-intervention (pre- intervention M = 4.71, SD = 2.05; post- intervention M = 3.94, SD = 0.97). Interestingly the SD for this scale lessened considerably, showing that post-intervention more of the students demonstrated a lessening of this negative coping behavior. The Self- Distraction means post-intervention indicated a decreased tendency to work or perform other activities to take their mind off of things such as watching television, sleeping, shopping, daydreaming, reading, or working out (pre- intervention M = 5.76, SD = 1.56; post- intervention M = 5.12, SD = 1.27). The use of Behavioral Disengagement post intervention in response to the question “I’ve been giving up trying to deal with it” decreased (pre- intervention M = 3.71, SD = 1.40; post- intervention M = 3.18, SD = 1.42). The remaining maladaptive coping behavior of Self- Blame also decreased, in response to “I’ve been blaming myself for things that happened” (pre- intervention M = 4.65, SD = 1.84; post-
intervention $M = 4.00, SD = 1.41$). The decreased use of the above identified negative coping behavior was felt to be a positive finding since it can be interpreted as evidence the group was relying less on negative behaviors post-intervention.

The participants mean scores in the positive or adaptive behavior areas include: Use of Emotional Support, Use of Instrumental Support, Acceptance, Religion, Active Coping, Positive Reframing, Humor and Planning, all increased post-intervention with the exception of the scale for Planning. The post-intervention mean scores for the scale measuring “Planning” demonstrated a slight decrease (pre-intervention $M = 6.59$, post-intervention $M = 6.53$) from the pre-intervention score, possibly revealing the participants did not feel this skill had yet been successfully mastered.

The scale measuring Use of Emotional Support, was evaluated with the statements “I’ve been getting emotional support from others such as family and friends” and “I’ve been getting comfort and understanding from someone” showed an increase in use at the eight-week re-measurement (pre-intervention $M = 6.88$, SD = 1.58; post-intervention $M = 7.0$, SD = 1.06). For the scale Use of Instrumental Support, the statements “I’ve been getting help and advice from others” and “I’ve been trying to get advice or help from other people about what to do” showed an increase in use of this coping behavior (pre-intervention $M = 5.24$, SD = 1.79; post-intervention $M = 6.29$, SD = 1.61). The scale for Acceptance, was evaluated with the statements “I’ve been accepting the reality of the fact” and “I’ve been learning to live with the stress and program demands” showed an increase in the use of this coping behavior at eight-weeks (pre-intervention $M = 6.06$, SD = 1.71; post-intervention $M = 6.29$, SD = 1.45). The use of Religion as a coping strategy in response to the statement “I’ve been trying to find comfort in my religion or spiritual beliefs”, and/or “I’ve been
praying or meditating” also showed an increase in use (pre-intervention M = 4.41, SD = 2.09; post-intervention M = 4.94, SD = 2.14). The scale for Active Coping in response to the statement “I’ve been concentrating my efforts on doing something about the situation I’m in, trying to make the situation better, delegating tasks to others or asking for help” also showed an increased use by an increase in post-intervention scores (pre-intervention M = 5.71, SD = 1.26; post-intervention M = 6.94, SD = 1.09). The Positive Reframing scale was evaluated with the statement: “I’ve been trying to see it in a different light, to make it seem more positive”, or “I’ve been looking for something good in what is happening” also showed an increased use post-intervention (pre-intervention M = 6.24, SD = 1.44; post-intervention M = 6.65, SD = 1.32). Humor as a scale was evaluated using the statements “I’ve been making jokes about it, or making fun of the situation” also, showed increased use at the eight-week re-measurement (pre-intervention M = 4.24, SD = 2.02; post-intervention M = 5.00, SD = 1.77).

The only adaptive scale which did not show an increase in use at the eight-week re-measurement was for the coping scale, Planning. Planning, was measured in response to the statement “I’ve been thinking hard about what steps to take” and “I’ve been trying to come up with an effective strategy about what to do” showed a slight decrease in use at the post-intervention re-measurement (pre-intervention M = 6.59; post-intervention M = 6.53). Although this reflected an extremely small decrease from that of pre-intervention, the mentors reported this as being one area the freshman students frequently asked for recommendations in. This may demonstrate that participants realize they had not yet acquired sufficient mastery of this learned skill. The individual scales, along with whether there was a
measurable increase or decrease in use of behaviors for that behavior at eight-weeks post-intervention, can be seen in Table 4.

Table 4

*Brief Cope Inventory Scores at Eight-Weeks Post-Intervention Showing Increase/Decrease*

<table>
<thead>
<tr>
<th>Negative Coping Scales (Maladaptive)</th>
<th>Post Interv. Scores</th>
<th>Positive Coping Scales (Adaptive)</th>
<th>Post Interv. Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denial</td>
<td>Decreased</td>
<td>Use of Emotional Support</td>
<td>Increased</td>
</tr>
<tr>
<td>Substance Use</td>
<td>Decreased</td>
<td>Use of Instrumental Support</td>
<td>Increased</td>
</tr>
<tr>
<td>Venting</td>
<td>Decreased</td>
<td>Acceptance</td>
<td>Increased</td>
</tr>
<tr>
<td>Self Distraction</td>
<td>Decreased</td>
<td>Religion</td>
<td>Increased</td>
</tr>
<tr>
<td>Behavioral Disengagement</td>
<td>Decreased</td>
<td>Active Coping</td>
<td>Increased</td>
</tr>
<tr>
<td>Self Blame</td>
<td>Decreased</td>
<td>Humor</td>
<td>Increased</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positive Reframing</td>
<td>Increased</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planning</td>
<td>Slight Decrease</td>
</tr>
</tbody>
</table>

**PSS.** Participants were asked to rate questions about their feelings and thoughts during the previous month using a scale with scores ranging from 0 (never), to 1 (almost never), 2 (sometimes), 3 (fairly often), to 4 (very often) for questions 1, 2, 3, 6, 9 and 10 (Cohen, Kamarck, & Mermelstein, 1983). Questions 4, 5, 7 and 8 are the four positively stated items, which required reverse scoring. Reverse scored items were scored as: 0 (very
often), 1 (fairly often), 2 (sometimes), 3 (almost never), and 4 (never). The scores were
totaled, thereby resulting in a total score ranging from 0-40, with higher scores indicating
higher levels of perceived stress. From the combined total scores for the group, a pre-
intervention mean score was obtained, and compared to a post- intervention mean score (see
Table 5). According to Cohen and Williamson (1988), since the PSS is not a diagnostic
instrument, there are no cut- offs, but instead should be used for comparison between your
own sample with higher scores reflecting higher levels of stress.

Both pre- and post-intervention scores were within the range identified by Cohen,
Kamarck & Mermelstein (1983) as consistent with average reported levels of stress (scores >
20 are felt to indicate high levels of stress, with average scores around 13). The PSS pre-
intervention mean score of 18.94 (SD = 6.75) when compared to the post- intervention mean
score of 16.18 (SD = 6.47) reveals the freshman participants experienced a decrease in their
perceived level of stress at the eight- week re-measurement (see Table 5).

Table 5

*Summary of Mean and Standard Deviation Scores for the PSS Pre- and Post- Intervention*

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th></th>
<th>Posttest</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Dev</td>
<td>Mean</td>
<td>Std. Dev</td>
</tr>
<tr>
<td>PSS</td>
<td>18.94</td>
<td>6.75</td>
<td>16.18</td>
<td>6.47</td>
</tr>
</tbody>
</table>
Post intervention ranking survey. Implementing a stress management intervention using multiple interventional approaches makes it difficult to isolate which intervention had what degree of effect. To identify the intervention each individual participant found to be the most or least helpful, two post-test ranking survey questions were included, so that interventions could be ranked according to the participants perceived degree of helpfulness. The questions were asked to provide an increased understanding of the pre- and post-intervention survey results from the participants perspective.

At the eight-week post-intervention meeting, freshman participants were asked to rank the degree of helpfulness for each intervention (see Appendix G). Eleven participants reported that the student mentor experience was the most helpful option of the three stress management interventions. Four participants reported that the DB was the most helpful intervention and two participants noted that the GI was the most helpful intervention. Students reported the second most helpful intervention as being DB \((n=11)\), with mentoring and GI both reported equally as being the second most helpful \((n=3)\). The least frequently used intervention was reportedly GI \((n=12)\), with mentoring \((n=4)\), followed by DB \((n=1)\). The reported frequency of mentor contact with students (i.e., via text, email, or phone calls) ranged from four to 85 times (e.g., through text messages), with the range of minutes of interaction between mentor and mentee being from 45 to 870 minutes.

As part of the ranking survey, the students were also asked to identify if they found each of the three interventions to be: not helpful, only slightly helpful, fairly helpful, or very helpful. For DB, one participant reported feeling that DB had not been helpful \((n=1)\), four felt DB was only slightly helpful \((n=4)\), three felt DB had been fairly helpful \((n=3)\), and nine students reported DB as being very helpful \((n=9)\). For GI, five students reported they had
found the exercises to be not helpful \((n=5)\), three reported GI had been only slightly helpful \((n=3)\), four reported GI had been fairly helpful \((n=4)\), and five students reported that GI had been very helpful \((n=5)\). For the mentoring program, eleven students ranked the mentoring program as being very helpful \((n=11)\), three \((n=3)\) identified it as being only slightly helpful, three \((n=3)\) identified mentoring as being fairly helpful, and none \((n=0)\) reported the mentoring portion of the program as not being helpful.

One final question was asked to evaluate the mentoring program. When asked the question, “Were there any areas in which you found having a mentor to be particularly helpful?” 13 of the 17 participants reported that if provided the opportunity, they would participate in the mentorship program again. The narrative regarding the mentoring program can be seen in Table 6.
Table 6

*Narrative Comments from Freshman Participants Regarding the Mentoring Program*

<table>
<thead>
<tr>
<th>Comment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>“They were very encouraging and always open to answering questions.”</td>
<td></td>
</tr>
<tr>
<td>“Encouraging, it helped to know what to expect.”</td>
<td></td>
</tr>
<tr>
<td>“Yes… She answered all of my questions that I had and was willing to help me with anything that I needed.”</td>
<td></td>
</tr>
<tr>
<td>“She was a great support system and provided encouragement.” “I contacted my mentor 1-2 times per week, just because I really enjoyed talking to her.”</td>
<td></td>
</tr>
<tr>
<td>“The acclimation, and study tips/advice was helpful.”</td>
<td></td>
</tr>
<tr>
<td>“Definitely served as a cheerleader, she was very encouraging, particularly after quizzes and exams.”</td>
<td></td>
</tr>
<tr>
<td>“It was very helpful having a reliable resource to ask questions.”</td>
<td></td>
</tr>
<tr>
<td>“My mentor gave great suggestions on classwork.”</td>
<td></td>
</tr>
<tr>
<td>“My mentor was really helpful in helping me learn how to cope with nursing school.”</td>
<td></td>
</tr>
<tr>
<td>“It was very helpful having someone to talk to that had just gone through what I was going through right now.”</td>
<td></td>
</tr>
<tr>
<td>“My mentor provided me with great time saving tips on what books to take to which class, and how to study for the different classes.”</td>
<td></td>
</tr>
<tr>
<td>“Having someone encourage me and available to ask questions was really helpful.”</td>
<td></td>
</tr>
<tr>
<td>“Very helpful having a resource during the first week confusion.”</td>
<td></td>
</tr>
</tbody>
</table>

The mentors were required to log the frequency of times contacted by freshman students to allow a record of time spent overall as credit toward service hours for graduation. Most of the seniors documented the frequency and time spent, but only briefly recorded the
reason for being contacted. The reasons provided were fairly consistent, with the primary focus being for information regarding recommendations for effective study strategies, particularly for tests, quizzes, and clinical lab checkoffs, with less frequent requests for support related to family stressors. The range of reasons provided can be seen in Table 7.

Table 7

*Comments from Senior Mentors’ Logs Identifying Reason Contacted by Freshman*

<table>
<thead>
<tr>
<th>Reason Contacted by Freshman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions regarding tips on study skills for tests/quizzes.</td>
</tr>
<tr>
<td>Questions regarding how to study and prepare for lab checkoffs.</td>
</tr>
<tr>
<td>Questions regarding supplies/asked for organizational recommendations.</td>
</tr>
<tr>
<td>Questions regarding how to log onto online assignments/videos (technical questions regarding online assignments).</td>
</tr>
<tr>
<td>Questions on how to successfully complete the program.</td>
</tr>
<tr>
<td>Requested advice on clinical rotations.</td>
</tr>
<tr>
<td>Needed emotional support, kids fighting/overwhelmed.</td>
</tr>
<tr>
<td>Needed emotional support, complaining of extreme anxiety particularly following exams/quizzes.</td>
</tr>
</tbody>
</table>

**Summary**

A combined total of 66 students (46 freshman students and 20 senior student mentors) participated in the project intervention/in-service to improve one’s stress management skills. As seen in the mentor’s logs, although the mentor portion of the program was utilized by
numerous students, only 17 returned for post-intervention re-measurement. Descriptive results indicated that the nursing students reported less stress post-intervention as compared to pre-intervention. In addition, all of the nurses reported a decrease in negative coping response and an increase in positive coping responses (except for planning) post-intervention. Eleven participants reported that the student mentor experience was the most helpful option of the three stress management interventions. Four participants reported that the DB was the most helpful intervention and two participants noted that the GI was the most helpful intervention. Eleven of the 17 students ranked the mentoring program as being very helpful (n=11), three (n=3) identified it as being only slightly helpful, three (n=3) as fairly helpful, and none (n=0) reported the mentoring portion of the program as not being helpful. The reasons that the freshmen students contacted the senior mentors were primarily related to information regarding recommendations for effective study strategies, particularly for tests, quizzes, and clinical lab checkoffs, with less frequent requests for support related to family stressors.
Chapter Five

Discussion

This EBP project was designed to answer the PICOT question, “What are the effects of a stress management intervention/in-service program (consisting of DB, GI, and assignment to a senior student mentor) on first-semester nursing students in a community college nursing program?” To assess the effectiveness of the interventions, several evaluative tools were used. The PSS was used to evaluate students’ perceived levels of stress and was administered both pre- and post-intervention.

The PSS does not have cutoff scores to determine classifications for high, medium or low levels of stress, according to Cohen & Janicki-Deverts (2012), however, the higher the PSS score, the higher the perceived level of stress. The intent of the PSS as a measurement tool is to allow comparisons between those in the same sample group. When viewed from this perspective, there was a noted decrease in scores from pre-intervention (18.94, SD 6.75) to post-intervention (16.18, SD 6.47) for the groups mean scores. This decrease was in spite of the fact the eight-week re-measurement occurred immediately following final exams.

The BCI measures 14 different areas of coping behaviors, asking two questions for each area of behaviors (scales). Unlike the PSS, rather than determining an overall score, the BCI scores for each scale are intended to be evaluated independently to identify the existence of a relationship to other variables. The BCI includes six coping behaviors (scales) which would be considered to be maladaptive (Self Distraction, Behavioral Disengagement, Self-Blame, Venting, Denial and Substance Abuse.

Post-intervention the BCI mean scores for all of the maladaptive scales (Denial, Substance Use, Self Blame, Behavioral Disengagement, Venting, and Self Distraction)
demonstrated decreased use in all six areas. The Denial scale decreased from a mean score of 2.71 to 2.29. The Substance Use scale decreased from a mean of 2.65 to 2.59. The mean score for Blame decreased from 4.65 to 4.00. Behavioral Disengagement decreased from 3.71 to 3.18. The mean score for Venting decreased from 4.71 to 3.94 and Self-Distraction reduced from 5.76 to 5.12. Despite recently beginning a nursing program known to cause high levels of stress and anxiety, the decreased scores for all six of the maladaptive areas indicated that none of the project participants had increased the use of negative coping behaviors. Although it would be difficult to attribute this finding to one particular portion of the stress management intervention, it was considered be a positive finding.

The remaining eight scales of the BCI measured coping behaviors and are considered to be more adaptive behaviors. These scales include: Active Coping, Positive Reframing, Self-Blame, Humor, Use of Emotional Support, Use of Instrumental Support, Acceptance, Religion and Planning. The post-intervention BCI scores revealed that seven of the eight scales related to the use of positive coping behaviors demonstrated an increase in use at eight-weeks post-intervention. The only adaptive coping behavior which showed a small decrease in use (pre-intervention $M = 6.59$, post-intervention $M = 6.53$), was for the scale “Planning”.

When faced with the stressors unique to a two-year nursing program (i.e. learning to balance the demands of work, school, family, and increased financial stressors), it is not unusual to experience a knowledge gap regarding how to meet all of the new demands in addition to ones’ normal responsibilities. The senior mentor logs identified the area of time management/planning as often being the reason for contacting the mentor, indicating that participants were aware of the importance of learning new time management/planning.
strategies. The fact that project participants were actively addressing this area with the
mentors, indicated good use of the resources available to them.

One area of coping behaviors (identified by comparing pre- to post- intervention BCI
scores) which revealed a considerable increase in use post- intervention was for the
“Adaptive Coping” scale (pre- intervention 5.71; post- intervention 6.94). This represents an
increased willingness to focus efforts on doing things about situations such as developing a
plan or schedule and trying to make the situation better by delegating to others or asking for
help when feeling overwhelmed. This area demonstrated the greatest improvement in scores
post- intervention followed by the Use of Instrumental Support. The remaining adaptive areas
(Use of Emotional Support, Positive Reframing, Humor, Acceptance and Religion) all
showed improvement, however, to a lesser extent than the above identified area (Active
Coping).

The scale for “Use of Instrumental Support” identified an increase in the students’
acquisition of external support (e.g., instructors, mentors, or others) between the pre-
intervention and eight weeks post-intervention with mean scores increasing (pre- intervention
5.24 to 6.29 post- intervention) at eight- weeks. Two factors that may have contributed to the
increase in use of this adaptive coping strategy is that at the pre-intervention timeframe, the
participants had not started the nursing program and were just assigned to a mentor.
Therefore, following the intervention, at which point the participants had started the nursing
program, the participants accessed their assigned mentors for support in reference to issues
regarding the nursing program. The narrative comments show that the participants contacted
the mentors for support regarding classes, courses, books and other issues related to the
nursing program.
The remaining adaptive subscales (Positive Reframing, Humor, Religion, Acceptance, and Use of Emotional Support) also demonstrated an increased mean score at the eight-week re-measurement. Post-intervention scores for “Positive Reframing” increased from a mean of 6.24 to 6.65 indicating participants tendency to look for positive aspects in their experiences and focus on the rewards of completing the program. The use of “Humor” increased from a pre-intervention mean of 4.24 to 5.00, indicating an increase in the participants’ tendency to make jokes and be able to make fun of the current situation. The subscale for use of “Religion” also demonstrated an increase from a mean of 4.41 pre-intervention to 4.94 at the eight-week re-measurement, indicating an increase in the students use of prayer, meditation, or finding comfort in religion or spiritual beliefs. The “Acceptance” subscale scores also increased from a pre-intervention mean score of 6.06 to 6.29 post-intervention, indicating an increase in the students’ tendency to accept the reality of fact and learning to live with the stress and program demands. The Use of “Emotional Support” mean score increased from 6.88 to 7.00 post intervention indicating the students’ perceptions of receiving understanding and emotional support from others such as family and friends had increased post-intervention.

When multiple stress interventions are implemented simultaneously, it becomes difficult to attribute causation to a specific intervention. In order to identify which intervention participants perceived as being the most helpful, students were asked to rank the order of effectiveness for the three interventions. Eleven of the 17 students identified the mentoring experience as being the most helpful. For the additional two stress interventions, students reported DB as being the second most helpful intervention, with GI the least helpful/least frequently used.
Participants also rated the degree of helpfulness for each of the three interventions as being: not helpful, only slightly helpful, fairly helpful, and very helpful. On rating the degree of helpfulness, eleven participants rated the mentoring program as being very helpful, three rated the mentoring program as only slightly helpful, three rated the mentoring program as being fairly helpful, and no students stated that the program was not helpful. The freshman student’s perception of the degree of helpfulness of the mentoring program as the highest rated of the three interventions was supported by the frequency of contact reported in the senior mentors logs. It could be argued the use of a mentor served as an effective instrumental support, especially since eleven of 17 participants reported that mentoring was the most helpful intervention. Peltz and Raymond’s (2016) study on student mentoring of ADN students, concluded that the stronger the level of psychological support the students reported experiencing in the mentoring relationship, the more likely they were to believe in their ability to succeed in the program. As seen in the student narratives regarding their mentoring experience the mentors were frequently utilized. When attempting to identify factors that contributed to the decreased PSS post-intervention scores, it is important to review the student rankings of the three interventions.

The improved scores of the BCI post-intervention for seven of the eight positive scales (Positive reframing, Use of Emotional Support, Use of Instrumental Support, Acceptance, Religion, Humor, and Active Coping, as well as the improved scores (defined by the decreased use of maladaptive/negative coping behaviors) for all six of the negative scales (Denial, Substance Use, Behavioral Disengagement, Self Blame, Self Distraction and Venting), reflects an increased use of adaptive coping behaviors and a decreased use of maladaptive coping behaviors during a period of time when students were considered to be
experiencing increased levels of stress. The descriptive findings from the BCI and PSS, in addition to the post-intervention student ranking surveys reporting on the participants perceived benefits of the individual stress interventions, supports the stress interventions as having positively impacted the participants. The improved PSS and BCI scores, in addition to post-intervention rankings reporting the mentoring project as the highest of the three interventions, is consistent with the findings of Regehr et al. (2013) in the review of interventions to reduce stress in university students.

Regehr, Glancy and Pitts (2013) review of stress interventions in university students found that cognitive, behavioral and mindfulness interventions were associated with decreased symptoms of anxiety in university students. In Galbraith and Brown’s (2011) review of studies that incorporated techniques addressing: intensity or number of stressors, cognitive reappraisal of potential stressors and learning more effective coping strategies, all demonstrated improvements across a range of measures particularly in state/trait anxiety as well as improved attitudes toward stress, reported levels of stress and the number of stressors reportedly experienced. The findings from Galbraith and Brown’s (2011) review identified that evidence suggests a combination of cognitive reappraisal and relaxation appears to be required to result in improvements in reported levels of stress.

However, consistent with the problems encountered in Galbraith and Brown’s (2011) review of stress reducing interventions on student nurses, the small sample size used in this study impacted the findings in that they precluded the use of inferential statistics. According to Galbraith and Brown (2011, ) the null findings obtained by many of the reported studies in their review were likely due to low statistical power, thereby, leaving the actual effectiveness of many of the interventions uncertain. Low statistical power from insufficient sample size in
nursing research is frequently encountered and increases the risk of “finding nonsignificant results” (p. 367) even when the research hypotheses are correct (Polit & Sherman, 1990). The small size of many nursing classes, appears to be a negative factor which has proven difficult to overcome when implementing research or stress management projects in this population. This is likely why systematic reviews frequently recommend focusing future research on the long-term impacts of stress management/prevention programs using sound methodological designs to address such barriers as well as larger sample sizes.

**Limitations**

As with all projects, there are various limitations that need to be addressed. First, the findings of this project was limited due to the relatively small sample size. The project was first presented at a small, rural campus with only 21 students enrolled for the semester. All first semester nursing students were invited to attend the schools boot camp/in-service, and received letters informing them that attendance was “strongly encouraged.” Unfortunately, the temperature was sub-zero on the day of the in-service, and only nine students were in attendance. Of the nine students who attended the in-service, only five students elected to participate in the intervention/project. The sample size, although a factor outside of the control of the project director, necessitated repeating the project at the larger campus at the same school. However, since both campuses’ boot camps had taken place on the same day, this required waiting until the following semester to repeat the project at the larger campus. Performing the project at a different campus required additional IRB approval, as well as working with different faculty to assist in successfully implementing the project.

The small sample size may have resulted in limitations in normal distribution and generalizability. For example, the number of males entering the field of nursing has increased
to 9.0 percent in 2018 (Kaiser Family Foundation, 2019, p. 109); however, despite five males attending the pre-intervention testing and intervention in-service, only one male student returned for post-intervention testing. Therefore, due to lacking male participation, the results obtained may not be representative of the general population of nursing students.

Another limitation of this study was the eight-week re-measurement timeframe. If the project had taken place over a longer period of time, the addition of a qualitative component would have provided more information on the participants’ individual perceptions of the different interventions. If such a small number of participants had been expected, the project would have been designed to include both quantitative and qualitative data analysis.

Since the sample self selected, there is also the possibility of participant bias, since those volunteering may be more interested in self help modalities or may be more aware of their perceived stress level. As a result, those who volunteer to participate may not be a true representative sample of the overall population (Terry, 2015). Also, the sample may not have been representative of the general population, since those entering a rigorous nursing program may be experiencing higher levels of stress than found in the general student population. The potential for bias in convenience sampling is the reason it is felt to be the weakest form of sampling (Terry, 2015, citing LoBiondo-Wood & Haber). However, to allow all of the students the opportunity to participate, it was felt unethical to use a different type of sampling.

Additionally, the lack of a control group could have potentially prevented the identification of any positive effect of the mentoring program. As demonstrated in a study by Kim et al. (2013), the positive effect of the mentoring program did not become evident until the groups’ final scores were compared to the control group who had not participated in the
intervention. Since it is difficult to predict whether students’ stress levels increase or decrease at different times throughout the semester, a more reliable indicator of program success would be to compare the scores over different periods of time, against the scores of the control group (Kim et al., 2013; Terry, 2015). This comparison may result in a more accurate measure of the success of interventional strategies; however, the use of a control group was deemed as unethical, for this project, due to the documented benefits of the interventions used.

An additional factor affecting the post-intervention re-measurement was that the survey was scheduled to take place eight-weeks post-intervention. Unfortunately, this timeline coincided with final exams. As a result of this timeline, participants took the re-measurement survey immediately following midterm exams. Following the re-measurement, several participants reported that they felt they did not do well on their midterm exams, which may have impacted post-intervention scores/reporting. This feeling most likely affected the participants’ reported stress levels during the time of re-measurement. If re-measurement had taken place the week before exams, scores may have been different. Unfortunately, using a different timeline would have resulted in re-measurement occurring at seven weeks, which was not considered in project development. Since eight-weeks was determined as the minimum amount of time necessary to observe/note decreased stress levels, the re-measurement was performed adhering to the timeline initially proposed. If this project was repeated, the time would need to be revised to allow for re-measurement to be offered online, several days prior to exams, thus offering students the opportunity to take the re-measurement at their convenience, in a less stressful environment. Moving the time of the re-
measurement may have additionally resulted in more students participating in the re-measurement.

A further limitation of this project is that project participants may have experienced some unknown, extraneous stressors or adverse life events within the past eight-weeks, which contributed to increased levels of stress and were reflected on the PSS and BCI but were unknown to the project director. The confounding factors were not measured throughout the project. The one negative stressor that the project director was aware of (taking a two-hour mid-term immediately prior to the re-measurement) could not be adjusted for since the eight-week re-measurement was required. The project director believed it would be unlikely for students to return to campus to participate in the re-measurement if other school related events were not scheduled on the same day. Scheduling the re-measurement to occur on a day which would require the participants to come to campus for the re-measurement alone would likely have further reduced the number participating in the post-intervention re-measurement, since it is believed few participants would have come for the sole purpose of participating in the post-intervention re-measurement.

An additional consideration to keep in mind was that once the program began, the students may have experienced a lessening of stress from gradual acclimation to the program that would have occurred regardless of the presence or absence of the intervention. Another possibility was that of a Hawthorne effect. It would be reasonable to consider that participation in an intervention designed to reduce stress, may have resulted in those behaviors because it was the expected outcome of the project. A systematic review of the Hawthorne effect undertaken by McCambridge, Witton, and Elbourne (2014), identified that “consequences of research participation for behaviors being investigated have been found to
exist in most studies,” however, little is known about “their mechanisms of effects, or their magnitude” (p. 276).

Another limitation that may have been present during this project was that of participant bias. This effect may have impacted students’ responses. Students were aware that the project director’s goal was to understand the impact of stress reduction techniques on beginning nursing students. Given the student’s knowledge regarding the project’s purpose, it is possible that participant bias may have been present. Participant bias occurs when those involved in an experiment respond in a manner they believe is in keeping with the response desired by the researcher (Leedy & Ormrod, 2010; Participant bias, n.d.), Thus, the participant is not responding how they normally would, but in the manner they believe is expected (Leedy & Ormrod, 2010; Participant bias, n.d.).

An additional limitation is the variability in the use of the stress reduction techniques. It is unknown how often each freshman student used the stress reduction techniques of DB and GI. In addition, it is unknown how effectively the students used the techniques.

One final limitation to consider is the differing use of the mentors by the freshman participants. One student contacted the mentor frequently (85 times), and although the frequency of responses was not analyzed for the existence of any correlation to lower levels of reported stress post- intervention, such an outlier may have pulled the intervention artificially toward significance. A further recommendation would be to repeat the project using periodic monitoring, and/or establishing parameters equalizing the frequency of contact.

Despite the known limitations of use of this type of design, it was felt to be the only practical means of identifying the impact of the planned intervention. The time allowed for
education of the senior students, pre-testing and application of the intervention in the freshman group of students, selection and assignment of mentors, and re-testing of the freshman students, all needed to occur within an eight-week period. In consideration of the eight-week time constraint, it was felt to be impractical to consider the use of additional methodologies such as qualitative analysis. However, a narrative statement of the degree of helpfulness of the mentoring program was included on the post-intervention survey (see Appendix G).

**Implications for Nursing and Education**

The problems encountered in this project were consistent with those found in similar studies and systematic reviews examining interventions to reduce stress in student nurses (Galbraith & Brown, 2010; Guillaumie, Boiral & Champagne; 2016; Turner & McCarthy; 2017). Small study samples and differences in measurement methods make comparison difficult and increase the possibility of inaccurately accepting null findings (Polit, 1990). Consistent with the findings of similar studies/projects, the outcomes of this project demonstrate the need for further research on stress reduction and effective methods of implementing stress reduction interventions in two-year ADN nursing students.

The Bureau of Labor Statistics (2017) predicted that the total number of nurse openings, by 2024, will be 1.09 million. An associate degree in nursing has been long considered the benchmark credential for entry into the nursing profession (Institute of Medicine, 2010). To ensure a sufficient number of two-year nursing school graduates to meet the anticipated needs of society, nursing school programs must increase their efforts to assist students to achieve program completion. One way to decrease attrition is through reducing the known stressors associated with challenging nursing programs (Fraher et al., 2010;
Jeffreys, 2007a, O’Donnell, 2009). While stress reduction does not equate program completion among nursing students, proper student preparation, through using stress reducing techniques and strategies, can help students during challenging times throughout programs. Helping students to develop stress reducing strategies, to meet the challenges of such rigorous programs, may impact attrition rates (Galbraith & Brown, 2011; Jeffreys, 2007a; Jeffreys, 2007b; Jeffreys, 2015; Melincavage, 2011; Moscaritolo, 2009). This may be due to the fact that beginning nursing students according to Jeffreys (2015) are at high risk for having unrealistic expectations of their ability to manage academic factors. Programs such as the Nursing Universal Retention and Success model (NURS) by Jeffreys (2015) impact attrition by addressing the multidimensional factors known to increase retention, with an important aspect of this model being peer mentoring. Peer mentoring is considered important as a support network for beginning students, since students’ persistence in programs is more influenced by interactions with peers than faculty (Ford, 2015; Peltz & Raymond, 2015). High stress levels, which are encountered during the first year of practice, commonly contribute to job changes, as well as one’s departure from the profession (Mazurek-Melnyk, Hrabe, & Szalacha, 2013). Adequate preparation helps nursing students to further handle stressors that are encountered throughout one’s nursing career, thereby resulting in higher levels of satisfaction within the nursing profession (Thiesen & Sandau, 2013).

While the impact and effects of stress have been studied a great deal in nursing schools, few programs include stress management techniques, resources, etc. in curriculum offerings (Clark & Pelici, 2011; Moscaritolo, 2009). Although there are many benefits associated with stress management techniques, it is difficult to correlate any specific technique to decreased stress (Galbraith & Brown, 2011; Turner & McCarthy, 2015). Using
multiple techniques may be a beneficial option to decrease stressors, especially since users could select the best technique for their needs and to address the situation at hand. Although it is difficult to determine which stress reducing strategy is most useful (Galbraith & Brown, 2011; Turner & McCarthy, 2017), studies involving a combination of methodologies have reported a significant decrease in anxiety/stress (O’Brien, 2013; Regehr et al. 2013; Turner et al. 2017).

Supportive personnel, who allow students to talk about experiences, as well as vent/complain, can reduce/relieve stress and promote strong coping skills (Chernomas & Shapiro, 2013, Reeve et al., 2013). By offering a mentor-mentee support system, nursing programs can provide support to each student. Assuming that students have access to support and resources for support outside of the learning environment is problematic. If nursing programs want to increase retention rates, it is necessary that programs ensure that support is available, particularly since it has been identified that a student’s intent to remain in a program, is more strongly influenced by their peers than by faculty (Peltz & Raymond, 2016). Assisting students to develop coping strategies sufficient to manage the known stressors associated with successful completion of nursing programs should be part of curriculum development.

Additional studies using a large sample size, as well as longitudinal studies conducted by nursing programs, would be beneficial to identify which types of interventions are most effective, particularly when multiple interventions are used among members of the same population.
Recommendations for Future Research

While there has been much progress regarding the study of stress among nursing students, there are limitations associated with these studies. There are great variations in study designs, small sample sizes, and conflicting types of data collection methods, which makes study comparisons difficult (Galbraith & Brown, 2011; Regehr et al., 2013; Turner & McCarthy, 2017). Consistent with previous research findings (Galbraith & Brown, 2010; Turner & McCarthy, 2017), the small sample of this project limited the generalizability of the findings. Future studies utilizing a large sample size, as well as a variety of stress reducing techniques, would be beneficial to conduct. In addition to issues with sample size and use of various techniques, there have been few large RCTs conducted, and to date, no longitudinal studies regarding whether interventions teaching stress management were effective over the long term (Galbraith & Brown, 2011; Turner & McCarthy, 2017). There is still a considerable need for studies that utilize stronger designs. Furthermore, additional studies are needed to determine what interventions are the most effective and to evaluate whether stress interventions taught early in the program result in higher rates of program completion or lower attrition during the early years of nursing practice.

Report Outcomes to Stakeholders

As identified in the JHNEBP model, the success of evidence-based practice does not end upon completion of the project (Poe & White, 2010). The successful distribution of project results is considered a vital part of the JHNEBP model process (Poe & White, 2010). As one of the final steps of the translation phase of the model, the following recommendations are made based upon the project outcome/findings.
Based on the evaluations from individuals who participated in this intervention, the project director recommends that faculty members continue to introduce evidence-based stress interventions into the curriculum, prior to program entry. Through using early interventions and adopting a proactive approach, students will likely be encouraged to utilize the intervention that is most appropriate for their situation. Additionally, given the positive feedback received from mentoring program participants, the project director recommends that the mentoring program be permanently adopted. The community college would benefit from using senior nursing students as mentors. When viewed from the students’ perspective, the mentor program appears to have benefited both freshman and senior student participants.

**Conclusion**

Today’s nursing students face extreme stressors when encountering technologically difficult programs, which simultaneously involve clinical and didactic areas of study. For the associate degree nursing student, these challenges are undertaken while also managing personal responsibilities (i.e., work, family, etc.). In order to successfully progress in one’s nursing program, as well as within the nursing profession, individuals need to effectively manage increased levels of stress. Using a proactive approach to develop effective stress management strategies would be beneficial, especially during the beginning of one’s nursing program journey (Chernomas et al., 2013; Demir et al, 2014; Ford, 2015).
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Appendix A

Johns Hopkins Nursing Evidence-Based Practice Model

Activities

Practice Question:
- Step 1: Recruit interprofessional team
- Step 2: Develop and refine the EBP question
- Step 3: Define the scope of the EBP question and identify shareholders
- Step 4: Determine responsibility for project leadership
- Step 5: Schedule team meetings

Evidence:
- Step 6: Conduct internal and external search for evidence
- Step 7: Appraise the level and quality of each piece of evidence
- Step 8: Summarize the individual evidence
- Step 9: Synthesize overall strength and quality of evidence
- Step 10: Develop recommendations for change based on evidence synthesis
  - Strong, compelling evidence, consistent results
  - Good evidence, consistent results
  - Good evidence, conflicting results
  - Insufficient or absent evidence

Translation:
- Step 11: Determine fit, feasibility, and appropriateness of recommendations(s) for translation path
- Step 12: Create action plan
- Step 13: Secure support and resources to implement action plan
- Step 14: Implement action plan
- Step 15: Evaluate outcomes
- Step 16: Report outcomes to stakeholders
- Step 17: Identify next steps
- Step 18: Disseminate findings

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### Appendix B

**Johns Hopkins Nursing Evidence-Based Practice**

Evidence Level and Quality Guide

<table>
<thead>
<tr>
<th>Evidence Levels</th>
<th>Quality Guides</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level I</strong></td>
<td></td>
</tr>
<tr>
<td>- Experimental study, randomized controlled trial (RCT).</td>
<td><strong>A- High quality:</strong> Consistent, generalizable results, sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence.</td>
</tr>
<tr>
<td>- Systematic review of RCTs, with or without meta-analysis.</td>
<td></td>
</tr>
<tr>
<td><strong>Level II</strong></td>
<td></td>
</tr>
<tr>
<td>- Quasi-experimental study.</td>
<td><strong>B- Good quality:</strong> Reasonably consistent results; sufficient sample size for the study design; some control, fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence.</td>
</tr>
<tr>
<td>- Systematic review of a combination of RCTs and quasi-experimental, or quasi-experimental studies only, with or without meta-analysis.</td>
<td></td>
</tr>
<tr>
<td><strong>Level III</strong></td>
<td></td>
</tr>
<tr>
<td>- Non-experimental study.</td>
<td><strong>C- Low quality or major flaws:</strong> Little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn.</td>
</tr>
<tr>
<td>- Systematic review of a combination of RCTs, quasi-experimental and non-experimental studies, or non-experimental studies only, with or without meta-analysis.</td>
<td></td>
</tr>
<tr>
<td>- Qualitative study or systematic review with or without a meta-synthesis.</td>
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Appendix B (Continued)

Johns Hopkins Nursing Evidence-Based Practice

Evidence Level and Quality Guide

<table>
<thead>
<tr>
<th>Evidence Levels</th>
<th>Quality Guides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level IV</td>
<td>A- <strong>High quality</strong>: Material officially sponsored by a professional, public, private organization, or government agency; documentation of a systematic literature search strategy; consistent results with sufficient numbers of well-designed studies; and definitive conclusions; national expertise is clearly evident; developed or revised within the last 5 years</td>
</tr>
<tr>
<td></td>
<td>B- <strong>Good quality</strong>: Material officially sponsored by a professional, public, private organization, or government agency; reasonably thorough and appropriate systematic literature search strategy; reasonably consistent results, sufficient numbers of well-designed studies; evaluation of strengths and limitations to included studies with fairly definitive conclusions; national expertise is clearly evident; developed or revised within the last 5 years</td>
</tr>
<tr>
<td></td>
<td>C- <strong>Low quality or major flaws</strong>: Material not sponsored by an official organization or agency; undefined, poorly defined, or limited literature search strategy; no evaluation of strengths and limitations of included studies, insufficient evidence with inconsistent results, conclusions cannot be drawn; not revised within the last 5 years</td>
</tr>
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Appendix C

Perceived Stress Scale (PSS)

Perceived Stress Scale - 10 Items
Instructions: 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. Please do not sign your name to this survey, it is strictly anonymous and completing the form is considered informed consent for participation.

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

5. In the last month, how often have you felt that things were going your way?
   ___4=never ___3=almost never ___2=sometimes ___1=fairly often ___0=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?
   ___4=never ___3=almost never ___2=sometimes ___1=fairly often ___0=very often

8. In the last month, how often have you felt that you were on top of things?
   ___4=never ___3=almost never ___2=sometimes ___1=fairly often ___0=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 the following articles:


Did you attend the January Student Success in-service?: __________________

Last four digits of Student ID#:________________________

Today’s date:________________________
Appendix D

The Brief Cope Inventory

Brief COPE
The items in this survey deal with ways you've been coping with the stress in your life. There are many ways to try to deal with problems. Obviously, different people deal with things in different ways, but I'm interested in how you've been trying to deal with the stressors associated with returning to a rigorous academic program. Each item says something about a way of coping. I want to know to what extent you've been doing what the item says, how much or how frequently. Don't answer based on whether it seems to be working or not—just whether you're doing it. Use the following response choices. Try to rate each item separately in your mind, apart from the others. Make your answers as true FOR YOU as you can.

1 = I haven't been doing this at all.
2 = I've been doing this a little bit.
3 = I've been doing this a medium amount.
4 = I've been doing this a lot.

1. I’ve been turning to work or other activities to take my mind off things. _______
2. I’ve been concentrating my efforts on doing something about the situation I'm in, such as developing a plan/schedule. _______
3. I’ve been saying to myself “this isn't real, or maybe this was a mistake, or I could always quit.” _______
4. I’ve been using alcohol or other drugs (including smoking) to make myself feel better. _______
5. I’ve been getting emotional support from others such as family and friends. _______
6. I’ve been giving up trying to deal with it. (Such as by either procrastinating or just ignoring the difficult parts of the program). _______
7. I’ve been acting by trying to make the situation better. (Such as by delegating tasks to others or asking for help when feeling overwhelmed). _______
8. I’ve been refusing to believe this is happening. (Not addressing the demands of the program). _______
9. I’ve been saying things to let my unpleasant feelings escape. (Such as frequent negative verbalizations, or just being in a bad mood). _______
10. I’ve been getting help and advice from other people. (Such as by my instructors or senior student mentor). _______
11. I’ve been using alcohol or other drugs to help me get through the increased stress. _______
12. I’ve been trying to see it in a different light, to make it seem more positive. (Such as focusing on how rewarding completing the program will be). _______
13. I’ve been criticizing myself. (Such as for not handling the demands of the program/stress effectively). _______
14. I’ve been trying to come up with an effective strategy about what to do. _______
15. I’ve been getting comfort and understanding from someone. __________
16. I’ve been giving up the attempt to cope. (Just accept that I’m going to be stressed for the next few years). ______
17. I’ve been looking for something good in what is happening. ______
18. I’ve been making jokes about it. __________
19. I’ve been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping. (Or something physical such as working out). __________
20. I’ve been accepting the reality of the fact. (That this is going to be it for the next two years). ______
21. I’ve been expressing my negative feelings. __________
22. I’ve been trying to find comfort in my religion or spiritual beliefs. ______
23. I’ve been trying to get advice or help from other people about what to do. (Such as how to be successful in this program). __________
24. I’ve been learning to live with it. (The stress and program demands). ______
25. I’ve been thinking hard about what steps to take. (Such as how to be successful in this endeavor). __________
26. I’ve been blaming myself for how things are occurring. (Such as how I’m handling this). ______
27. I’ve been praying or meditating. __________
28. I’ve been making fun of the situation. (Or handling it with humor). __________


Last four digits of Student ID#: ______________________________

Today’s Date: ____________________
Appendix E

Demographic Survey for First Semester LCCC Students

Last four digits only of: Student ID #__________________________

Age:
18-28 (1) ____________ 29-39 (2) ____________ 40-65 (3)___________

Marital Status:
Single (1) ____________ Married (2) ____________ Widowed (2) ______
Divorced (3) __________ Separated (3) ____________

Gender: ________________
* above numbers in parenthesis are for matching to mentors with similar characteristics and
coding for data analysis

Hours worked per week, if employed: ____________ will be used to match
students
Number of children in household: ____________
Number of other persons in household: ____________
Pets: _______________________________________
Number of hours currently enrolled: ____________
Any previous attempts completing the semester currently enrolled in:
__________________________________________
Other degrees or certifications held:
__________________________________________________________________

I would like to be assigned a student/mentor for the first semester of the nursing program. I
understand the student/mentor volunteer is not a licensed professional and has volunteered to
mentor me through recommendations such as those covered in today’s in-service/stress
management training program. I will respect the time obligations of the student volunteer and
agree to contact them during reasonable hours (9 a.m. – 9 p.m.), unless the student and I have
made previously agreed upon arrangements. If additional questions regarding this program
arise, I will direct them to the Project Director/Investigator.

In place of signature please sign using the last four numbers of your student identification #:
ID#__________________________
Date: ______________________

The 4th semester student this student was assigned to:
__________________________________________________________________
Appendix F

Demographic Survey for Fourth Semester Mentor Student Volunteers

Fourth Semester Nursing Management Student Survey for Participation in Evidence-Based Project Mentor Program

Name: ____________________________________________

Age: 18-28 (1) ____________ 29-39 (2) ____________ 40-65 (3)__________

Marital Status: Single (1) ____________ Married (2) ____________ Widowed (2) _______ Divorced (3) ____________ Separated (3) ____________

Gender: __________________________

Hours worked per week, if employed: ____________ * above numbers in parenthesis

Number of children in household: ____________ used to match students/mentors

Number of other persons in household: ____________

Pets: __________________________________________

Number of hours currently enrolled: ____________

Any previous attempts completing the semester currently enrolled in: ________________________________

Other degrees or certifications held:

________________________________________________

Would you like to act as a mentor for the remainder of the semester to a first semester student: Yes__________ No______________

If yes please, provide your contact information:

Cell# ________________ Home# ____________

School Email address: __________________________________________

I would like to be assigned as a student/mentor for the remainder of the semester. I understand that I am not performing as a licensed professional and will make recommendations such as those covered in today’s boot camp/stress management training program, based on evidence-based practice recommendations I have learned through this program. I will respect the time obligations of the freshman student and agree to contact them during reasonable hours (9 a.m. – 9 p.m.), unless the student and I have made previously agreed upon arrangements. If I am unsure of how to direct or assist the student I am assigned to, or have any safety concerns regarding this relationship, I will immediately contact the Project Director/Investigator. If unable to contact the Project Director/Investigator, if I feel the student is in immediate need of assistance I will appropriately refer to the available college resources, or if an emergency, the appropriate community resource.
Signature: _______________________________      Date: ________________

The 1st semester student this senior volunteer was assigned to: (last 4 digits of student ID#)

_____________________________________________
Appendix G
Post Intervention Survey

Thank you for your participation in this Evidence-Based Project on Stress Reduction in first-semester nursing students. To allow me to identify which aspects of the program you found the most helpful, please answer the following questions. This will provide me with information the school will find useful to determine how to further assist beginning students during this important period of transition.

Did you attend the Nursing Student Success Bootcamp in January/August:
Yes_____ No_____

During the Stress Management/Mentoring In-service the following were discussed with instruction provided for the following:

1) Diaphragmatic Breathing Instruction, and

2) Guided Imagery Instruction.

3) Explanation of the Senior Mentor Program with assignment to a mentor following.

Please rate the above resources in the order which you found them to be the most helpful to your success over the past eight weeks, with 1 being the most helpful and 3 the least helpful (options are the diaphragmatic breathing instruction, guided imagery instruction, and senior mentor program).

1) ____________________________________________ (most helpful)

2) ____________________________________________

3) ____________________________________________ (least helpful)

Please tell me approximately how many times you contacted your mentor over the past eight weeks. ____________________________________________
The senior mentors also maintained logs identifying the number of times they were contacted, and brief description of reason for being contacted. It is however, important that you turn in your log identifying how often you practiced/used the diaphragmatic breathing, and guided imagery techniques

Were there any areas in which you found having a mentor to be particularly helpful?

So that I may have a better understanding of how helpful you found each of the techniques taught to you, please answer the following questions:

A. I found the Diaphragmatic Breathing Exercises to be:
   (1) not helpful_________________ (2) only slightly helpful _______________________
   (3) fairly helpful________________ (4) very helpful _________________________

B. I found the Guided Imagery Exercises to be:
   (1) not helpful_________________ (2) only slightly helpful _______________________
   (3) fairly helpful________________ (4) very helpful _________________________

C. I found having a senior student mentor to be:
   (1) not helpful_________________ (2) only slightly helpful _______________________
   (3) fairly helpful________________ (4) very helpful _________________________

Last 4 digits of student ID#_________________
December 12, 2017

Dear Nursing 100 Student:

Welcome to Nursing School! My name is Sharon Choma and I am an adjunct instructor with the college. I am a former graduate of LC, and returned to school several years ago, to pursue the degree of Doctorate in Nursing Practice. As part of my degree, I am performing an Evidence-Based Project involving the freshman students. This project will consist of teaching freshman students, stress management techniques such as diaphragmatic breathing, and guided imagery, as well as provide you with the opportunity to be paired with a senior nursing management student for the upcoming semester. As an instructor and student, I appreciate how stressful returning to school can be when combined with family obligations, so I am interested in teaching freshman students stress relieving strategies to assist in this process. This is the purpose of the project which I am inviting you to participate in.

I would like the opportunity to meet with you and explain my project. You were recently invited to attend an in-service offered by the college on January 9, 2018 at 9:00 a.m. Following the in-service, a short intermission will be provided during which light refreshments will be offered. Immediately after the break, I will be present to discuss with you what my project involves and offer you the opportunity to participate. Your participation would be strictly voluntary and will not affect your grade other than through the benefit obtained from learning new methods of stress/relaxation, as well as having the support of an experienced student. If you choose to participate, your participation will be anonymous, with instructors unaware of who chose to participate, and who did not. This informational session will begin at approximately noon and is expected to last less than two hours. We will meet in the nursing skills lab. I look forward to meeting with each of you.

Sincerely,

Sharon Choma

Sharon Choma MSN/Ed., R.N
Appendix H (Continued)

Letter of Invitation to Freshman Students Presentation (Main Campus)

July 30, 2018

Dear Nursing 100 Student:

Welcome to Nursing School! My name is Sharon Choma and I am an adjunct instructor with the college. I am a former graduate of LC, and returned to school several years ago, to pursue the degree of Doctorate in Nursing Practice. As part of my degree, I am performing an Evidence-Based Project involving the freshman students. This project will consist of teaching freshman students, stress management techniques such as diaphragmatic breathing, and guided imagery, as well as provide you with the opportunity to be paired with a senior nursing management student for the upcoming semester. As an instructor and student, I appreciate how stressful returning to school can be when combined with family obligations, so I am interested in teaching freshman students stress relieving strategies to assist in this process. This is the purpose of the project which I am inviting you to participate in.

I would like the opportunity to meet with you and explain my project. You were recently invited to attend an in-service offered by the college on August 14, 2018. Following the in-service, a short intermission will be provided during which light refreshments will be offered. Immediately after the break, I will be present to discuss with you what my project involves and offer you the opportunity to participate. Your participation would be strictly voluntary and will not affect your grade other than through the benefit obtained from learning new methods of stress/relaxation, as well as having the support of an experienced student. If you choose to participate, your participation will be anonymous, with instructors unaware of who chose to participate, and who did not. This informational session will begin immediately following the schools in-service and is expected to last less than two hours. We will meet in the nursing skills lab. I look forward to meeting with each of you.

Sincerely,

Sharon Choma

Sharon Choma MSN/Ed., R.N
Attention Freshman Nursing Students!
It’s Re-measurement Time!

Have you gone from this?

To this?

It’s time to re-measure to find out! Please come to the nursing skills lab following exams on **Thursday, March 8th** for the eight-week Stress Management Project re-measurement. **All freshman nursing students who attended the boot camp/in-service are asked to participate in the re-measurement.** This should take less than 30 minutes. Refreshments will be provided so please come directly to the skills lab following the exam. See you then!

Sharon Choma
Attention Freshman Nursing Students!
It’s Re-measurement Time!

Have you gone from this?

![Stressed cartoon face](image1.png)

To this?

![Happy beach scene](image2.png)

It’s time to re-measure to find out! Please meet in the nursing skills lab following exams on **Tuesday, October 8th** for the eight-week Stress Management Project re-measurement. **All freshman nursing students who attended the boot-camp/in-service are asked to participate in the re-measurement.** This should take less than 30 minutes. Refreshments will be provided so please come directly to the skills lab following the exam. See you then!

Sharon Choma
## Appendix J

Diaphragmatic Breathing/Guided Imagery Log

<table>
<thead>
<tr>
<th>Date</th>
<th>Relaxation Exercise</th>
<th>Minutes Performed</th>
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Last four digits of student ID #: ________________
Appendix K

StressFreeNow CD Meditations/ App Download Information

Cleveland Clinic’s Online Wellness Program

The CD that will be used to guide the students through the diaphragmatic breathing (DB) and guided imagery (GI) exercises was developed by the Cleveland Clinic for use in their online Stress Management/Wellness program, Stress Free Now (Cleveland Clinic Wellness, 2018). This program was developed based on a random controlled trial undertaken by Morledge et al., (2013), on the feasibility of an online program for stress management. The same CD used in this program is available for purchase through the Cleveland Clinic Wellness site, Stress Free Now (Cleveland Clinic Wellness, 2018).

The DB exercises the students will be instructed on are on the StressFreeNow CD and include: “Mindful Breath – Day” (ClevelandClinicWellness.com,©2015, side 1, track 1) and “Guided Imagery” (ClevelandClinicWellness.com, ©2015, side 1, track 5) using the CD purchased from the Cleveland Clinic’s Wellness site. Additionally, Cleveland Clinic’s StressFreeNow meditations are available as an IOS app from the App Store as a free download (ClevelandClinic.com, ©2018). The Cleveland Clinic Stress meditations may be downloaded from the App Store and for further information the website is: https://my.clevelandclinic.org/mobile-apps/stress-free-now-app

The Cleveland Clinic Stress Free Now Meditations accessible through the Cleveland Clinic Wellness app site includes the relaxation techniques titled:

Mindful Breath – Day
Mindful Breath – Night
Finding the Pause
Body Scan
Heart Breath
Guided Imagery
Letting Go
Mindfulness of Being
Loving Kindness
Mountain Meditation
References


ClevelandClinicWellness.com (©2015). Mindful Breath – Day. [Recorded by ClevelandClinicWellness.com]. On StressFreeNow, [CD]. Location: Label. Cleveland Clinic Wellness Enterprise LLC.
Appendix K (Continued)

ClevelandClinicWellness.com (©2015). Welcome. [Recorded by ClevelandClinicWellness.com]. On StressFreeNow, [CD]. Location: Label. Cleveland Clinic Wellness Enterprise LLC.

Cleveland Clinic Wellness Program (©2018). StressFreeNow. Cleveland Clinic Wellness Enterprise LLC. All rights reserved. Retrieved from https://my.clevelandclinic.org/departments/wellness

Appendix L

Senior Management Student’s Educational Plan Firelands’s Campus

The proposed project is scheduled to follow an in-service presented by the college on evidence-based successful learning strategies. The boot camp/in-service presented by the school will be delivered by senior nursing management student volunteers, in partial fulfillment of community service hours required for program completion. The four areas to be presented on are: successful reading/studying tips, effective test taking strategies, time management skills, and available campus resources. As a participating senior student volunteer, you will receive information on these topics, from the nursing programs site coordinator and project director to assist you in preparing for the presentations, or if you are participating as a volunteer mentor, to help you to develop an awareness of the information being presented, that you will need to re-enforce to the freshman student throughout the mentoring experience. You are encouraged to perform additional research independently.

A preparatory meeting is scheduled to take place before the boot camp presentation on January 9th, to assist those presenting at Boot camp to develop their oral presentations. The program coordinator and the project director/investigator will be present at all of the meetings, and it is necessary that all senior students who have volunteered to participate in the project attend all scheduled meetings as well as the boot camp/Inservice to insure full credit for your participation. Those presenting information at the boot camp will obtain information and tips on information to present from the program coordinator. It is important that the senior mentor volunteers attend the boot camp/ in-service to help gain a thorough understanding of the content being presented, to allow sufficient understanding of the information presented on, to reinforce to the freshmen throughout the eight-week mentoring period, as that is the primary role of the mentor. The first meeting will take place on Tuesday, November 21st, 2017 at 11:30 a.m. immediately following classes. During the meeting, we will review the above information to be provided during the boot camp/in-service. During this meeting, the volunteer mentors will be instructed on the purpose of the mentoring role with information given on how to handle different types of questions, as well as who to address with questions if unsure of how to respond to the students, or how to address potentially sensitive problems. Contact information will be provided for the project director/investigator following the first meeting should any questions arise prior to the boot camp/in-service.

The second meeting is scheduled to take place on December 5th, 2017 at 11:30, following class. During this meeting, senior participants will receive additional information on the stress management/coping intervention to be presented to the freshman students. You will receive information on how and why the coping/stress measurement tools are necessary, to provide you with a more thorough understanding of the project should the students have any questions. You will also receive information on how to download the interventions that will be taught to the freshman students through the StressFreeNow site and will be assisted to download it as an app (for those with Smartphones) (StressFreeNow, 2015, Copyright © ClevelandClinicWellness.com).
Appendix L (Continued)

The third and final meeting will take place one week prior to the scheduled in-service on January 4th, 2018, following class at 11:30. During this meeting, those presenting should plan on bringing a copy of their PowerPoint on a flash drive to review. This is a good opportunity to provide a practice session to allow the participants to experience of insuring they know how to use the audio-visual equipment prior to the actual presentation. During this meeting the project director/investigator, will again review the project and information to be presented during the stress management in-service and be available to field any questions. We will also review the date for the scheduled re-measurement of the freshman students stress/coping behaviors should they ask during the eight-week mentoring program. All meetings are expected to take less than thirty minutes.

This project is being undertaken based on the premise that research has shown students may be more comfortable in approaching a peer than faculty, with mentored students reporting they felt encouraged by the mentors, resulting in lower levels of anxiety/stress (Bulut, Hisar, & Demir, 2010; Ford, 2015). This relationship has been shown to benefit both the mentor and mentee, with students involved in mentoring projects reporting increased understanding of the importance of collaboration and teamwork (Ford, 2015; Giordana & Wedin citing Colalillo, 2007). Senior students are being asked to approach the mentoring relationship, with the same degree of professionalism expected as that demanded of the patient/nurse relationship. The role of being an informational support to the new student is very important. Should any questions or concerns arise they you are unable to answer, please feel free to refer questions to the project director/investigator. The student’s participation in the mentoring project must remain anonymous with faculty unaware of who chose to participate. If at any time however, you feel the student requires immediate/emergency physical or emotional assistance, do not attempt to contact the project director first, but rather direct the student to the appropriate on-campus resources, or if after hours, to the appropriate emergency resources available within the community the student is in.

The senior mentor volunteers are not intended to function in the capacity of an advisor for academic information, with specific questions/problems to be referred to a faculty member (with the exception of content taught during the colleges in-service). The purpose of the mentor role is to reinforce the information provided during the in-service given by the school, and to encourage participation in the stress/relaxation exercises taught during the intervention (DB and GI). To provide insight into the effectiveness of student mentoring, additional material on mentoring skills and strategies may be found at several websites provided at the end of this letter (Building a mentoring relationship, 2017; Mentoring skills and strategies, 2007).

The boot camp is scheduled for January 9th, 2018 at 9:00 a.m., with the educational portion of the Stress Management In-Service and explanation of the capstone offered following the in-service. The following websites will provide some of the information being covered during the boot camp, to allow you to familiarize yourself with some of the content being coverwhich would be appropriate to reinforce to the freshman students.
Appendix L (Continued)

Information on the role of the mentor includes:


Stress Management/Meditations:

Cleveland Clinic Wellness.com ©2015, Cleveland Clinic Wellness Enterprise LLC. *Mindful Breath- Day*. On StressFreeNow, CD side 1, track 2. Location Label.

Cleveland Clinic Wellness.com, ©2015. Cleveland Clinic Wellness Enterprise LLC. *Guided Imagery*. On StressFreeNow, CD side 1, track 5. Location Label.

Cleveland Clinic Wellness Program (©2018). *StressFreeNow*. Cleveland Clinic Wellness Enterprise LLC. All rights reserved. Retrieved from https://my.clevelandclinic.org/departments/wellness


Information to assist in preparation of the PowerPoint and presentation on reading skills/successful study strategies includes:


Appendix L (Continued)

Information on available campus resources can be found at the following website:


Information to assist in preparation of the presentation on time management strategies includes:


Information/websites on test taking strategies and NCLEX tips includes:


General Information regarding mentoring benefits:


Appendix M

IRB Approval Letter of Participating School Where Project Completed

Lorain County
Community College

Ms. Sharon Choma,

The Lorain County Community College IRB has approved your request to conduct research. Your request titled "An Evidence Based Application of a Stress Reduction Pilot Project On First Semester Associate Degree Nursing Students" was found to be exempt under code 45CFR 46.101(b), 45 CFR 46.101 (b) (2) and CFR 46.101 (b) (3). It has been assigned Number # 1276 for internal IRB tracking purposes.

We wish you the best as your study moves forward. Please contact us should you have any questions or concerns.

John R. Crooks, Ph.D.
IRB Coordinator
Lorain County Community College
jcrooks@lorainccc.edu
(440)366-7793
8/10/2017
Appendix M (Continued)

IRB Approval Letter of Participating School Where Project Completed

Ms. Sharon Choma and Ms. Pat Schrull,

The Lorain County Community College IRB has approved your request to conduct research. Your request titled "An Evidence Based Application of a Stress Reduction Pilot Project on First Semester Associate Degree Nursing Students" was found to be exempt under code 45CFR 46.101(b), 45 CFR 46.101(b) (2) and CFR 46.101(b) (3). It has been assigned Number# 1814 for internal IRB tracking purposes.

We wish you the best as your study moves forward. Please contact us should you have any questions or concerns.

John Crooks Ph.D.
IRB Coordinator
Lorain County Community College
jcrooks@lorainccc.edu (440)366-7793

7/17/2018
Appendix N

IRB Committee Approval Letter of School of PI

August 28, 2017

Ms. Sharan Choma
21 North Pleasant Street
Norwalk, OH 44857

Subject: Project title “An Evidence Based Application of a Stress Reduction Pilot Project on First Semester: Associate Degree Nursing Students” Protocol No. 17-044

Dear Ms. Choma:

Your research for the subject project was reviewed by the Secretary of the Committee for the Protection of Human Subjects, and has been certified as exempt under 45 CFR 46.101. Certification expires 08/21/20 as long as no changes are made to the protocol. If changes are made, or if the research continues beyond three years, re-submission to the IRB must be made.

Enclosed is an approved copy of the exemption certificate.

Sincerely,

[Signature]

Ralph Albano
Secretary
Committee for the Protection of Human Subjects

Enclosure

cce: [ ] Dr. Angolo
THE CATHOLIC UNIVERSITY OF AMERICA

August 6, 2018

Ms. Sharon Choma
21 North Pleasant Street
Norwalk, OH 44857

Subject: Project title "An Evidence Based Application of a Stress Reduction Pilot Project on First Semester Associate Degree Nursing Students"
Protocol No. 17-049

Dear Ms. Choma:

Your research for the subject project was reviewed by the Secretary of the Committee for the Protection of Human Subjects and has been approved. The changes requested are to add another recruitment site. No additional risk is incurred. The exempt protocol is approved, and continues to expire 08/21/20.

Enclosed is a signed copy of the Request for Changes form.

Sincerely,

[Signature]

Ralph Albano
Secretary
Committee for the Protection of Human Subjects

cc: [ ] Dr. Agazio

Office of Sponsored Programs
620 Michigan Ave., N.E. | Washington, DC 20064 | 202-319-5218
Appendix O

Senior Student/Mentor Log

Dear Student Mentor:

To ensure you receive credit for all of the time which you provide to your student, and so that I have an accurate idea of how many times your assigned student contacted you for assistance, please record each contact made by your student, below with an approximate length of time provided for each time you were contacted. Please feel free to contact me if any questions. Also, make sure to bring the log with you to the eight-week post-intervention re-measurement so that you can receive credit for your community service hours.

Sincerely,
Sharon Choma

Your name: ____________________________

Please provide me with the last four digits of your student’s identification number, so I can match to their response sheets: _________________________

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<tr>
<th>Date:</th>
<th>Reason Contacted</th>
<th>Length of Time Provided</th>
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Appendix P

Permission for Use of JHEBPMN

Thank you for your recent request. We are happy to give you permission to use the model and tools as you describe. The zipped file of the tools are located here: http://www.hopkinsmedicine.org/institute_nursing/_docs/Model_and_Tools_2013.zip

If you choose to use the Johns Hopkins Nursing Evidence-Based Practice Model and Tools in any other way, please submit another request for that specific use. You may not modify the model or the tools. All reference to source form should include "©The Johns Hopkins Hospital/The Johns Hopkins University." Please note, this permission does not include any commercial use.

Thanks,
Kim

Kim Bissett, MSN, MBA, RN
Evidence-based Practice Coordinator
Institute for Johns Hopkins Nursing
600 N. Wolfe Street
Admin 308
Baltimore, MD 21287
410-502-2567
Kjewett1@jhmi.edu

Don't miss our EBP Boot Camp, March 20-24, 2017!
Learn about our online EBP course
## Appendix Q

**Timeline for Completion**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 7, 2017</td>
<td>Copy of capstone to Dr. Merritt for first reading</td>
</tr>
<tr>
<td>June 26, 2017</td>
<td>Successfully passed comprehensive exam. Permission to proceed with EBP project.</td>
</tr>
<tr>
<td>July 4, 2017</td>
<td>Revised copy of capstone to Dr. Merritt.</td>
</tr>
<tr>
<td>July 18, 2017</td>
<td>Recommendations from Dr. Merritt with IRB to be submitted after recommended changes made.</td>
</tr>
<tr>
<td>July 24, 2017</td>
<td>Project Proposal Defense with all Committee Members.</td>
</tr>
<tr>
<td>July 27, 2017</td>
<td>Recommended revisions to be made to capstone, 2-page Proposal. research consent form, application or exemption, CITI training certificates, BCI, PSS, demographic forms, information on the CD/wellness program, DB/GI participation log, preparation of student’s paper, flier for recruitment (letter sent by administration) and post-intervention recruitment flier. Submit IRB approval to CUA.</td>
</tr>
<tr>
<td>August 10, 2017</td>
<td>IRB approval received from LCCC.</td>
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<td>August 22, 2017</td>
<td>IRB approval received from CUA.</td>
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<tr>
<td>August 22, 2017</td>
<td>Due to small number of attending students, following discussion LC staff, determined best outcome could be achieved with larger group. Agreed to perform intervention with next class in January.</td>
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Presentation not made as planned.

October 31, 2017

Meeting with college nursing program site coordinator, to review capstone project purpose, timeline and proposed dates for student education and presentation. Met with students who will be Management Leadership Students in the upcoming semester on return from break. Explained purpose of project and invited interested participants to attend additional educational sessions to prepare them for the role of presenting educational materials at the freshman student boot camp be offered the week prior to classes beginning, or to serve as a student mentor to reinforce the material presented to the freshman students during the first eight-week session of classes.

November 2, 2017

Revised copy of chapters 1-3 to Dr. Agazio with updated timeline.

November 21, 2017

In-service provided to Lorain Community College Senior Management students who will present the Educational In-service/Bootcamp to the Freshman Nursing Students.

Handouts distributed on content to be covered, with sections assigned allowing students to prepare PowerPoint presentations. Student mentors provided with printed literature regarding the defined scope of the mentoring role, with discussion following with those interested in serving in the mentoring role.

December 5, 2017

Letters to be sent from the college inviting all freshman nursing
students to attend a “Strategies for Success Bootcamp” scheduled for January 2018. Although not mandated by the college, attendance is “strongly encouraged”.

December 12, 2017

A letter of explanation of this project will be sent by the Nursing Department Secretary to all freshman students on behalf of the Project Director, inviting them to participate in the Stress Management In-service/Project presentation schedule to follow the schools in-service. Freshman will be advised in the letter that following the Stress Management portion of the in-service, freshman will be paired with a senior student mentor volunteer for the next eight weeks of the semester. They will also be advised in the letter that participation is strictly voluntary. A second meeting will take place between the Project Director and Site Coordinator with the Management Students on this date, to address questions on information to be presented, and how to begin to develop the PowerPoint presentations.

January 4, 2018

Meet with Senior students to review power points and presentations for the Freshman In-service/Boot camp on January 9th. Third meeting with Senior student volunteers scheduled to perform as student mentors. To review purpose and limitations of the mentoring role.

On this date will complete contract for the mentors prior to the actual boot camp.
January 9, 2018  In-service/intervention titled “Strategies for Success Boot camp”
to be presented to first year students from 9:00 to 12:00. Following in-service, Freshman attendees will be invited to participate in the Stress Management Project consisting of Relaxation Breathing Techniques and Mindful Meditation Instruction following measurement of Stress and Coping Behaviors. This portion will begin at 12:20 and is expected to be completed by 14:20.

February 11, 2018  Changes made to capstone, for any final recommendations, before adding Chapters 4 and 5. Will begin putting into final paper format/language.

February 20, 2018  Flyers will be posted in the nursing lab alerting students to the upcoming re-measurement of Stress/Coping Behaviors following classes on March 6th, 2018.

March 6, 2018  Meet with Senior Student Mentors – collection time logs of number of contacts with Freshman students, and total amount time spent with each student for data analysis. Identify any problems with program or student recommendations. Sign community service hours sheets.

March 8, 2018  Re-measurement of participating Freshman Nursing students using the Stress Inventory and Coping Behaviors Scale will take place following the days classes. It is anticipated to take less than 30 minutes.

March 20, 2018  Data analysis to be completed.
April 2, 2018  Have paper completed by/send to Dr. Agazio to read
April 10, 2018  Have revisions made by and PowerPoint completed.
April 16, 2018  Final defense on main campus. (cancelled). Need additional students.
July 16, 2018  Letter to go out to freshman students by LC secretary to invite to participate in stress management following the August 14th Boot camp.
July 31, 2018  Met with senior students educate on role of mentor. Have demographic sheets and consents signed.
August 7, 2018  Met with additional group of senior students, educated on role of mentor. Have demographic sheets and consents signed.
August 14, 2018  Second project performed on main campus of participating school.
October 8, 2018  Re-measurement of students at 8 weeks. Met with senior mentors and collected logs, and de-briefing on role.
Nov. 8, 2018  Have data entered in SPSS and analyzed by for re-writing of chapters 4 and 5
Dec. 10, 2018  Paper with chapters 1-4 completed and to Dr. Agazio and editor for revision/recommendations.
January 14, 2019  Have revised chapter five completed, and corrections on recommendations made by Dr. Agazio/Dr. Claus completed, then back to both final recommendations/formatting completion.
January 25, 2019  Completed edits recommended, Chapters 1-5 to Dr. Agazio for further recommendations