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# The Use of Stress Reduction Techniques in Nursing Education

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# VALPO

## THE USE OF STRESS REDUCTION TECHNIQUES IN NURSING EDUCATION

by

**JENNIFER S. BAUER**

### EVIDENCE-BASED PRACTICE PROJECT REPORT

Submitted to the College of Nursing

of Valparaiso University,

Valparaiso, Indiana

in partial fulfillment of the requirements

For the degree of

**DOCTOR OF NURSING PRACTICE**

2014

*Jennifer S. Bauer* 5-2-14  
Student Date

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Advisor Date



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## DEDICATION

Without Christ, nothing is possible, so I first acknowledge God for the overwhelming abundance of blessings and opportunities he has given me throughout my life. I dedicate this paper in honor of my Grandmother Geraldine Andrews who was always beamingly proud of all of my accomplishments and who taught my father love, hard work, and dedication, which extended down to his children. In addition, I dedicate this paper to my loving family which includes my brilliantly amazing, devoted, and supportive husband Kevin, my three beautiful children Isabella, Liliana, and Brooks and the two newest little blessings who are on their way, but still growing on the inside, Jude Michael, and Noah Matthew. I would also like to extend my heartfelt thank you to my amazing mother, Connie, who is my biggest cheerleader. She has always stood right by my side whenever I needed her. She is one of the most beautiful people I know and I am blessed to call her my Mother. And, to my father Randy (my own super hero), for always believing in me, loving me unconditionally, and supporting me in all of my endeavors! I will always be your little girl! I would also like to extend my gratitude to my brother, David, for his IT expertise, and always pushing me to reach my goals. Without the support, prayers, and blessings of my family and Christ I would not be where I am today. I love you all to the moon and back, and cannot wait to put the computer and papers away for a while and just simply be a mom, wife, daughter, and sister again!!!!

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## ABSTRACT

Stress is a complex phenomenon that has significant effects on students which may disturb their physiological, psychological, and spiritual health and well-being. Nursing students have been identified to be at high risk for stress during their education. Stress can arise from new clinical experiences, academic load, and personal stressors (Jones & Johnston, 2006). This increase in stress can lead to the student's inability to assimilate and learn within the classroom and clinical settings. A review of the literature provided evidence that reported a positive relationship between guided imagery and a decrease in stress and anxiety. This evidence-based practice (EBP) project assessed whether a stress relief guided imagery intervention improved perceived stress in nursing students. The Stetler Model and The Neuman Systems Model guided this project. Fourth semester sophomore nursing students from the Fundamentals of Nursing class were invited to participate in the project. Participant demographics, and Cohen's Perceived Stress Scale (PSS) were administered to students prior to the intervention. The intervention included 20 minutes of a stress relief guided imagery audio CD by Belleruth Naparstek. At the completion of the eight week period, the PSS was re-administered, and students completed a post intervention self-report survey of usefulness to evaluate project success. Paired samples *t* tests were performed on pre and post intervention PSS scores, which did not reveal a statistically significant difference ( $p = .239$ ). Thirteen of 21 students had lower perceived levels of stress post intervention. The results of the post intervention survey indicated that 18 of 21 students would utilize guided imagery in the future, 19 of 21 students would recommend guided imagery to family, friends, and patients, and 20 of 21 students found guided imagery helpful in reducing school related stressors. Implications for future practice have been validated by the results of this EBP project. Based on the positive results of this project, the integration of guided imagery in

undergraduate nursing curricula should be considered to reduce perceived stress among nursing students.

Key Words: Student nurse, Stress, Stress management, Intervention



## CHAPTER 1

### INTRODUCTION

Evidence-based practice (EBP) is a critical component of everyday nursing care. Nurses are responsible for providing safe, affordable, high quality, and evidenced based care for their patients. Melnyk and Fineout-Overholt (2011) describe evidence-based practice as "a problem solving approach to clinical practice that integrates the following; a systematic search for and critical appraisal of the most relevant evidence to answer a burning clinical question, ones' own expertise and patient preferences and values" (p. 6). Evidence-based practice integrates the best evidence from well-designed studies and patient care data. In addition EBP utilizes theory-derived, research-based information that takes into consideration the needs of the target population as well as the knowledge base of the staff instituting the EBP.

EBP is vital to the advancement of the profession of nursing. With the ever changing complexity of healthcare, the nursing profession is required to meet the demands of providing the highest level of care while utilizing guidelines that are derived from the best available evidence from research, clinical experience, and patient preferences. EBP allows nurses to provide their patients with the best possible care based on evidence.

#### **Background**

Healthcare is changing at a rapid pace, and the expectations for providing cost-effective high quality healthcare are intensified. These added demands present an increasingly stressful environment for both professional nurses and nursing students. Nursing students are especially stressed with the multitude of responsibilities they may have in their personal, academic, and clinical environments. Nursing faculty may be aware of the stressors present for nursing students but often remain uninvolved in

assisting students in establishing healthy behaviors and identifying tools to appropriately deal with those stressors. Educators are ethically responsible for supporting students in managing their stressors and identifying appropriate coping mechanisms. If students are not taught to manage stress in healthy ways, their growth in self-awareness and caring capabilities may be impaired which could adversely affect the care they provide for their patients (Clark & Pelici, 2011).

An additional topic of concern within the nursing field is the increasing nursing shortage and nursing dropout rate within the workforce. One approach for retaining nurses and other healthcare professionals in the workforce is to teach health care students effective stress management techniques and healthy behaviors during their education period prior to entering the workforce.

This EBP project served to address the question of whether incorporating a guided stress intervention into a fundamental nursing class was effective in improving nursing student perceived stress scores after an eight week trial.

### **Statement of the Problem**

Stress is a multifaceted phenomenon that may adversely affect a person's physiological, psychological, sociobehavioral, and spiritual domains. "Stress refers to a dynamic interaction between the individual and the environment" (Pulido-Martos, Augusto-Landa, & Lopez-Zafra, 2012, p. 15). Lazarus and Folkman (1984) defined psychological stress as "A relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (p. 21). "Through cognitive appraisal, the person judges both the nature of the environmental demands and the resources existing to meet those demands" (Godbey & Courage, 1994, p. 191). Lazarus and Folkman stated that "people and groups differ in their sensitivity and vulnerability to certain types of events, as well as in their interpretations and reactions" (p. 22). Lazarus and Folkman defined coping as

“Constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). Lazarus and Folkman (1984) further described coping as a “shifting process in which a person must, at times, rely more heavily on one form of coping, say defensive strategies, and at other times on problem-solving strategies as the status of the person-environment relationship changes” (p. 142). Individuals may use personal resources as a form of coping. These coping techniques may include health and energy, positive beliefs, problem-solving skills, social skills and support, and material resources (Godbey & Courage, 1994; Lazarus & Folkman, 1984). It is important that individuals develop strong coping mechanisms in order to prevent the stressor from becoming a hazard to their health and well-being.

Stress and nursing school seem to go hand in hand. Nursing students today lead complex lives while juggling personal, professional, and academic responsibilities. These multiplying responsibilities along with the increasing demands of today’s healthcare system are leading to higher levels of stress and anxiety for nursing students. Traditionally nursing programs were designed for full time students who had recently graduated from high school. The demands and designs of nursing programs have not changed, although the characteristics of students (nontraditional students) have transformed dramatically over time. The educational training for nursing students is conducted in a highly stressful environment where academic content is mastered with long hours of study (Godbey & Courage, 1994). “Nursing students report especially high stress levels, in some cases higher than those of students in other health professions” (Beddoe & Murphy, 2004, p. 305). Linden, Turner, Young, and Bruce (2001) stated that nursing students experience higher physiological and psychological symptoms than students in other health-related disciplines.

Negative effects of stress on a student can include physical, psychological and behavioral disorders (Pulido-Martos et al., 2012). High levels of anxiety can interfere with sleep affecting clinical conduct, test performance, and concentration ability in class (Capp & Williams, 2012). Stress can also decrease communication, interpersonal effectiveness, and empathy for others (Kendrick, 2000). “Studies suggest high stress and anxiety impede concentration, memory, and problem-solving ability, which in turn, adversely affect academic performance and learning” (Beddoe & Murphy, 2004, p. 305). Hensel and Stoelting-Gettelfinger (2011) reported that stress inhibits the ability of the student to think clearly thus inhibiting the student’s professional growth. Prato and Yucha (2013) stated that nursing students who experience high stress and anxiety during test taking may be unable to demonstrate their true knowledge and may do poorly in the academic component of nursing courses.

#### **Data from the Literature Supporting the Need for the Project**

High levels of stress in nursing students have been well documented in the research literature dating back to the 1970s. Nursing students experience stress both in their personal lives and in their role as a student facing academic and clinical related stressors. Stress in their personal lives may be varied and can include but are not limited to parenting responsibilities, work responsibilities, group and community affiliations, personal health concerns, family and health issues, and spiritual beliefs among many others. The most common stressors in the clinical environment include first clinical experience, fear of making mistakes, performing clinical skills, faculty evaluation, lack of support by nursing personnel, and a gap in the didactic learning for the course content (Moscaritolo, 2009). “Nursing students endure both the professional stress of exposure to unfamiliar environments in clinical practice and personal stress, which can include personal relationships, sense of values, religion, prospects and future, academic problems, and the financial problems all students experience during their college life”

(Burnard, Rahim, Hayes, & Deborah, 2007, p. 808). The combination of these stressors can cause significant anxiety and feelings of failure for the student.

Jones and Johnston (2006) assessed specific student stressors which included academic load, clinical concerns, personal problems, and interface worries. Zupiria et al. (2007) documented other sources of stress for nursing students which included lack of competence, uncertainty and impotence, difficult patient relationships, emotional involvement, lack of control in relationship with patients, contact with suffering, overload, relationships with tutors, workmates, and classmates, and lastly patients seeking a close relationship. Kim (2003) reported specific clinical situations causing higher levels of anxiety in students which included, being late, observation by instructors, talking with physicians, and initial clinical experiences.

Pulido-Martos et al. (2012) conducted a systematic review of the scholarly literature on stressors in nursing students. The most common sources of stress were related to academic course load which included reviews, workload, and problems associated with studying; while clinical stressors included fear of unknown situations, mistakes with patients, or handling of technical equipment (Pulido-Martos et al., 2012).

Adequate amounts of stress can be motivating and assist the student in maintaining physical and mental health (Kang, Choi, & Ryu, 2009). Repeated high-level stress can cause students to become maladjusted specifically if the student does not have the tools to adequately deal with the perceived level of stress. Many forms of stress can ultimately impact the nursing student and the student's ability to cope.

Ross and Goldner (2009) found that healthcare professionals often formed negative attitudes towards help-seeking behaviors for stress during their clinical training. These negative behaviors and effects of stress can lead to future health and psychological related issues for the nursing student. Each student is unique in how the student perceives and handles stress. It is vital that each student work through stress in



a healthy manner in order to maintain the ability to concentrate, function, and learn.

Jones and Johnston (2000) indicated that the assessment of stress interventions during the formative training period is especially pertinent as they found that dealing with these issues early in a nurse's training could potentially counteract future stress related problems. Therefore it is essential that nursing students are provided with the tools to recognize and handle their stressors early on in their education.

It has also been noted that student nurses appear to experience significantly higher levels of stress during their education period than they do in their first year of professional nursing work (Yonge, Myrick, & Haase, 2002). With the nursing shortage continuing to grow, professional nurses continue to cope with various on the job stressors, again pointing to the importance of implementing stress interventions early on in their training. "If nurses are to assimilate the ethic and skills necessary for career-long self-care, stress management techniques must be integrated throughout nursing education programs" (Grossman & Wheeler, 1999, p. 23).

The historical observations throughout the continuum of the literature indicate the continued existence of a highly stressful nursing environment for both student nurses and professional nurses. The evidence is clear that nursing students are at risk for being highly stressed, yet few researchers have conducted studies assessing the effectiveness of stress reduction interventions within the nursing student population. Previous research studies have shown a positive impact between implementing stress interventions, and improving student's sense of well-being, decreasing stress, and reducing anxiety. Many of these studies have shown positive results yet most colleges and universities across the United States and abroad have failed to integrate some type of stress intervention or program into their nursing curricula.

Stress interventions reviewed in the literature included relaxation, imagery, behavior-modification, exercise, mindfulness meditation, mindfulness-based stress

reduction (MBSR), deep breathing, peer mentoring, and yoga among others. Numerous studies that have been reviewed have specifically incorporated guided imagery, deep breathing and guided imagery, and guided imagery and/or relaxation as a form of stress intervention. Many of the studies have found a positive relationship between guided imagery and relaxation, and a decrease in stress and anxiety levels, and improvement in overall student perceived health and well-being (Charlesworth, Murphy, & Beutler, 1980; Speck, 1990; Stephens, 1992; Wright, Hogard, Ellis, Smith, & Kelly, 2008). This evidenced-based DNP project utilized deep breathing to induce relaxation followed by guided imagery as a form of stress intervention for fourth semester nursing students in their fundamental class. Guided imagery will be discussed in detail below.

Imagery is a mental process that draws upon the senses and consists of mental representations of external reality (Zahourek, 1997). "Guided imagery is a therapeutic technique that allows a person to use his or her own imagination to connect body and mind to achieve desirable outcomes such as decreased pain perception and reduced anxiety" (Ackerman & Turkoski, 2000, p. 524). Many forms or approaches of guided imagery have been used to reduce pain, reduce and manage stress, and achieve psychological well-being (Kolkmeier, 1989; Academy for Guided Imagery, 2013). The term guided imagery may refer to a wide variety of techniques. These may include "simple visualization and direct suggestion using imagery, metaphor and story-telling, fantasy exploration and game playing, dream interpretation, drawing, and active imagination where elements of the unconscious are invited to appear as images that can communicate with the conscious mind" (Academy for Guided Imagery, 2013, para 2).

"Once considered an "alternative" or "complementary" approach, guided imagery is now finding widespread scientific and public acceptance, and it is being used to teach psychophysiological relaxation, alleviate anxiety and depression, relieve physical and psychological symptoms, overcome health-endangering habits, resolve conflicts, and

help patients prepare for surgery and tolerate procedures more comfortably” (Academy for Guided Imagery, 2013, para. 3).

“Relaxation and guided imagery are believed to interrupt the disease process and to foster health by dramatically reducing stress and discomfort, enhancing positive feelings, and enriching perceptions” (Zahourek, 1997, p. 89). Kolkmeier (1989) stated that one of the more powerful triggers of the mind modulation process is that of visualization or imagery. Imagery usually encompasses utilization of several or all of the senses. “The imagery experience affects all internal systems; it is the bridge that connects mind, body, and spirit” (Kolkmeier, 1989, p. 75). Guided imagery is useful in assisting a patient to define and modify a problem or situation such as stress (Kolkmeier, 1989). Kolkmeier stated that it is best to begin with a general relaxation exercise to facilitate and lead into the guided imagery. “Nursing students guided through imagery exercises are taught to use imagery techniques independently in order to achieve educational goals” (Contrades, 1991, p. 62).

Deep or diaphragmatic breathing involves expanding the diaphragm with the abdomen rising with each inhalation. When stressed or anxious, individuals tend to breathe rapidly and shallow. This can lead to a decrease in carbon dioxide levels which may unconsciously be interpreted by the body as a sign of high stress or anxiety (Wilkinson, Buboltz, & Seemann, 2001). Deep breathing is an effective form of stress relief as it is simple and quick to learn. Deep breathing also induces a state of relaxation, calming the individual on a deeper level. “Teaching students natural, slow breathing can help them relax, energize, and acquire an inner sense of peace and tranquility” (Wilkinson et al., 2001, p. 77). Therefore deep breathing was utilized for two minutes prior to the start of the guided imagery CD to induce a sense of relaxation and peace for the student.

Mizrahi et al. (2012) conducted a study on the effects of guided imagery with relaxation training on the anxiety and quality of life among patients with inflammatory bowel disease (IBS). The study was a prospective randomized control trial utilizing 56 randomly selected patients either put into a control or treatment group. The treatment group attended three relaxation-training sessions and received a guided imagery audio tape for use at home. Mizrahi et al. found that following the intervention, the treatment group measured results showed statistically significant improvement as compared to the control group. Mood improved, and levels of pain, anxiety, and stress decreased (Mizrahi et al., 2012).

Speck (1990) investigated the effect of guided imagery on nursing students' anxiety levels related to performing their first injections. The study was a quasi-experimental posttest design. The results indicated significantly lower self-reported anxiety levels. Stephens (1992) examined the effectiveness of guided imagery via audiotape with and without relaxation in decreasing anxiety enhancing test performance in first year nursing students. Test performance was not significantly changed; however posttest anxiety scores were significantly lower in the two treatment groups than in the control group (Stephens, 1992).

Charlesworth et al. (1981) conducted a non-randomized experimental study that utilized relaxation, imagery, and desensitization as a form of stress intervention in nursing students over a five week period of time. Outcomes were measured by analyzing state and trait anxiety and student grades. Both state and trait anxiety measures showed statistically significant improvements after the five week period (Charlesworth et al., 1981). Grades did not show a significant change.

### **Data from the Clinical Agency Supporting the Need for the Project**

While there was no available anecdotal or statistical data representing the level and types of nursing student stressors at this Midwestern University, the DNP project

manager did pursue evaluation of current nursing student's perspective regarding stress and how they perceived stress. The DNP project manager discussed concerns with current clinical nursing students regarding their levels of stress in the spring of 2013. The manager discussed techniques students could utilize to manage their stressors and how students could play an active role in minimizing or eliminating daily stressors. The majority of students welcomed the idea of a stress intervention and agreed that it was something they would like to participate in. The students regarded their health and wellness as a high priority, but felt they often neglected time for self-care, relaxation, and maintaining a balance of health and wellness.

### **Purpose of the EBP Project**

It is evident from the literature that stress is and will remain a significant threat to the well-being of nursing students and can dramatically affect their ability to perform safely and effectively in the clinical and classroom setting.

The purpose of this project was to implement, and evaluate a guided stress intervention for fourth semester fundamental nursing students with the goal of improving student perceived stress levels. Many student stressors that were reported in the literature are closely linked to the time that is spent both within the class and clinical setting. Therefore, by utilizing a group of students during their first fundamental class, the stress intervention could decrease perceived levels of stress over the new skills and information they will be learning over the semester. An additional purpose of the project was to provide students who are early within their training with several evidenced-based tools to utilize when dealing with stressors throughout their schooling and into their professional careers.

The project manager determined the student's pre and post perceived stress levels before and after implementing the guided imagery stress intervention. The stress intervention started with deep breathing (to induce relaxation) for two minutes, followed

by actively listening to a Belleruth Naparstek stress relief guided imagery CD. The sessions took place weekly on Tuesday mornings at the beginning of the fundamental class for an eight week period.

The main goal of the project was to determine whether an eight week guided stress intervention would decrease nursing students' perceived stress levels. The desired outcome was to show an improvement in the students' perceived stress thus giving applicability to permanently adding a stress intervention into this Midwestern University's nursing curricula.

### **Identify the Compelling Clinical Question**

The EBP process is initiated by a question or concern about current nursing practice. There is a sequence of six steps that encompass the EBP process. The first step in the EBP process is posing the clinical question in PICOT format (Melnyk & Fineout-Overholt, 2011). The PICOT question for this EBP project was generated after much consideration of the constant challenges of the current healthcare system and the demands they impose upon the Bachelor of Science in Nursing (BSN) curricula in preparing future nurses. These demands cause increased stress and anxiety for nursing students which can adversely affect them throughout their nursing career if not adequately addressed in their educational training.

### **PICOT Format**

Melnyk and Fineout-Overholt (2011) stated the PICOT is based on patient population, intervention of interest, comparison intervention, outcome, and timeframe of intervention. The DNP project PICOT question was formulated by addressing the concept of stress intervention in undergraduate nursing students. The PICOT question was: "What is the effect of guided imagery on fourth semester BSN nursing students over an eight week period when compared to their pre intervention perceived stress scores"? The stress intervention included two minutes of guided deep breathing to

induce relaxation followed by 20 minutes of guided imagery over an eight week period. The guided imagery was presented by the DNP student project manager in the form of a Belleruth Naparstek stress relief guided imagery CD that was played weekly for the students.

### **Significance of the Project**

Clinical and academic stressors continue to be a source of anxiety and hardship on overall student performance. To date at this Midwestern University there has been no formal research, studies, or EBP projects done to indicate how students assess and manage their daily stressors. This EBP project was conducted to evaluate the outcome of a guided stress intervention on nursing students' perceived stress levels. The way students perceive and manage their stressors can significantly influence the way they perform both clinically and academically. Numerous studies in the literature have assessed specific student stressors, but few steps have been taken on the collegiate/academic level to assist students with specific stress interventions. Therefore, stressors within the clinical setting need to be addressed by nursing faculty and educators. Both the didactic and clinical learning environment will continue to represent a large component of nursing education, making it imperative that faculty work together to help students manage their stress in a healthy manner and provide evidence-based tools for students to utilize.

The significance of this evidence-based project was to assist student nurses in decreasing their perceived levels of stress by providing them with a specified stress intervention over a period of time. Students who perceived less stress after the intervention should be expected to better cope with future stressors by utilizing the tools provided during the stress intervention. Decreased stressors for students should optimistically result in enhanced clinical alertness and performance due to reduced anxiety and stress. A second goal of decreasing perceived stress in students is to

ultimately improve their overall health and well-being and how they perform in their role both as a student and professional nurse.

Lastly, providing students with tools to deal with stressors will allow them to utilize these tools with future patients as well as patients' families who are suffering from excessive stress due to their current health condition or diagnoses. The benefits of providing stress tools during students' formative training are numerous as they will have lasting effects throughout their nursing career.



## CHAPTER 2

### THEORETICAL FRAMEWORK AND REVIEW OF LITERATURE

Guided imagery is a therapeutic technique that permits a person to use imagination to connect body and mind to attain desirable outcomes such as reduced stress, decreased pain perception, and reduced anxiety (Ackerman & Turkoski, 2000). Chapter two will provide an evidenced-based outline to the utilization of guided imagery as an effective stress management technique in nursing students. The Neuman Systems Model will provide the theoretical framework for the DNP project while the Stetler Model of Research Utilization (Stetler Model) will provide guidance for the step by step process throughout the project.

#### **Theoretical Framework**

This evidence-based practice project was designed utilizing the Neuman Systems Model which encompasses a dynamic, systems-based perspective. The model is focused predominately on stress prevention and the promotion of wellness, making it complimentary to the DNP project application of a stress intervention in student nurses aimed at improving student wellness and decreasing perceived stress.

**Description of theoretical framework.** “Neuman Systems Model is a systemic perspective of health and wellness, defined as the condition or the degree of system stability, that is, the condition in which all parts and subparts (variables) are in balance or harmony with the whole of the client/client system” (Neuman & Fawcett, 2002, p. 12). The Neuman Systems Model provides a unique perspective to approach a wide range of nursing concerns making it applicable to most areas of nursing both in the clinical and academic arena (Neuman & Fawcett, 2002).

The model is based on the individual’s continuous relationship to environmental stress factors. These environmental stress factors have the potential to cause a reaction

or a symptomatic reaction to stress thus affecting the client's current health status (Neuman & Fawcett, 2002). The model is an open systems model that views nursing as being primarily concerned with defining appropriate action in stress-related situations or probable reactions of the client and the clients system (Neuman & Fawcett, 2002). Neuman and Fawcett (2002) stated that both the client and the environment may be positively or negatively affected by each other thus representing a reciprocal exchange between the client, client's system, and the environment. "The model takes into account all variables affecting a client's possible or actual response to stressors and explains how system stability is achieved in relation to environmental stressors imposed upon the client" (Neuman & Fawcett, 2002, p. 3).

Neuman and Fawcett (2002) defined the person as the client who is in constant exchange with the environment and always moving either towards a state of dynamic stability, or wellness, or a state of illness. The client is also considered to be a system in this model, where the client system is a composite of five interacting variables with varying degrees of development and interactive styles (Neuman & Fawcett, 2002). The model focuses on assessment of these variables and how these variables are affected by environmental stressors. The first variable is physiological, which refers to bodily structures and internal function. Neuman and Fawcett defined the second variable as psychological, which refers to mental processes and interactive environmental effects, both internally and externally. The third variable is sociocultural, which is defined as combined effects of social cultural conditions and influences (Neuman & Fawcett, 2002). The fourth variable is developmental and defined as age-related development processes and activities. Lastly, the spiritual variable refers to the client's spiritual beliefs and influences (Neuman & Fawcett, 2002). According to Neuman and Fawcett these five variables function harmoniously and are stable in relation to internal and external environmental stressors.

Neuman Systems Model identifies and defines three relevant environments that impact the client. The internal environment, which is intrapersonal in nature, contains all forces or influences contained solely within the boundaries of the client (Neuman & Fawcett, 2002). The external environment consists of all forces or interactive influences external to or existing outside the client's boundaries (Neuman & Fawcett, 2002). The created environment represents an open system exchanging energy with both the internal and external environments and is dynamic (Neuman & Fawcett, 2002).

Neuman and Fawcett (2002) outlined and defined three types of stressors that can affect the client. Stressors in this model are defined as environmental factors that are intrapersonal (internal environmental forces), interpersonal (external environmental interaction forces outside the client's boundaries), and extrapersonal (external environmental interaction of forces that occur outside the boundaries of the client system at a distal range). All of these stressors have the potential for disrupting system stability by penetrating the system lines of defense and resistance (Neuman & Fawcett, 2002). Nursing students qualify as being at risk for all three of these specific stressors as they are faced with a multitude of stressors including personal, social, academic, and clinical related stressors each day. Many of these stressors are outside of their personal system boundaries.

Neuman Systems Model addresses the influence of the above stated stressors and environments which can influence the basic structural make-up of each client or nursing student. In Neuman's model there is a basic structure for each client composed of concentric circles. The concentric circles are the flexible and normal lines of defense and the lines of resistance. They function to serve as protective mechanisms for the basic structure to preserve client integrity and keep the system stable (Neuman & Fawcett, 2002). The flexible lines of defense protect the system from immediate or short-term environmental stressors whereas the normal lines of defense are viewed as a long-term

adjustment to stressors (Neuman & Fawcett, 2002). When the normal lines of defense fail or are penetrated by one or more stressors, a reaction or system destabilization occurs (Neuman & Fawcett, 2002). When a reaction occurs the lines of resistance are activated. The lines of resistance are based on the assessment of the interaction between the five client variables and the environment (Neuman & Fawcett, 2002). If the lines of resistance are adequate they will move the client back to a state of wellness. If they are not adequate they will move the client down the continuum to illness of varying degrees.

**Application of theoretical framework to EBP project.** “Optimal wellness represents the greatest possible degree of system stability at a given point in time. Wellness is a matter of degree, a point on a continuum running from the greatest degree of wellness to severe illness or death” (Neuman & Fawcett, 2002, p. 3). Student wholeness and wellness is based on the interrelationships of variables, which determine the amount of resistance to stressors. When a student is unable to handle the incoming stressors in a therapeutic manner, illness may occur as a result. Illness in Neuman’s model represents instability and energy depletion along the system parts or subparts affecting the whole (Neuman & Fawcett, 2002). This instability can adversely affect the student’s ability to perform both in the clinical and academic settings. This can lead to the lines of defense becoming weaker thus allowing other perceived stressors to become more intense thus further decreasing the student’s ability to handle additional incoming stressors. After time the student may enter the continuum of illness. This is where Neuman’s teaching of prevention as intervention comes into play with nursing students.

Nursing students can prepare themselves for incoming stressors through different stress modifying interventions by learning and maintaining the tools and cognitive behaviors necessary to counteract daily stressors. Teaching students appropriate stress

intervention techniques such as guided imagery and deep breathing as a preventative intervention would be beneficial in moving students along the continuum of health to a state of wellness. When the nursing student is healthy, the student can provide the best care possible for patients. When the student is not healthy, care provided will be suboptimal or below the standard, thus significantly impacting the outcome of the patient's care and recovery.

When there is a perceived threat in the student's environment, the student may respond in a variety of ways. The behavior may be maladaptive if the students' lines of defense are weak or their response will be appropriate if the lines of defense are strong and the student is in a state of well-being. If the student is knowledgeable about stress modifying behaviors the student would be better able to form a line of defense against incoming environmental stressors.

Each student functions as an open system. The open system in this model is where there is a continuous flow of input and process, output and feedback (Neuman & Fawcett, 2002). It is a system of organized complexity, where all elements are in interaction (Neuman & Fawcett, 2002). A nursing student's stress and reaction to stress are a function of this open system. Evaluation of both the student's internal and external environments including the student's stressors and reactions to stressors should be assessed. Once the stressors are identified, appropriate interventions can be taught or applied. Students who have the appropriate tools to function as a primary source of defense against incoming stressors will be better equipped to maintain a state of wellness and system stability. Nursing students who practice stress interventions will be able to form a more appropriate action towards the incoming stressor, thus strengthening their lines of defense.

In summary, this theory is applicable to students as they try to maintain a sense of balance and homeostasis within their learning environment. The Neuman Systems

Model supported this EBP project's method of assessing the effectiveness of applying a stress intervention (guided imagery) to strengthen the nursing student's lines of defense and resistance. Neuman Systems Model supported identifying the occurrence of perceived stress in nursing students' lives (as measured by Cohen's perceived stress scale).

**Strengths and limitations of the theoretical framework for EBP project.**

Strengths of the Neuman Systems Model in relevance to the EBP project are numerous. To date this model is complimentary to other nursing models because of its broad, comprehensive systemic holistic perspective (Newman & Fawcett, 2002). The model considers the wholeness of each student and each student's interaction within the environment and the environmental stressors that students may encounter daily. The Neuman Systems Model helps nurses to organize their care within a broad systems perspective as a diverse way of dealing with the growing complexity of healthcare. Nursing students will be faced with the challenge of working within a complex healthcare system, thus they need the tools in which to succeed in such an environment. This particular framework allowed for the EBP project manager to look at the student as a whole and provide the student with evidence-based tools to reduce perceived stress levels. The framework also allowed for the EBP project manager to assess how students approach and evaluate perceived environmental stressors. Providing students with stress reducing exercises will allow them to maintain a state of wellness.

At one point the broad perspective was considered a criticism of the model but now that healthcare is changing at a rapid pace, this broad systems perspective is seen as a major reason to implement and apply this model to a diverse nursing field both in the clinical and academic arenas (Neuman & Fawcett, 2002). Neuman Systems Model incorporates a comprehensive look at the environment and the patient. This is why this model is so effective in the current healthcare environment and blended well with the

chosen EBP project of applying a stress intervention into a nursing course to improve the students' lines of defense both now and in the future.

There were no limitations of the model that adversely affected the application of the model to the EBP project topic.

### **EBP Model of Implementation**

The Stetler Model was utilized as the evidence-based model for guiding the step by step process of the DNP project. The Stetler Model was first developed in the late 1970's and originally formulated a series of critical-thinking and decision-making steps designed to facilitate safe and effective utilization of research findings (Stetler, 2001). The model has undergone three major revisions to reflect the new teachings and emerging concept of evidence based practice with the most recent revision occurring in 2001(Stetler, 2001).

**Description of the model.** The Stetler Model can assist providers in analyzing how research outcomes and other applicable evidence can be applied to daily practice. This model examines how to use evidence to effectively create formal change and can assist practitioners in utilizing research on an informal basis as part of critical thinking and reflective practice (Stetler, 2001).

There are six assumptions of the practitioner-oriented Stetler Model of Research Utilization. These include the following: (a) the formal organization may or may not be involved in the individual's utilization of research, (b) utilization may be instrumental, conceptual, and/or symbolic, (c) other types of evidence and/or non-research related information are likely to be combined with research findings to facilitate decision-making or problem-solving, (d) internal and external factors can influence an individual's or groups view and use of evidence, (e) research and evaluation provide us with probabilistic information, not absolutes, and (f) lack of knowledge and skills pertaining to

research utilization and EBP can inhibit appropriate and effective use (Stetler, 2001, p. 274).

The Stetler Model consists of five phases which will be detailed and include the step by step process of the DNP EBP project. Phase one (preparation) includes identifying potential issues, affirming perceived problems, and focusing on high priority issues. The researcher should decide whether it is necessary to form a team or involve key leaders in the process. Internal and external factors including resources, timelines, and beliefs should be considered. Phase one also consists of searching, sorting, and selecting sources of research evidence and defining purpose and desired, measurable outcomes (Stetler, 2001). Phase two (validation) incorporates performing utilization-focused critiques and synopsis and determining their applicability to the EBP or study. This phase also includes reassessing the fit of individual sources and rating the level and quality of each piece of evidence (Stetler, 2001). Lastly, the researcher will differentiate statistical and clinical significance and eliminate non-credible sources. At this point the researcher has the ability to end the process if there is no evidence or insufficient credible evidence that is applicable to the identified problem (Stetler, 2001). Phase three (comparative evaluation/decision making) includes synthesizing cumulative findings which can include locally organizing and displaying similarities and differences across multiple findings (Stetler, 2001). Next, a decision will be made on whether or not to use each piece of data or information. This includes assessing the fit of the setting, feasibility to the study or project, substantiating evidence, and defining how the information relates to current practice (Stetler, 2001). Phase four (Translation/Application) incorporates the confirmation of type, level and method of application, utilization of the information in practice, and identifying evidence-based documentation for dissemination (Stetler, 2001). Phase five (Evaluation) includes evaluating and identifying the goal for use (formal, informal, individual, and institutional), considering cost benefit of evaluation



efforts, obtaining evidence to guide the change process, and identifying goal related progress and end results (Stetler, 2001). Phase five may include the researcher considering use either informally or formally. Informally includes obtaining targeted practice information where formal use includes implementing a pilot use project with evaluation (Stetler, 2001).

**Application of the EBP model to EBP project.** The five phases of the Stetler Model will be described in its application to the DNP EBP project. The first phase was the preparation phase where the DNP student project manager looked at identifying the purpose of consulting evidence. In this phase the project manager had previously identified the need to address the problem of stress within the nursing student population at a local Midwestern University. Many students frequently discussed their concern with all of the many objectives they needed to address on a day to day basis. This concern led to the project manager's desire to assist students to deal with stressors and promote positive behaviors and interventions to prevent stressors from building up and becoming detrimental to their health and well-being. Phase two of the model was the validation phase. This phase allowed the DNP student project manager to assess each source of evidence for its overall credibility, applicability, and operational details. This model takes into consideration that a methodologically weak study may still provide useful information in light of the evidence (Stetler, 2001). This is a large consideration as many of the nursing articles focusing on stress management were descriptive in nature. The DNP student project manager accomplished this phase through individual article critiques to determine the credibility of each individual study. A summary of findings reflected the meaning of each study and its relevance to the topic of the EBP project and reflected relationships between interventions in ways that were applicable to the sample population of interest. Phase three was the comparative evaluation, decision making phase (Stetler, 2001). During this phase the DNP student project manager determined

whether it was desirable to apply the findings to the evidence-based practice project. The project manager looked at the applicability criteria, evidence, and overall strength of the data summarized. Phase four was the translation and application phase. In this phase the DNP student project manager addressed and identified the type of research utilized. The project manager identified method of use, level of use, whether translation went beyond actual findings, considered the need for appropriate variation in certain cases, and planned for dissemination and change (Stetler, 2001). Plan five was the evaluation phase. This phase allowed for clarification of expected outcomes. This included differentiating formal and informal evaluation of applying findings in practice (Stetler, 2001). The DNP student project manager evaluated the results of the project at this time, and determined whether it was applicable to permanently implement the stress intervention into the nursing program curricula at the Midwestern University.

**Strengths and limitations of the EBP model for the EBP project.** Strengths of the Stetler Model include that it encompasses an easy step by step process that leads to a change throughout the healthcare spectrum. The model works in conjunction with changes in the clinical setting as well as the educational setting. This was one of the main strengths for applying this particular model to the EBP project. The model allowed for the project manager to fully evaluate each step of the EBP process along the way. It flowed seamlessly with the topic of stress intervention within the student nurse population.

Limitations of the Stetler Model in conjunction with this EBP project were not identifiable at the time of the project. The model was practical for numerous practice situations including the academic setting where the model was utilized to incorporate the DNP EBP project.

### **Literature Search**

A comprehensive search was obtained to find the best evidence-based research using specifically guided imagery to reduce stress in undergraduate nursing student populations and additionally in the general patient population. The following sections include a description of sources examined for relevant evidence, levels of evidence, and an appraisal of evidence.

**Search engines.** The literature search was conducted through the use of databases provided by the Valparaiso University Christopher Center Library. The databases searched included Cumulative Index to Nursing and Allied Health Literature (CINAHL), Proquest Nursing and Allied Health Source (Proquest), Medline via EBSCO, Cochrane, Education Resources Information Center (ERIC), Joanna Briggs Institute, PsychArticles, and Virginia Henderson Library.

**Key words.** Key words included “stress management”, “baccalaureate student”, “nursing student”, “intervention”, and “guided imagery”. An initial web-based review of available resources revealed a limited number of recent nursing student articles that utilized guided imagery as a source of intervention for stress management within the past five years. Therefore, no timeframe was used for the comprehensive search specifically reviewing guided imagery and deep breathing studies as forms of stress management interventions in the nursing student population. No specific type of study was excluded from the original search. Articles were plentiful originally, however many of the studies found included research on nursing students and their specific stressors and were lacking a specific stress intervention to assist students in managing their stress.

**Inclusion/exclusion criteria.** The criteria for articles reviewed included (a) adult subjects (greater than 18 years of age), (b) written in English, (c) focused on guided imagery in some form (with or without relaxation or deep breathing) as a type of stress management or stress intervention, and (d) focused on nursing students or focused on a

specific patient population. Articles were excluded from further evaluation if they (a) included part time nursing students, and (b) focused on types of intervention including exercise, healthy eating, MBSR, meditation not involving guided imagery, yoga, hypnosis, or other forms of stress management.

A search of the CINAHL database using MM “students, nursing” as the main heading AND (“stress” \* OR “stress management”) with limiters of scholarly articles and the year 2007 to 2013 yielded 175 hits. An additional search was run using the keyword: (MM “stress management”) AND ((MM “students, nursing, baccalaureate”) OR (MM “Education, Nursing, Baccalaureate”)) yielding 15 results. No limiters were utilized as limiters took the search down to only 3 hits. The 15 results were specific to the project but 75 % of the articles were descriptive narrative articles without a controlled study or specific intervention. A search of Medline via EBSCO using “stress intervention” as the main phrase and “nursing student” with a limiter of 2007-2013 yielded 30 hits; 20 articles were duplicates from CINAHL. The project manager reviewed the abstracts for the ten new articles from the Medline search. A search of ERIC using “stress management” yielded 3,853 results. When “nursing” was added the results were narrowed down to 57. Out of the 57 article abstracts reviewed, no articles were relevant to the DNP topic. An additional search of ERIC using “stress management” AND “student” and “nurse” yielded 27 results. Twenty seven abstracts were reviewed and no articles were chosen. Joanna Briggs was searched using “stress management”. A second search of Joanna Briggs was run using “student nurse stress” yielding three results; again no articles were chosen for further review. Psycharticles was another database used to search. Psycharticles was searched utilizing “stress management” which yielded 934 results. These results were narrowed by adding “nurses” which took the results down to 16. After review of abstracts, no articles were chosen. A search of Proquest database using SUBJECT.exact (“college students”) yielded 9,007 results which was narrowed by

adding “stress management” which yielded 112 articles. The search was then narrowed down by adding NURS\* to 74, and then limited to peer review taking the total number down to 40. An additional Proquest search using the key word “stress management” in the subject heading elicited 92 hits, which were modified by adding NURS, and narrowed down to 39 results. The 39 results were then narrowed by adding student, peer reviewed, and published after Jan 1, 2003, taking the total down to nine. Cochrane was searched utilizing the key term “stress management” or “nursing student stressors” and yielded 0 results. Over 200 abstracts were reviewed, and a total of 68 full text articles were reviewed. Many articles were kept for the background of Chapter 1 as they were descriptive and informative in nature but were not research studies with specific comparison groups. After review of the 68 full text articles only four articles were chosen for inclusion in the literature review for the EBP project.

It was deemed at this time that the project manager did not have many articles regarding just nursing students and stress interventions that included guided imagery. It was also apparent from the numerous searches performed specifically in CINAHL, Medline via EBSCO, and Proquest, where the majority of the articles were obtained, that there was a gap in the literature between the mid-1990s and into the early to mid-2000's regarding the utilization of guided imagery in the nursing student population. The project manager noted there were more recent articles regarding the utilization of guided imagery within other populations as a form of stress management. These populations included cancer patients, irritable bowel syndrome patients, pregnant mothers in distress or preterm labor, smoking cessation, patient's undergoing cardiac surgery, patients with immune-compromised status, postoperative patients, and post-traumatic stress disorder (PTSD) patients. The literature showed a significant improvement in stress reduction, pain relief, and improved health status among other benefits from the utilization of guided imagery in these specified patient populations. Therefore it was determined that

the project manager would do a thorough hand search based on the literature that was available in addition to performing a new search in CINAHL, Medline via EBSCO, and Proquest with the main heading of guided imagery in stress management.

First, a hand search of the reference list from the full text articles chosen was undertaken by the project manager. The hand search encompassed several days of tracking down and requesting a multitude of articles from Valparaiso's interlibrary loan system. As a result of the hand searches, 20 abstracts were reviewed, and 15 full text articles were chosen for review.

Next, a second comprehensive search of CINAHL, Medline via EBSCO, and Proquest was completed utilizing the key words "guided imagery" to attempt to elicit an increase in the number of studies utilizing guided imagery with or without deep breathing/relaxation as the intervention of choice in multiple patient populations. This second search of CINAHL was performed using "Guided imagery/NU" as the main heading. The search yielded five results, one of which the manager chose to review in full text. An additional search of Medline via EBSCO was run using the main heading "guided imagery" AND "stress management" which yielded 18 results. Fifteen of the 18 results did not meet inclusion criteria, therefore only three of the articles were reviewed in full text. Lastly, a final search was performed using Proquest with key terms of "guided imagery" AND "nursing" AND "stress management" with a limiter of 01/01/08 to 06/10/13 which yielded 71 results. After reviewing title and abstract, ten articles were chosen for full text review. At this point one final review of the reference lists from the full text articles was undertaken and the project manager located one additional article for review.

After reviewing all full text articles, only eight additional research articles were chosen as they met inclusion criteria. The project manager then performed citation

chasing from the main eight articles chosen, and one additional article was included for the literature review.

One of the articles found within Proquest included a dissertation assessing guided imagery as a form of stress intervention in the transition of nursing students to new graduate nurses. The paper was published in 2013, therefore giving a thorough and detailed list of articles referring to nursing student stressors and the use of guided imagery. The project manager was able to citation chase two more articles from the paper that were not originally maintained through Proquest and CINAHL. The project manager noted that at least 95% of the articles within the reference list of this new paper had already been obtained or reviewed by the project manager through initial searches of CINAHL, Medline via EBSCO, and Proquest. This was reassuring to the project manager, supporting that a thorough search of the current and past literature had been undertaken thus yielding a saturation of the literature including the articles that truly pertained to the specific DNP project.

The full text of each of the cumulative articles were reviewed, critically evaluated, and appraised. After full review of all literature searches, 128 full text articles were reviewed, and 116 were eliminated because they did not fit the inclusion criteria or did not use the chosen intervention of guided imagery. A total of 12 articles were chosen with various levels of evidence. The 12 articles successfully provided evidence that guided imagery alone or in conjunction with deep breathing and relaxation was useful in reducing student and patient stress levels.

**Expert opinions.** Expert opinions were evaluated. After discussion with several faculty colleagues, it was determined that guided imagery alone or in conjunction with deep breathing and relaxation as forms of stress interventions would facilitate learning and assimilation in the clinical and academic settings. Several faculty members and the DNP student project manager felt that stress interventions including deep breathing,

guided imagery, and relaxation could be adapted and utilized by students for future use with patient teaching scenarios. Students would be able to use these tools to assist patients who are dealing with stress regarding their care, diagnosis, recovery, and therapy/treatments.

**Description of levels of evidence.** The rating system developed by Melynck and Fineout-Overholt (2011) for the hierarchy of evidence was used to divide and further analyze the research articles. Level one evidence includes systematic reviews or meta-analysis of RCT's or EBP. Level two evidence includes evidence from at least one RCT. Level three is evidence obtained from well-designed controlled trials without randomization. Level four is evidence from well-designed case control or cohort studies. Level five is evidence including systematic reviews of descriptive or qualitative studies. Level six includes evidence from a single descriptive or qualitative study. Level seven includes evidence which reflects the opinions of authorities or reports of expert opinions.

**Appraisal of relevant evidence.** After thoroughly searching the literature, twelve articles were chosen for the literature review. There were four level two evidence studies, six level three evidence studies, and two level five evidence studies. The study designs included: two quasi-experimental pretest/posttest, control group designs, two quasi-experimental pretest/posttest designs, one quasi-experimental posttest design, one experimental group-based pre and posttest, one pre/post experimental design, one experimental, pretest/posttest control design with two posttest points, one prospective randomized, control trial, one prospective, longitudinal feasibility study using 1-group pre/posttest design, one descriptive pilot study, and one descriptive study.

**Level II evidence: Experimental group-based pre and posttest.** Wright et al. (2008) conducted a pilot study utilizing an experimental design to evaluate the effect of Physical, Environment, Task, Timing, Learning, Emotion, and Perspective (PETTLEP) based imagery training on nursing skill performance. PETTLEP is a form of imagery



structuring which involves preparation through focusing on each of the letters of the acronym. Each letter stands for an important practical consideration when implementing an imagery intervention (Wright et al., 2008). It was hypothesized that the PETTLEP imagery group would achieve statistically significant higher evaluation scores than the control group in performing two different nursing skills; blood pressure measurement and aseptic technique.

The design included a group-based pre and post-test, using Objective Structured Clinical Examination (OSCE) scores as the performance measure (Wright et al., 2008). Fifty six preregistration nursing student volunteers were recruited from the United Kingdom University nursing department, and only one eligible student declined to participate. None of the participants had ever received imagery training, and all but four participants were female. The Movement Imagery Questionnaire-Revised (MIQ-R) was utilized for the study as a screening procedure to ascertain whether participants had the ability to perform visual and kinesthetic imagery (Wright et al., 2008). All participants received a passing score of 16 or higher on the MIQ-R. The participants were assigned to one of the two groups, the PETTLEP imagery group and the control group by drawing names out of a hat (Wright et al., 2008).

The intervention included an initial practice session of the chosen OSCE skills and then an interview with the experimental group to gather data about their knowledge of the skills. Wright et al. (2008) utilized this information to assign individualized imagery scripts for the subjects. The students in the experimental PETTLEP group received response training which involved having students focus on their role within the chosen skill (Wright et al., 2008). Additionally participants were asked when feasibly possible to perform their imagery in their uniforms, holding any instruments, standing in correct stance, before or after a shift in the clinical setting, and to image the specific skill or task

in full, in real timing, and from an internal perspective; all of which covered each of the PETTLEP steps (Wright et al., 2008). The students in the experimental group imaged completing both tasks three times per week for four weeks prior to the OSCEs. The control group continued with their preparation in the usual manner.

Locally devised OSCEs were used as dependent measures in this particular study. Students were asked to carry out blood pressure measurements on simulation patients utilizing a sphygmomanometer and were given 20 minutes to complete the task and were allowed three attempts (Wright et al., 2008). Aseptic technique entailed each student performing an aseptic dressing change on a simulation patient and was given 20 minutes to complete the task. Tasks were assigned by the OSCE assessors. A single group of OSCE assessors conducted all assessments and were blinded to group allocation (Wright et al., 2008).

Data were analyzed by a one-way between-group Analysis of variance (ANOVA). Thirty eight students were assessed on blood pressure measurement (19 in each group). One-way ANOVA indicated that the PETTLEP imagery group scored statistically significantly higher on the blood pressure measurement OSCE than the control group ( $p = 0.038$ ) (Wright et al., 2008). Wright et al. (2008) indicated that PETTLEP imagery group did not score statistically significantly higher on the aseptic dressing change simulation OSCE than the control group.

Limitations of the study included lack of a pre-intervention assessment of competence of each skill. The assignment of participants was nonrandom which could have altered the characteristics of the two groups. An additional limitation to the study was the small number of male participants. Lastly, the researchers could have

considered an analysis on the effects of age or level of qualification on the effectiveness of the PETTLEP imagery.

This study was effective in demonstrating a relationship between a type of guided imagery and nursing students and their ability to develop and effectively demonstrate new skills.

**Level II evidence: Pre/post experimental design.** Iglesias et al. (2012) conducted a study with the purpose of designing, implementing, and examining the psychoneuroendocrine responses of three different types of stress management programs. Approximately 400 students from the School of Pharmacy and Biochemistry at the University of Buenos Aires were recruited through email to participate in the study. The researchers selected four groups of 14 students each by registration order (Iglesias, et al., 2012). Fifty six students were randomly assigned to four groups, where 52 subjects completed the programs and all measures.

Each of the three stress intervention programs consisted of stress reduction classes which included ten week sessions lasting 90 to 120 minutes per session. All three sessions included a brief introduction to the intervention for about 30 to 40 minutes followed by time spent performing the intervention for 20 to 30 minutes and 40 to 50 minutes in final reflection. The emphasis of the intervention was to provide students with numerous stress reduction skills that could be incorporated into daily life (Iglesias et al., 2012). The Response, Relaxation, Guided Imagery (RRGI) program included formal practice of deep breathing as a relaxing introduction into meditation-guided imagery exercises. The Cognitive Behavioral (CB) group program included cognitive behavioral stress management training which focused on following a theoretical introduction for each class, training modules, and group discussion followed by a brief review of

homework. The RRGICB program included a combination of the RRG I and CB programs together.

Psychological and physiological profile variables were each measured by different instruments. A one-way ANOVA was utilized to differentiate differences among the four baseline groups. Posthoc analysis was determined using Tukey's test and Wilcoxon Signed-Rank test was utilized to examine differences in pre and post variables (Iglesias et al., 2012). Effect size was also taken into consideration by the researchers as they used Analysis of covariance (ANCOVA) for each dependent variable.

Subjects in the RRG I group demonstrated significantly lower levels of salivary cortisol, respiratory rate, anxiety, anger, neuroticism, and hopelessness after the treatment (Iglesias et al., 2012). Subjects in the CB group showed significantly lower levels of anxiety, anger, and neuroticism after treatment. There was no significant reduction in salivary cortisol levels in this group. Lastly, subjects in the RRGICB group showed significantly lower levels of salivary cortisol, respiratory rate, anxiety, anger, neuroticism, and hopelessness (Iglesias et al., 2012). Subjects in the control group showed only one variable modification, which was a significant increase in cortisol levels. The effect size was large for salivary cortisol, anger trait, and respiratory rate. The effect size was medium for anger dysfunctional expression, neuroticism, and hopelessness (Iglesias et al., 2012).

The results of the study indicated that guided imagery along with deep breathing, and relaxation showed a positive relationship in assisting students with stress. All of the programs were effective in this particular study; however the deep breathing, meditation, and guided imagery group alone showed the highest level of effectiveness.

The researchers did control for baseline scores when analyzing scores through the utilization of ANCOVA with baseline scores as covariates for each corresponding post intervention score. This allowed for the variables to show statistically significant results when compared to pre intervention scores and also when compared to post intervention scores (Iglesias et al., 2012). This was a significant strength of the study.

There were several limitations of the study including the utilization of multiple stress management techniques making it more difficult to ascertain which technique had impacted each dependent variable more. Two additional limitations included the small sample size in each group, and the relatively short follow up period.

Ultimately this study represents the positive nature of combining the mind and body technique (guided imagery, deep breathing, and meditation) in an effort to reduce stress in the college student population which in turn affects the psychological and physiological variables associated with stress.

***Level II evidence: Experimental, pretest/posttest control design with two post-test points.*** Tsai and Crockett (1993) conducted a study to examine the effectiveness of relaxation training on aiding Chinese RNs to reduce their stress in three different first-ranked teaching hospitals in Taipei, Taiwan. The 137 participants were chosen randomly from the three hospitals. Twenty three subjects in the experimental and 23 subjects in the control group from each hospital participated in the study. A random selection was made from 46 units from two separate hospitals and 23 units from the smaller hospital. The instruments used to determine outcome measures in this study included the Nurse Stress Checklist (NSC) and Chinese General Health Questionnaire (CGHQ).

The experimental groups received relaxation training that combined meditation with imagery which lasted for a 90 minute session for two consecutive weeks with a follow up during the fifth week (Tsai & Crockett, 1993). The relaxation training sessions included presentations on topics such as sources of stress at work, relaxation as a coping method, process of relaxation, and techniques on breathing exercise, imagery, and meditation. The control group participated in the same sequence of sessions with a presentation by the researcher on theory analysis and nursing (Tsai & Crockett, 1993). Background data information and the initial NSC and CGHQ were collected after the first session and both the NSC and CGHQ were administered at the end of the second sessions and the beginning of the follow-up session (Tsai & Crockett, 1993).

The results of the study indicated that there was a statistically significant difference between the experimental and the control group on the main effect of nurse stress level ( $p < 0.5$ ) as indicated on the NSC questionnaire. Tsai and Crockett (1993) also found there was a significant interaction effect of treatment and time on the nurses stress level ( $p < 0.5$ ) on the NSC questionnaire. Additionally, the means of the NSC in the experimental group decreased from week one to week two and continued to decline from week two to week five. The control group differed as the means of the NSC decreased from week one to week two but stayed almost identical between week two and week five (Tsai & Crockett, 1993). The repeated measures ANCOVA showed no interaction effect between treatment and time of treatment ( $p < .05$ ) with the CGHQ questionnaire. The CGHQ consisted of somatic symptoms, anxiety/worrying, social dysfunction among other variables, and showed a significant change after two treatment sessions and one week of practice. The change of the NSC which was more focused on personal reactions, concerns, work concerns, and competence showed significant effects after two treatment sessions and four weeks of practice (Tsai & Crockett, 1993).

A strength of the study included decreasing the possibility of contamination by selecting only one nurse from each unit in the two larger hospitals and for the smaller hospital selecting two to three nurses from each unit to participate in the same group (either experimental or control) thus not exposing one group to the other group's intervention. A limitation included instituting multiple interventions (imagery, relaxation, and meditation) making it difficult to determine if one intervention was more successful than another.

The results revealed that relaxation techniques and guided imagery were effective in reducing nurse's stress and nurse's self-perception of their own health.

***Level II evidence: Prospective randomized, control trial.*** Mizrahi et al. (2012) conducted a prospective randomized control trial on the effects of guided imagery with relaxation training on the anxiety and quality of life among patients with inflammatory bowel disease (IBS). The study examined the impact of the intervention on patient's anxiety level, quality of life, pain, depression, stress, mood, and intestinal symptoms. Fifty six randomly selected patients from the IBD Centre patient database at Hadassah Medical Centre in Jerusalem, fitting inclusion criteria, were either put into a control or treatment group.

Data were collected utilizing several self-report questionnaires. All study participants were assessed pre and post-treatment. State anxiety was measured by using the State-Trait Anxiety Inventory (STAI). Quality of life (QoL) was measured with the IBD questionnaire, and the Visual Analogue Scale (VAS) was used to assess pain, depression, stress, and mood (Mizrahi et al., 2012). Cronbach's alpha reliability for the STAI in this study was 0.924 and 0.941 for pre and post-treatment respectively (Mizrahi et al., 2012). The Cronbach's alpha reliability for the quality of life IBD questionnaire was

0.925 and 0.929 for pre and post-treatment. Reliability of the subscales ranged between 0.657 and 0.902.

The treatment group consisted of three individual relaxation/imagery training sessions at two-week intervals. Relaxation training with guided imagery served as the basis for the three, 50 minute treatment sessions. Subjects were given a guided imagery audio disc to take home to use once daily for the five week interval.

Results indicated that 17 participants (30%) failed to complete the study for various reasons. Eighteen subjects in the treatment group and 21 in the control group completed the study by providing complete data sets. There were no statistically significant differences with regards to demographic variables; patients were on prior medication regimen throughout the study (Mizrahi et al., 2012).

Repeated measures analysis indicated a statistically significant difference between the two groups in STAI throughout the study showing the experimental group had significantly lower state anxiety levels. Mizrahi et al. (2012) utilized paired sample *t*-tests to compare pre and post-treatment scores for state anxiety which demonstrated statistically significant within subject improvements in the treatment group ( $p < 0.001$ ) and no change in the control group ( $p > 0.05$ ). The improvement in general QoL index score was significantly higher in the treatment group. Anxiety level decreased in the experimental group ( $p < 0.01$ ). QoL and mood improved ( $p < 0.05$ ), while levels of pain and stress decreased in the treatment group ( $p < 0.01$ ).

Strengths of the study included the utilization of *t*-test to analyze differences between group's baseline assessments for levels of STAI, QoL index and its four domains, three of the VAS measurements, and number of bowel movements. Several limitations included the non-blind study design that increased the potential for



investigator bias. The sample size was relatively small, affecting generalizability of the study results. No long term follow up was conducted to examine the lasting effects. Even with the limitations, the findings were indicative that IBD patients may benefit from the effects of guided imagery and relaxation training on anxiety and quality of life.

***Level III evidence: Quasi-experimental pretest/posttest, control group***

**design.** Charlesworth et al. (1981) conducted a non-randomized experimental study that utilized relaxation, guided visual imagery, and desensitization as a form of stress intervention in nursing students over a five week period of time. There were ten experimental group nursing students (all female) and eight control group nursing students (seven females and one male). Outcomes were measured by analyzing state and trait anxiety and student grades.

Effectiveness of the stress training was assessed by the researchers at three points throughout the study including pretest data, before midterm data, and before final examination data (Charlesworth et al., 1981). The STAI was used as a self-report dependent measure. Midterm and final examination departmental scores served as additional measures of the group's effectiveness in managing stress. Both groups received the same grading and testing procedures using standard departmental testing. Midterm and final STAI measurements were collected immediately prior to the midterm and final examinations.

Four stress management sessions (introduction, progressive relaxation, and deep muscle exercises) preceded the midterm. Post midterm, the experimental group received autogenic training, the use of visual imagery, and systematic desensitization for active coping with test-taking and other life stressors (Charlesworth et al., 1981). Stress management training included group training sessions for the experimental group that

included two one hour sessions per week over a five week period. Daily home practice was included as well.

Both state and trait anxiety measures showed statistically significant improvements after the five week period (Charlesworth et al., 1981). The stress management group effectively reduced trait anxiety ( $p < .05$ ). The mean difference in improvement on trait anxiety scores was 3.9; while the mean difference in state anxiety scores was 4.6. Grades did not show a significant difference. In addition the experimental group showed a reduction in state (test-taking) anxiety from mid-semester to final examinations, while the control group showed a slight increase from midterm to final exam (Charlesworth et al., 1981).

Strengths of the study included the procedural steps that the researchers took to assure that comparability of the two groups was the same. Charlesworth et al. (1981) reported that the groups did not differ significantly on the pretest state anxiety measures or pretest trait anxiety measures nor did they differ on GPA.

Charlesworth et al. (1981) noted that five of the students in the experimental group preferred visual imagery with a combination of another exercise. Experimental group students gave subjective reports of preferred techniques and application of stress management training which largely encompassed visual imagery alone and in conjunction with deep breathing. Students reported utilizing visual imagery and deep breathing as a preferred stress management technique for driving in heavy traffic, waiting in long lines, studying, generalized anxiety, controlling anxiety, clearing mind, gaining self-confidence, and relieving and controlling migraine headaches (Charlesworth et al., 1981).

A limitation of the study included the small sample size. The study utilized various methods of stress management techniques making it difficult to determine how effective each intervention was by itself. Although the study is older, it clearly demonstrates the effectiveness of different stress management techniques for students including guided visual imagery and deep breathing.

The researchers concluded that “the positive changes that occurred in generalized anxiety and in diverse situations support the value of stress management training as an effective process” (Charlesworth et al., 1981, p. 290). They also note that teaching nursing students to cope effectively with anxiety and stress may considerably decrease their vulnerability to work stress and exhaustion.

***Level III evidence: Quasi-experimental posttest design.*** Speck (1990) examined the effect of guided imagery upon nursing students performing their first injections. The quasi-experimental posttest design utilized a guided imagery treatment group and a control group of participants who were first semester undergraduate nursing students. Subjects for the study included 26 baccalaureate nursing students registered in the three fundamental skills laboratory sections at a Midwestern University (Speck, 1990). The control (10 students) and experimental (16 students) groups were similar in age, number of children, and hours of employment. However, the control and experimental groups were not as similar in regards to marital status, gender, and number of semester hours.

The STAI was used to acquire self-reported anxiety data. Biodot Stress Dots were utilized to measure physiological stress by clinically indicating peripheral body temperature as a measure of stress (Speck, 1990). Two other measures used in this

study included students' performance time and performance score. All 26 students were evaluated by two instructors, the researcher, and a graduate teaching assistant.

The experimental group received guided imagery instruction by audio cassette tape. Guided imagery steps were provided via the cassette tape which included relaxation, focus on the topic, imaging of procedure for injection, and imagery of successful completion (an important part of the imagery process). Three hours of supervised practice were allowed during the seventh week. The participants practiced all of the steps involved in administering an injection and utilized models for practice (Speck, 1990). During the eighth week each student scheduled a time slot during their regular lab hours to administer his or her first injection on a student partner. All participants were required to give an intramuscular injection into the dorsogluteal muscle. Participants in the experimental group listened to the guided imagery cassette prior to administration of the injection. All participants completed the STAI scale. Biodot readings were taken before the injection and performance was timed and scored.

ANOVA was conducted on baseline STAI scores to conclude that both the control and experimental group came from the same population. ANCOVA was calculated on the participants post treatment state anxiety scores, performance times, and performance scores for the performance evaluation (Speck, 1990). Biodot stress dot colors were evaluated utilizing a Kruskal-Wallis test.

Results showed statistically significant lower anxiety levels by self-report STAI ( $p = .0008$ ) for subjects who used guided imagery prior to performing their first injection. The other three measures were not statistically different. Speck (1990) postulated that this may be due to the reliability and validity of the stress dots. Several limitations to the

study including the inability to feasibly assign subjects to the experimental or control group, small sample size, and validity of the utilization of stress dots.

***Level III evidence: Quasi-experimental, pretest/posttest, control group design.*** Stephens (1992) conducted a quasi-experimental, pretest/posttest, control group design study with the purpose of examining the effectiveness of imagery via audiotape in decreasing anxiety and enhancing examination performance among first-year nursing students. One hundred and fifty nine female students who were enrolled in the first year of an Associate Degree in Nursing (ADN) or BSN nursing program in five separate institutions of higher learning in south central and southeastern United States volunteered to participate in the study. The volunteers were randomly placed into three groups which included imagery only, imagery/relaxation, and a no-treatment control group (Stephens, 1992). The first treatment group, imagery only group, was exposed to an audiotape using imagery. Students were instructed to utilize the audiotape initially for 15 minutes a day for five consecutive days, then to use the audiotape three times a week for three weeks at any time of the day (Stephens, 1992). The second group was exposed to the same imagery audiotape but the tape included five minutes of relaxation presented before the imagery. Students were instructed to listen to 20 minutes of the audiotape each day for five consecutive days followed by three times a week for three weeks (Stephens, 1992). The control group had no tape.

The STAI was used to measure student anxiety levels. Demographic data on variables that may increase anxiety in the participants were collected at pretest. Due to fluctuations of anxiety throughout the semester the researcher had students complete the inventory at similar times of anxiety to assure consistency of anxiety measures (Stephens, 1992). Stephens (1992) also utilized a second method of measuring the effect of the intervention by evaluating student's examination scores. Scores on the

course examination following the posttest were utilized to determine the effectiveness of the intervention on improving test scores. To assure that the students listened to the audiotapes the researcher administered an open-ended questionnaire to all intervention group participants. Only those students who listened to the audiotapes more than five times were included in the data analysis.

A one-way ANCOVA was completed on posttest state anxiety scores with the pretest state anxiety scores as a covariate in order to compare the treatment effects to the control group (Stephens, 1992). Posttest state anxiety scores in both experimental groups were significantly lower ( $p = .001$ ). Students who utilized the imagery tape had less anxiety as measured by the STAI compared to those students who did not listen to the tape. Test performance did not differ significantly between the experimental and control groups ( $p = .067$ ). The results of the questionnaire revealed that participants in both treatment groups experienced a sense of well-being, improved ability to sleep, greater energy, and improved self-confidence after utilizing the guided imagery tapes (Stephens, 1992). Stephens (1992) reported that these study results indicate that imagery alone can be effective in treating nonpathological anxiety and stress.

A limitation of the study included the high attrition rate, as 17 participants were dropped because they had not utilized the audio tape and one control group participant was dropped due to listening to another student's imagery CD. Other limitations of the study included utilizing examination scores as an indicator for effect of the intervention. Different teachers at each of the different institutions made up different tests, as opposed to using one single standardized test. Even with several limitations, the results of this study continue to support the benefit of utilizing guided imagery as a positive intervention in reducing anxiety and stress in the nursing student population.

**Level III evidence: Prospective, longitudinal feasibility study using 1-group pre/posttest design.** Jallo, Cozens, Smith, and Simpson (2013) conducted a repeated measure pre/posttest study design to assess the effects of guided imagery on maternal stress in 19 hospitalized pregnant women. Participants in the study were recruited from the antepartum unit of a tertiary hospital in southeastern Virginia. The women were between 20 and 34 weeks with an admitted diagnosis of preterm labor. The Numeric Rating Scale of Stress (NRSS) was utilized to quantify the intensity of stress among the participants. The reported reliability for NRSS ranges from 0.95 to 0.99 (Jallo et al., 2013). Blood pressure was also utilized as a measure of determining stress and anxiety. The intervention included listening to 20 minutes of a guided imagery CD once a day at a time when participants could focus on the CD only.

Results of the analysis indicated that the mean stress level after participation in the guided imagery therapy was statistically significantly lower than the mean level of stress prior to therapy. A *p* value was not provided in the article review. Sixty eight percent of participants had lower systolic blood pressure scores, while 53% of participants had lower diastolic blood pressure readings after the guided imagery intervention.

The study demonstrated encouraging results for the effectiveness of GI to reduce perceived stress and systolic blood pressure in hospitalized high-risk pregnant women and is consistent with past research examining guided imagery in pregnant women (Jallo et al., 2013). All participants documented at least one benefit from the guided imagery intervention and asked for the CDs to use upon arriving back at home after discharge.

Some limitations of the study included the study design. The sample was a small nonrandomized convenience sample with lack of a control group, which limits reliability

that the intervention, as opposed to other variables, resulted in stress reduction. The study took place over a relatively short period of time, and ultimately could have continued upon discharge of the women to allow for a longer intervention period. Only one psychological and physiological measure of stress was used. Stress is a multifaceted process, so obtaining various measures may have increased the strength of the results. Another concern with the intervention included the multitude of interruptions and noises within the hospital setting that affected the ability of the participant to fully concentrate on the guided imagery.

***Level III evidence: Quasi-experimental, pre/posttest design.*** Kruschke (2008) conducted a study to determine the effect of relaxation and guided imagery on healthcare employee mental and emotional stress. Kruschke assessed the impact of guided imagery on healthcare employees as a means to lower their blood pressure, pulse, and perceived stress level. The sample size consisted of 28 healthcare workers ranging from age 22 to 58 years living in a rural Midwestern Minnesota town working in a variety of areas. The intervention for the study consisted of four guided imagery sessions once weekly on the same day. Kruschke measured perceived stress levels using a VAS. Results were collected before and after each of the four sessions. Kruschke also took subjects blood pressure and pulse before and after each session.

Results of the study revealed a direct correlation between the reduction of blood pressure and pulse, and an overall reduction of the self-reported stress level by participants following the guided imagery session (Kruschke, 2008). There was a statistically significant difference between pre and post systolic blood pressure for each of the four guided imagery sessions ( $p < .0001$ ). Data analysis generated a statistically significant difference between the four guided imagery sessions using pulse as the repeated measure ( $p < .05$ ). Pre and post stress levels for guided imagery after each



session were also statistically significant ( $p < .0001$ ). These results were consistent for all four guided imagery sessions.

This study established the positive impact that guided imagery had on healthcare workers stress levels along with improved physiological responses in blood pressure and pulse readings. Limitations of the study included the small sample size of 28 participants and the non-diverse sample population comprised of primarily Caucasian females. This limited the ability to generalize results.

***Level III evidence: Quasi-experimental pre/posttest design.*** Watanabe, Fukuda, and Shirakawa (2005) examined a large number of healthy adults in the general community who had individually participated in a guided imagery program daily and for various durations to observe the psychological effects of a guided imagery program within a healthy group. Watanabe et al. studied 148 subjects (50 males and 98 females) who participated in guided imagery sessions and had practiced guided imagery at home for 20 minutes a day in a quiet place after becoming skilled at guided imagery in group sessions. Statistical analysis was only completed on the 138 participants who provided complete data by the end of the study timeframe.

The instruments utilized in the study included the Multiple Mood Scale (MMS), Betts Shortened Questionnaire on Mental Imagery (QMI), VAS of imagery vividness, salivary cortisol levels (Cs), and general stress and health were utilized in the sessions (Watanabe et al., 2005). The relationship between duration of guided imagery practiced at home and MMS, QMI, Cs, and general health and stress were assessed at baseline.

Statistical analysis included paired  $t$  tests to test changes in the MMS scores and repeated measures ANOVA was used to test the changes in the Cs levels (Watanabe et al., 2005). Results indicated that those participants that practiced guided imagery at

home for longer periods of time (> 20 minute a day) showed higher baseline scores of their positive mood on MMS, image vividness on QMI and general health, and lower baseline scores on their negative mood on MMS, and general stress than compared to participants who had shorter or no history of guided imagery at home. In addition the longer the participants practiced guided imagery at home, the higher the VAS vividness imagery scores were after the initial group session (Watanabe et al., 2005). There were no associated changes on duration of daily guided imagery practiced on the three Cs levels when repeated measures ANCOVA were calculated. Watanabe et al. (2005) recommended that the regular daily practice of a guided imagery program might be connected to less stress and better health.

Limitations of the study included the addition of background music and the instruction to deep breathe in conjunction with the imagery, allowing for other factors such as music and breathing to have played a role in the results. Data on the duration and frequency of guided imagery practiced at home were collected via participant memory, allowing for a decrease in the accuracy of participants recollection of actual time spent performing guided imagery over the duration of the study. It is possible that those subjects who enjoyed the guided imagery may have practiced it for longer periods of time each day at home. Age was not controlled for in this study and could have played a role in the outcome of Cs level.

**Level V evidence: Descriptive study.** Kvale and Romick (2000) conducted a descriptive study to determine the experience of midwifery students using imagery to assist them through role transitions. The University of Texas Collaborative Nurse-Midwifery Education Program approaches the transition from baccalaureate-prepared registered nurse to advanced practice nurse utilizing the role theory framework (Kvale & Romick, 2000). The college employed a nurse-counselor to assist students in

addressing the demands of stressors that students may encounter throughout their nursing training. The counselor also employed strategies to improve student stress and role transition (Kvale & Romick, 2000). Guided imagery is the mainstay of the strategies used throughout each semester of the program for midwifery students. In the final semester a specific intervention focused on preparing the students for leaving the student role and becoming a practicing professional midwife was implemented (Kvale & Romick, 2000). This intervention was the focus of the study.

Kvale and Romick (2000) utilized psychosynthesis as the final intervention which encompassed the method of employing relaxation of the mind and body, followed by visualization of elements of the student's transition process towards the advanced practice role. A 5-point Likert-type tool with an emphasis on qualitative comments was utilized as the evaluation tool for the intervention. The 5-point Likert tool was created by the nurse counselor to evaluate student's positive or negative responses to the guided intervention. Kvale and Romick stated results of the student evaluation scores revealed that psychosynthesis was received enthusiastically by the majority of students. No statistical analysis was reported in the study article. However, the authors did state that the positive results of the study led to faculty implementing the guided intervention to help facilitate role transition for future midwifery students.

***Level V evidence: Descriptive study.*** Contrades (1991) conducted a descriptive study to describe the use of imagery with nursing students for anxiety reduction, stress management, and learning psychomotor skills. The guided imagery assessed in the article reviewed relaxation and imagining a safe place. Contrades found that guided imagery is useful in nursing education where nursing students are guided through imagery exercises and taught imagery techniques independently in order to achieve their educational goals. Contrades looked through numerous studies evaluating

the effectiveness of guided imagery in an educational setting. The mental practice of imagery is implemented along with physical practice in the skills laboratory where images of an actual patient simulation is created for students. The student through guided imagery visually images participating in the setting with all appropriate tools for the procedure or skill. The student is taught to visualize the step by step process with each particular scenario, procedure, or skill. Faculty can guide students through details of the imagery while giving students control over specific features of their own imagery (Contrades, 1991). Contrades (1991) concluded after her review that not only is imagery use in the clinical setting an accepted nursing practice, but imagery used in the educational setting to reduce anxiety and stress is also effective for nursing students.

### **Construct EBP**

The best practice evidence was built upon the appraisal of the relevant evidence. A thorough review of the literature was undertaken to identify the evidence-based practice of utilizing guided imagery in undergraduate nursing students to reduce perceived levels of stress.

**Best practice recommendations for clinical question.** After a thorough review of the literature, the utilization of guided imagery in decreasing nursing students' perceived levels of stress was highly supported. Best practice recommendations include implementing a stress relief guided imagery intervention into the undergraduate nursing curricula at the chosen University. An additional best practice recommendation is to have all faculty members incorporate some form of guided imagery intervention into their course curricula to decrease level of perceived stress among nursing students in the program. This may include playing a guided imagery CD as students are entering the classroom setting or prior to administering an examination.

Guided imagery has been found to be increasingly valuable as an intervention in reducing pain, stress, anxiety, depression, hopelessness, and hostility among many other symptoms in the general patient population. Nursing students can utilize guided imagery not only during their nursing training but also as professional nurses for their personal lives and for the improved health and wellness of their patient's quality of life.

Many of the studies reviewed assessed the impact of guided imagery on the student's ability to successfully complete a specific clinical task by imaging completion of the task in a successful manner with an added reduction in stress and anxiety involved with the task. The results all indicated success in appropriately completing the task with reduced anxiety and stress compared to the control group (Charlesworth et al. 1981; Speck, 1990; Stephens, 1992). Therefore, the project manager's goal of utilizing a fundamental class is complimentary to several of the studies addressing use of guided imagery in performance of essential clinical nursing tasks. Providing students with stress management skills early in their training will improve their overall clinical and academic experience and success.

The DNP project manager desired to attain positive results for the EBP project in hopes of advocating for a lasting change in the fundamental class curricula which would include a permanent stress management intervention in the early phases of the students' training. The ultimate project goal is to permanently incorporate a stress management program utilizing guided imagery in the early phases of the nursing program at this Midwestern University.

## **CHAPTER 3**

### **IMPLEMENTATION OF PRACTICE CHANGE**

The PICOT question addressed in this project was: What is the effect of guided imagery on fourth semester BSN nursing students over an eight week period when compared to their pre intervention perceived stress scores? The synthesis of the literature supported the positive impact of guided imagery on student perceived stress and anxiety. In chapter three the project manager discusses the process of the procedure that took place during the fall semester. The project manager describes in detail the participants and setting, outcomes, intervention, planning, recruiting, procedures, data analysis tools, and protection of human subjects.

The EBP project manager functions as a nursing faculty member at a Midwestern University in Indiana. Throughout her experience as faculty, she has witnessed many students become overly anxious and stressed over the multitude of responsibilities the students have both academically and socially. The project manager has noted that the added stress impedes the student's ability to learn within both the academic and clinical environment. Currently the University does not incorporate any type of stress management or wellness intervention in the academic or clinical setting.

Undergraduate BSN nursing students enrolled in the fundamental class were invited to participate in the EBP project component of the guided imagery stress intervention. All students were required to participate in the guided imagery exercise as part of class participation. However, only those students who consented to participating in the data collection functioned as project participants.

#### **Participants and Setting**

The EBP project took place on the campus of a Midwestern University in Indiana. Campus enrollment is comprised of 8,490 students; 7,860 undergraduate students, and

630 graduate students. The School of Nursing has four programs including, a Bachelor of Science (BSN) four year degree, an RN to BSN program, a second degree BSN accelerated program, and a Master's of Science in Nursing program offering a Family Nurse Practitioner track.

The EBP project participants included 24 traditional sophomore year nursing students enrolled in the School of Nursing undergraduate BSN or accelerated degree program. The participants were recruited from 4th semester fundamental students who were registered for the fall semester 2013. The project manager chose to work with undergraduate college nursing students to provide them with evidence-based tools to utilize now, and as future professionals, in dealing with daily stressors. In addition, the project manager also chose the population of beginning nursing students. Several sources indicated that providing stress interventions early on in the students' education may prepare students for dealing with stress and anxiety in the future (Clark & Pelici, 2011; Jones & Johnston, 2006; Moscaritolo, 2009). The project manager has worked with many students who often have multiple stressors which impact their quality of life, social life balance, and clinical and academic performance. The benefits of providing stress tools during students' formative training are numerous as they will have lasting effects throughout their nursing career and will help relieve the stress associated with providing care to complex patients in an ever evolving health care system.

All students in the fundamentals class were required to participate in the guided imagery stress intervention which took place for the first 20 minutes of their lecture every Tuesday morning for the first eight weeks of the semester. The students were given information on the history and use of guided imagery as a form of perceived stress reduction in nursing students and patients alike. Students were guided through the stress relief imagery by an audio CD of Belleruth Naparstek, a professional guided

imagery psychologist. The project manager was present during the guided imagery and participated during the guided intervention with the students.

### **Outcomes**

The EBP project employed a pre and post perceived stress scale to determine how students who participated in the stress relief guided imagery intervention perceived their stress after an eight week trial period. Perceived stress levels were measured for each of the students participating in the project by administration of Cohen's perceived stress scale (PSS). The project manager reviewed demographic data describing the student's age, gender, marital status, employment status, and parental status to assess for outside variables that may have increased the level of perceived stress. The explanation of the study was provided on the first day of class prior to the first stress relief guided imagery. Although all students were required to participate in the guided imagery as part of their lecture course participation, participation in the EBP project was voluntary and not part of the requirements for the course.

The EBP project manager reassessed students' perceived stress levels by re-administering the PSS after the eight week stress relief intervention. The project manager also administered a post intervention self-report survey of usefulness to assist in gathering supplementary outcomes data. The post intervention self-report survey of usefulness was developed to assist the project manager in determining how the students felt about the guided imagery sessions and whether they utilized the guided imagery throughout the day at work, home, or school and how effective they felt the intervention was.

### **Intervention**

The evidence based practice project took place in the fundamentals class. The project manager, a DNP student, was not an instructor in the course at the time of the



project, but did direct the evidence based intervention. All participants in the project received the same stress relief guided imagery intervention.

The project manager provided students with a description of the project by reading the prewritten verbal script to the students on their first day of the fundamentals class. After answering any questions, the project manager left the room. The course instructor then distributed the informed consent sheet and also left the room to give students ample time to read and sign the consent form if they chose. Once students filled out the provided informed consent, the course instructor reentered the room and collected the informed consent sheets and distributed the demographic sheet and PSS. The course instructor handed every student the demographic sheet and PSS; those that chose not to participate in the project returned their paperwork blank. Once the students received ample time to complete these two items, the course instructor, then collected the data collection forms. The student project manager was then asked to reenter the room.

The course instructor privately correlated the three pieces of information (consent form, demographic sheet, and PSS) and assigned each student a code number. The course instructor then assigned codes to the data collection forms and entered the codes assigned to each student into a code book. The code book and data collection forms were locked in a drawer and remained there until the intervention was completed.

At the beginning of each lecture the students participated in deep breathing guided by the beginning of the Belleruth Naparstek stress relief guided imagery CD which then led into the actual guided imagery. The CD was played on a CD player, and the project manager sat and participated with the students during the guided imagery. The project manager was present for any questions or concerns by the students. At the end of the stress relief guided imagery CD, the students attended class as accustomed.

The intervention took place once a week consistent with the class over an eight week period.

At the completion of the eight week intervention period, the project manager read the prewritten post intervention/survey script (Appendix B) to the students and answered any questions. After the project manager answered all of the questions, the manager left the room. The course instructor distributed the PSS and post intervention self-report of usefulness survey. After ample time had been given to complete the forms, the course instructor collected and attached the forms to the appropriate student's pre intervention paperwork. The course instructor removed any identifying information from all paperwork except for the code number. The course instructor provided the project manager with the completed paperwork that was coded by numbers only for input into the Statistical Package for the Social Sciences (SPSS) 28.0 statistics software program. The consent forms remained on file until the project was concluded and the results presented.

Students who wanted to opt out of the project were given the ability to do so at any time. Students could tell the course instructor or the project manager they no longer want to be a part of the project. The course instructor would have shredded any of their paperwork that had been collected to date. Fortunately no students opted out of the data collection; rather several were absent either on the first or last day during data collection. The absent participants paperwork were shredded with the remaining paperwork at the end of the data analysis period.

### **Planning**

The planning phase of the project initially started with performing specific literature searches of nursing students stress and the utilization of guided imagery as a stress intervention. After a thorough review of the literature, the project manager contacted both the head of the undergraduate BSN program and the instructor for the fundamentals class. Both the BSN program director and instructor were consulted

regarding the project manager's specific plan for implementation of the guided imagery in the proposed student population. The project manager discussed evidence pointing to the increasingly stressful environment that students are faced with academically, clinically, and socially. The project manager gave detailed evidence recommending a proposed stress intervention in the population. The BSN program director and the course instructor both agreed that the intervention was exciting and would be beneficial for students during their training. Both faculty members also saw the benefit of stress interventions for use with future patients.

The only change to the course was the implementation of the guided imagery during the first 20 minutes of the lecture. Participation in the guided imagery counted towards class participation hours. The students were not required to fill out any of the data collection instruments if they did not give informed consent.

Additional planning for the project included gathering all necessary data and tools for the intervention component. The project manager researched different options for the proposed guided imagery. Once the project manager identified the CD of choice, the project manager obtained consent from Belleruth Naparstek for utilization of her stress relief guided imagery audio CD.

After researching different options for tools to measure the outcomes, the project manager chose the PSS. The scale was easy to read and had a high established reliability and validity. The project manager obtained consent for use of the scale.

### **Recruiting Participants**

The project manager recruited students from the fundamental class on their first day of their fall semester class, August 27<sup>th</sup>, 2013. The project manager prepared a script that was reviewed and approved by both the Valparaiso University and the Midwestern University's Institutional Review Boards (IRB) to be read to the students prior to obtaining informed consent and beginning the project. The script was read to the

students at the beginning of the first class. The project manager then answered any questions that the students had in regards to the project. Once all questions were answered, the project manager left the room. The script can be found in Appendix C.

### **Data**

Data were collected from EBP project participants before and after the guided imagery stress intervention. The pre and post intervention data were used to evaluate the usefulness of the intervention. The following sections will discuss the reliability and validity of the instruments used. The management and analysis of the data collected from the instruments will also be discussed.

**Measures and their reliability and validity.** The PSS was utilized to measure the perceived stress of participants both prior to the start of the guided imagery intervention and at the end of the guided imagery intervention. The PSS is the most widely used psychological instrument for measuring the perception of stress. It is a measure of the degree to which situations in one's life are appraised as stressful (Cohen, Kamarck, & Mermelstein, 1983). Cohen et al. (1983) state that items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. A study done by Cohen and Williamson (1988) assessed perceived stress in a probability sample of the United States (U.S.). For this particular study the PSS 10 was shown to have better reliability and validity than the longer PSS 14 version. The PSS 10 was recommended for future research purposes. The PSS 10 showed an alpha coefficient of .78 for internal reliability in the study of perceived stress in the U.S. population. The study further reported that the PSS scale does an adequate job of measuring appraised stress which is the measured outcome in this particular EBP project.

The PSS can be completed in a four question, ten question, or fourteen question format. The PSS utilized for this project included the ten question scale used to assess

the degree to which the participant is experiencing stress in various life situations. For each item, the participant was to choose the number that best described the participant by filling in one of the five circles to the right of the statement according to the following scale: 0=never, 1=almost never, 2=sometimes, 3=fairly often, 4=very often. The PSS met the need of this EBP project since it focuses on assessing the participant's perceived stress at the time of the survey. The ease of obtaining the measured outcome was another reason for choosing this method. The PSS was designed for use with community samples with at least a junior high school education. The items are easy to understand, and the response alternatives are simple to grasp. The PSS is the only empirically established index of general stress appraisal. The PSS-10 scores are obtained by reversing the scores on the four positive items, e.g., 0=4, 1=3, 2=2, etc. and then summing across all 10 items. Items 4, 5, 7, and 8 are the positively stated items. Scores can range from 0 to 40, with higher scores indicating greater stress.

**Collection.** The collection of data was completed by the ninth week of the semester. During the first class, initial data collection included giving the students the opportunity to voluntarily participate in the project. Those students who chose to participate in the project signed the consent form on the first day of lecture. Students who participated in the project also filled out the demographic sheet and PSS prior to the start of the intervention on the first day of lecture. Upon completion of the intervention the participants were asked to fill out the PSS and a post intervention self-report of usefulness survey. After the course instructor collected all paperwork from the participants, the instructor made sure all student data were attached to the appropriate code number and removed any identifying student information from the data. The course instructor provided the student project manager with the data without any names attached to maintain subject confidentiality. The project manager placed the data into SPSS for statistical analysis.

**Management and analysis.** The effectiveness of the guided imagery stress intervention was evaluated by the use of the PSS administered before and after the intervention. The comparison of the pre and post intervention scores was evaluated to establish if the guided imagery should be integrated into future undergraduate nursing curricula. The project manager assessed the demographic characteristics of the participants to determine if there were any confounding variables that may have increased or decreased the students' perceived stress levels. The demographic variables that were assessed were age, gender, marital status, parental status, and work status. All of these variables could ultimately play a role in increasing or decreasing individuals perceived level of stress.

The post intervention self-report survey of usefulness was utilized to evaluate whether the students used the intervention outside of the fundamental class. The survey also assessed the participant's perception of the likelihood the students will utilize guided imagery and deep breathing in the future.

Data were analyzed using the SPSS 28.0 statistics software program. Paired samples *t* tests were utilized to compare and evaluate scores from the pre intervention and post intervention PSS to measure the effectiveness of the intervention. Because the nature of each individual question on the PSS lent itself to be considered ordinal data, a Wilcoxon Signed-Rank test for related samples was also run on both pre and post intervention PSS scale scores. A Wilcoxon Signed-Rank test for related samples was also run on each individual PSS question to assure the results of the paired samples *t* tests were accurate.

### **Protection of Human Subjects**

The project manager obtained IRB approval from both Valparaiso University and the Midwestern University's IRB. The project manager did not associate any risks either

physical, psychological, social, legal, or loss of confidentiality or other risk connected with the stress intervention and project collected data.

The project manager took precautions to maintain confidentiality. Although the answers and information that students gave were used and reported by the project manager, their name and other facts identifying the student were kept strictly confidential. Quotes taken from the post intervention self-report of usefulness survey were used in the reporting of the project results.

The students were assured that whether or not they chose to participate in the project, there was no impact on their grade in the course, nor was there any impact on their progression or grades at the University. The consent form stated that students understood that participating in the project was their choice, and they were free to withdraw at any time by informing the course instructor or the project manager. At that point the project manager would have shredded any of the participant's paperwork that had been collected.

The project manager took extra precautions when developing the consent form to assure students of the procedure, any risks (none were known), benefits, voluntary participation and withdrawal rights, and confidentiality. The students who wished to participate in the project signed the consent form. Those who did not wish to participate in the project left their consent form blank as well as any paperwork that was distributed during class time in relevance to the EBP project.

The project manager was also certified by online training offered through the National Institute of Health to maintain all safeguards necessary while conducting EBP projects or research. The project manager took precautions throughout the EBP project to assure that participants were safe and free from any danger.

To reduce any coercion of participants, the project manager was not an active teacher for any students in the fundamentals class. The project manager did not have

any inside or outside relationship with any of the students. The project manager met with the students for the first time on the first day of their fundamentals class. The project manager had no power or authority over any of the students. The project manager read a script (as described above in subject recruitment section) to the students and answered any questions they had after the script was read. Once all questions had been answered, the project manager left the room to assure there was no perception of coercion. The course instructor also left the room after she passed out the consent form to the students.



## CHAPTER 4

### FINDINGS

This EBP project was designed to determine if a guided imagery stress intervention was effective in improving perceived levels of stress in undergraduate nursing students within a Midwestern University. The PICOT question for the EBP project was “What is the effect of guided imagery on fourth semester BSN nursing students over an eight week period when compared to their pre intervention perceived stress scores?” Specifically, the DNP project manager chose to utilize a Belleruth Naparstek stress relief guided imagery CD as the chosen intervention to reduce stress in fourth semester fundamental nursing students. This chapter will provide the data analysis of the EBP project. The following data analysis will detail project outcomes and compare the effectiveness of the guided imagery on pre and post PSS scores.

#### **Participant Characteristics**

Demographic data was collected on the sample participants. Demographic data included gender, age, marital status, parental status, and employment status. The following section will discuss the participant size and characteristics.

**Size.** Twenty one participants completed the project. Out of the 24 initial students, one student was absent on the first day of data collection, while two students were absent on the last day of data collection, therefore removing them from data analysis. The DNP student project manager was unable to determine the demographic characteristics of the 12.5% that were dropped from the data analysis because the demographic data was missing from the student who was absent on the first day of the intervention.

**Characteristics.** The mean age of the twenty one participants was 24.71 years. Nineteen participants (90.5%) were female, and two participants (9.5%) were male. The

gender distributions were reflective of a typical nursing program population with females serving as the majority of the students.

Sixteen of the participants (76.2%) were actively working, while five participants (23.8%) were not working. Five of the participants (23.8%) had children at home, while 16 participants (76.2%) were without children in the home. Sixteen of the participants (76.2%) were not married, while five participants (23.8%) were married.

**Instrument reliability.** The EBP project utilized the 10 question PSS as the instrument of choice. The PSS was important to the EBP project as the scale directly measured perceived stress, prompting participants to recall their stress over the previous month. The lower the total sum of the ten scale questions, the lower the level of perceived stress. Since the EBP project was specifically evaluating the level of perceived student stress the PSS was a compatible choice. Additionally, the PSS was designed for use with community samples with at least a junior high school education. The PSS items and answer selections are easy to comprehend.

Although, reliability and viability was established previously for the PSS by Cohen and Williamson (1988) with an alpha coefficient of .78, the reliability was also established for this EBP project. The alpha coefficient for the PSS in this EBP project was .57.

### **Changes in Outcomes**

The PICOT question for this EBP project asked, "What is the effect of guided imagery on fourth semester BSN nursing students over an eight week period when compared to their pre intervention perceived stress scores?" Initial review of results indicated that thirteen of the 21 participant's had lower scores on the PSS after the guided imagery intervention. A lower score on the PSS indicated a decrease in overall perceived stress over the last month for the participant. Some participants lowered their post intervention PSS scores by as much as 13 points, while others lowered their scores

by only a few points. (Table 4.1). Twelve females had lower perceived stress on the post intervention PSS, while seven females had higher perceived stress on the post intervention PSS. One male had improved perceived stress while one male had higher perceived stress post intervention. It was unknown if students whose perceived stress scores had improved post intervention were more successful within their clinical and classroom environments. Nineteen participants stated they would utilize guided imagery or some form of stress intervention in the future to deal with stressors.

**Table 4.1** Participant pre and post guided imagery intervention scores

<b>Participant</b>	<b>Pre scores</b>	<b>Post scores</b>	<b>Points improved (less stress)</b>	<b>Points non Improved (more stress)</b>	<b>Improvement post guided imagery</b>
1	17	13	-4		Yes
2	20	19	-1		Yes
3	11	19		+8	No
4	10	14		+4	No
5	22	20	-2		Yes
6	13	15		+2	No
7	7	9		+2	No
8	13	25		+12	No
9	18	12	-6		Yes
10	18	5	-13		Yes
11	15	14	-1		Yes
12	11	24		+13	No
13	21	8	-13		Yes
14	20	7	-13		Yes
15	28	17	-11		Yes
16	14	22		+9	No
17	23	12	-11		Yes
18	27	23	-4		Yes
19	23	18	-5		Yes
20	15	16		+1	No
21	17	8	-9		Yes

**Statistical testing.** To determine the effectiveness of the guided imagery stress intervention, a paired samples *t*-test was conducted using commercially available software, the Statistical Package for the Social Science. Paired-samples *t* tests were utilized to evaluate if there was any significant difference between the PSS scores before and after the guided imagery intervention. Paired-samples *t* tests were also utilized to analyze and compare the pre and post PSS scores for each individual question before and after the intervention. Since the data of each PSS question resembled the nonparametric data of a Likert scale, a Wilcoxon Signed-Rank test for related samples was also performed on each pair of pre and post PSS questions to confirm the accuracy of the results. Statistical significance for all analyses was established as  $p = .05$ . Descriptive statistics were utilized to determine the mean age of participants, whereas frequencies were used to describe the remaining demographic variables.

**Findings.** The effect of guided imagery on perceived stress was mixed. Overall, guided imagery did not significantly decrease the perceived level of stress after the guided imagery intervention. The mean score on the PSS before the intervention was 17.287 ( $sd = 5.58$ ), and the mean score on the post PSS was 15.29 ( $sd = 5.86$ ). No significant difference from pre intervention to post intervention was found ( $t(20) = 1.161$ ,  $p = .259$ ). A Wilcoxon Signed-Rank test for related samples also produced similar results, showing no significant difference was found from pre intervention to post intervention ( $p = .236$ ).

The results from each of the 10 questions on the PSS were also evaluated using paired-samples *t* test. Because the nature of each individual question lent itself to be considered ordinal data, a Wilcoxon Signed-Rank test for related samples was also performed to confirm the results of the paired samples *t* test. After performing the Wilcoxon Signed-Rank test for related samples for each of the pre and post question

pairs, there was no difference found between the results of the paired-samples *t* tests and the Wilcoxon Signed-Rank tests for related samples. Two of the questions on the PSS showed a statistically significant difference in improvement in stress on specific indicators of stress before and after the guided imagery intervention. The first question with a statistically significant result included, "in the last month, how often have you felt that you were unable to control the important things in your life?" The mean on the pre intervention stress scale question was 2.00 (*sd* = .89), and the mean on the post intervention stress scale question was 1.48 (*sd* = .87). A significant increase in control over unexpected events from pre intervention to post intervention was found ( $t(20) = 2.329, p = .03$ ). The result of the Wilcoxon Signed-Rank test for related samples also exhibited a statistically significant difference ( $p = .03$ ) for question number one post intervention. The fourth question on the PSS also indicated a statistically significant difference in level of perceived stress before and after the guided imagery intervention. This question included, "in the last month, how often have you felt confident about your ability to handle your personal problems?" The mean on the pre intervention stress scale question was 2.76 (*sd* = .83), and the mean on the post intervention stress scale question was 3.14 (*sd* = .65). A significant increase in the level of confidence over the students' ability to handle stress from pre intervention to post intervention was found ( $t(20) = -.044, p = .030$ ). The result of the Wilcoxon Signed-Rank Test for related samples also revealed a statistically significant difference ( $p = .03$ ) on question number four post intervention.

### **Significance**

The findings indicate that there was not a statistically significant difference between the PSS before and after the intervention. However, there was a notable improvement in students perceived stress level when looking at two different stress variables in two of the PSS questions. Participants felt an increase in control over unexpected events.

Participants also felt more confident in their ability to control personal problems in their life.

The DNP student project manager evaluated the demographic characteristics of the 21 participants in comparison to their post intervention PSS scores. The DNP student project manager sorted the participants and their PSS scores according to their demographic characteristics. Table 4.2 presents the demographic characteristics of the participants and whether, as a group, they increased or decreased their stress level perceptions.

**Table 4.2 Participant demographic characteristics and perceived stress results**

Participant characteristics	Decreased perceived stress level post intervention	Increased perceived stress level post intervention
Employed	11	5
Non employed	2	3
Married	4	2
Non married	9	6
Children	4	1
No children	9	6



## CHAPTER 5

### DISCUSSION

This EBP project was designed to answer the PICOT question: “What is the effect of guided imagery on third semester BSN nursing students over an eight week period when compared to their pre intervention perceived stress scores?” Although 13 of the 21 participants post intervention PSS scores were lower, indicating a decrease in perceived level of stress, there was not a statistically significant decrease in overall student perceived stress after comparing the pre and post PSS scores. In this chapter, an explanation of findings, evaluation of the applicability of the theoretical and EBP framework, strengths and limitations, and implications for future research will be reviewed.

#### **Explanation of Findings**

Demographic data were collected from each participant prior to the initiation of the guided imagery intervention. Twenty one participants completed the project. Out of the 24 initial students, one student was absent on the first day of data collection, while two students were absent on the last day of data collection, therefore removing them from data analysis. Participant characteristics were analyzed for the final sample population. The mean age of the twenty one participants was 24.71 years. Nineteen participants (90.5%) were female and two participants (9.5%) were male. The gender distributions were reflective of a typical nursing program population with females serving as the majority of the students. Sixteen of the participants (76.2%) were actively working, while five participants (23.8%) were not working. Five of the participants (23.8%) had children at home, while 16 participants (76.2%) were without children in the home. Sixteen participants (76.2%) were not married, while 5 participants (23.8%) were married. The gender distributions were reflective of a typical nursing program population

with females serving as the majority of the students. However, 24.71 years of age is an older than traditional sophomore college student, which could ultimately lead to additional stressors related to being an adult. These students may experience more stress due to having to work a full time job as they are likely independent of a parent. They may also have to pay for their own housing, insurance, car, food, schooling, etc. Those students who are married may have the added stress of marital concerns, money, jobs, among other stressors. Students who have children may have increased stress due to fulfilling parental responsibilities while going to school, and possibly even working at the same time.

The paired samples *t* test findings did not show a statistically significant impact on perceived stress following the guided imagery intervention. The mean score on the PSS before the intervention was 17.287 (*sd* = 5.58), and the mean score on the post PSS was 15.29 (*sd* = 5.86). No significant difference from pre intervention to post intervention was found ( $t(20) = 1.161, p = .259$ ). A Wilcoxon Signed-Rank test for related samples also produced similar results, showing no significant difference was found from pre intervention to post intervention ( $p = .236$ ). While not statistically significant, the two point decrease in the mean total PSS scores is clinically significant. The DNP project manager did not gather information about what else was occurring in the participants' lives at that particular point in time. It is also possible that the participants' stress may have increased during the first month of the intervention and then decreased again during the second month of the intervention.

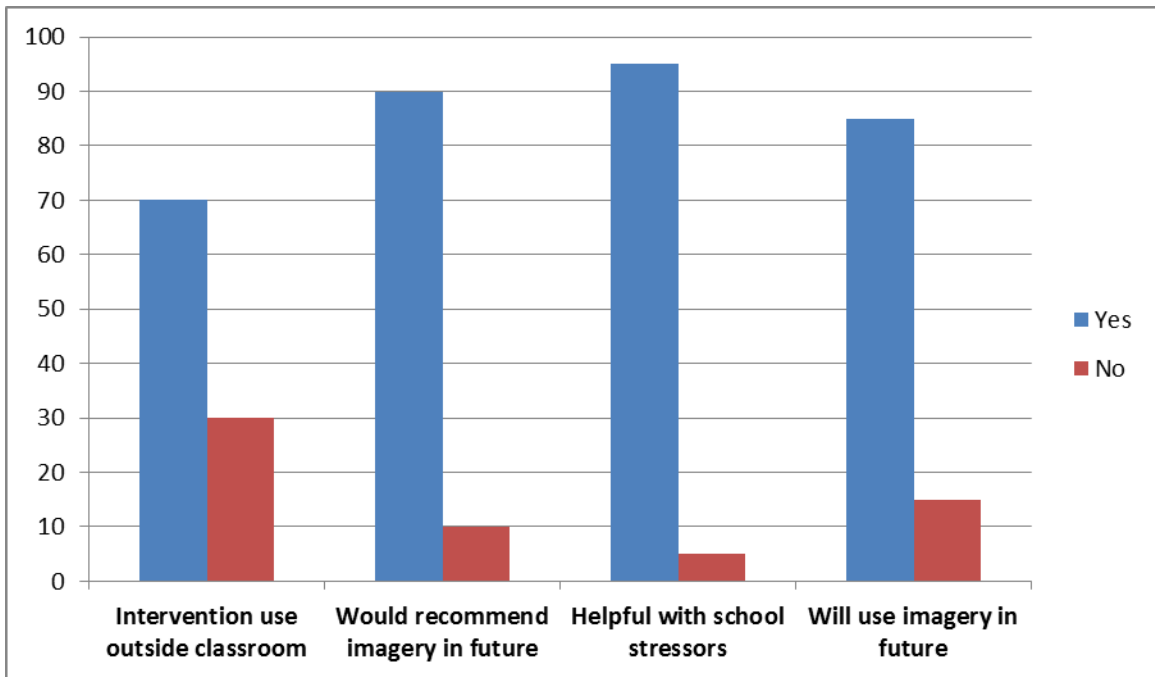
There were two separate PSS questions that indicated a statistically significant improvement after the guided imagery intervention. The first of these two questions (question #1 on the PSS) showed that students had a higher level of confidence in their ability to control their stress because of an unexpected event after the guided imagery. The mean on the pre intervention PSS question #1 was 2.00 (*sd* = .89),

and the mean on the post intervention PSS question #1 was 1.48 ( $sd = .87$ ). A significant increase in control over unexpected events from pre intervention to post intervention was found ( $t(20) = 2.329, p = .03$ ). The second question (question #4 on the PSS) was also statistically significant and asked how often the participant had felt confident about his or her ability to handle personal problems. The students felt more confident in their ability to handle their personal stressors following the guided imagery intervention. The mean on the pre intervention PSS question #4 was 2.76 ( $sd = .83$ ), and the mean on the post intervention PSS question #4 was 3.14 ( $sd = .65$ ). A significant increase in the level of confidence over the students' ability to handle stress from pre intervention to post intervention was found ( $t(20) = -.044, p = .030$ ). The increase in level of confidence may be due to the student's proven ability to complete and carry out new clinical skills after two months of hands on clinical experiences. The confidence in the new skills may be increasing confidence in all facets of the students' lives. The increase in control over unexpected events could be due to the increase in control students may feel in their classroom and clinical settings as half of the semester was completed at that time. Both the increase in control and confidence may be related to the growth in knowledge students gained over the previous two months, obtained through, reading, classroom lectures, and examinations.

The post intervention self-report surveys of usefulness results were positive. The surveys indicated a positive response between the guided imagery stress intervention and student satisfaction. Fourteen of the 21 students used guided imagery, relaxation, prayer, or deep breathing outside of the classroom. Nineteen of the 21 participants stated they would recommend guided imagery and/or deep breathing to family, friends, or patients in the future. Twenty of 21 students felt that the guided imagery was helpful when dealing with school related stressors. Some participants also commented that the stress intervention was helpful with social, work, and family related stressors. Eighteen

of 21 students stated they would use guided imagery and/or deep breathing in the future as a source of stress relief. Table 5.1 represents the post intervention survey of usefulness results.

The DNP project manager did not collect data exploring the relationship between academic success and perceived stress. Due to the confidential nature of the student participants and the limitations set by the Midwestern University's IRB on type of data to be collected, the project manager was unable to gather information which included examination scores, GPA, clinical evaluation scores, or other indicators that may affect level of perceived stress. Therefore, the DNP project manager was unable to explore the possibility of higher academic success leading to lower or in some cases higher perceived levels of stress depending on the personality type of the student.

**Table 5.1 Post Intervention Self-Report Survey of Usefulness Results**

Many positive comments were also elicited on the post-intervention survey of usefulness. Students indicated that the guided imagery allowed the student to feel relaxed, calm, and ready for class to begin. Many students also felt the guided imagery helped them to “decompress” prior to the start of class. Several students indicated that guided imagery was easy to participate in. Other students stated they looked forward to the weekly guided imagery in class as they did not have time to participate in stress relief interventions outside of class. Numerous students admitted to feeling more relaxed than usual since beginning the guided imagery sessions. Various participant quotes taken directly from survey results have been included in Table 5.2.

**Table 5.2 Comments from participants from the self-report of usefulness survey**

“I try to give myself time to just sit, relax, and deep breathe at least once a day since the intervention.”

“It was a good relaxer before tests and lectures.”

“When I felt stressed or anxious, I would take a few minutes to do some deep breathing.” “I also did deep breathing before going to bed.”

“I liked how we were able to relax before lecture began.”

“This class is probably the class that stresses me out the least because I knew we would have a de-stress session at the beginning of class.”

“I never take my own personal time so when I came to class on Tuesday I looked forward to the stress intervention.”

“I have found myself more relaxed than usual lately and a little more go with the flow.” “I’ve been wondering if it is because of the stress intervention”.

“It helps me de-stress and clear my mind.”

“Deep breathing will be a great resource to use.”

**Evidence.** Several of the studies appraised in Chapter 2, indicated that guided imagery showed a statistically significant improvement in levels of stress and anxiety, and/or improved clinical nursing validation skills (Speck, 1990; Stephens, 1992; Wright et al., 2008). Iglesias et al. (2012) found that pharmacy and biochemistry students who participated in a guided imagery relaxation group demonstrated significantly lower levels of salivary cortisol, respiratory rate, anxiety, anger, neuroticism, and hopelessness after the treatment. Tsai and Crockett (1993) found that Chinese RN'S working for top-ranked teaching hospitals in Taipei who were exposed to relaxation and guided imagery were found to have reduced stress levels and an improved perception of their own health after a five week period. Although these studies utilized different measurements and instruments than the EBP project, both showed a positive relationship between guided imagery and students/nurses' level of stress and anxiety. The common intervention effect was the guided imagery. Although this EBP project did not show statistically significant results after the intervention, the project did show that thirteen of the twenty one students that participated in the project had decreased levels of perceived stress following the guided imagery. In addition, nineteen of the twenty one student participants stated they would use some form of guided imagery or stress intervention again in the future and would recommend it to family, friends, and future patients. Therefore, the results of this EBP project are fairly consistent with the previous studies reviewed in the literature. One of several differences of this EBP project compared to other studies reviewed was the utilization of the PSS as the instrument to measure pre and post intervention stress scores. Several of the studies reviewed in the literature utilized the State-Trait Anxiety Inventory. However, the EBP student project manager was assessing perceived levels of stress, as opposed to anxiety, making the PSS a complimentary instrument to the EBP project. In addition, this EBP project was not evaluating nursing



assessment validation skills, or examination scores, as in several of the studies (Speck, 1990; Stephens, 1992; Wright et al., 2008) reviewed in the literature.

Many of the studies that utilized post intervention surveys, had similar positive statements about the usefulness of guided imagery when compared to the survey results of this EBP project. Student participants from this EBP project discussed how they felt guided imagery was important to reduce everyday stressors, and they found themselves utilizing guided imagery outside of the classroom. Student participants in previous studies also indicated that they utilized the guided imagery outside of the research study and felt that guided imagery was useful in many ways.

### **Evaluation of the Applicability of the Theoretical and EBP Framework**

The chosen theoretical framework, Betty Neuman Systems Model, flowed seamlessly with the project throughout the planning, implementation, evaluation, and dissemination phases. The Neuman Systems Model is focused predominately on stress prevention and the promotion of wellness, which was the goal of this EBP project. The DNP student project manager anticipated an improvement in student perceived levels of stress by incorporating the stress relief guided imagery intervention into the classroom setting. The Neuman Systems Model allowed for the project manager to take into account that each individual student has a continuous relationship to environmental stress factors. The student is in constant exchange with the environment and is always moving towards a state of dynamic stability or wellness or a state of illness. By realizing that each student is at a different state of stability, the DNP student project manager targeted the guided imagery at improving each student's current state of dynamic stability in hopes of guiding them closer to a state of wellness. When the student is in a state of wellness he or she can better cope with stressors related to school both clinically and academically. The guided imagery was designed to assist in counteracting the environmental stress demands that are constantly present within the undergraduate

nursing curricula. The guided imagery was openly accepted by student participants allowing for the imagery to give them a sense of dynamic stability in their stressful schooling environment. The Neuman Systems Model allowed for the guided imagery to be integrated seamlessly into the classroom setting with the students by reinforcing a stable level of wellness throughout the first part of the semester through weekly guided imagery stress intervention sessions. Teaching students appropriate stress intervention techniques, such as guided imagery did prove to be a successful intervention in improving more than half of the participants' overall post perceived stress scale scores. By improving overall PSS scores, the students were more likely to move along the continuum of health to a state of wellness.

Overall the Neuman Systems Model aligned nicely with the goals, implementation, and evaluation of the project. The DNP student project manager plans to utilize the Neuman Systems Model again for future research in evaluating stress interventions in undergraduate nursing students.

The Stetler Model was selected as the Evidence-Based Practice Model for the EBP project. The Stetler Model was formulated as a series of critical-thinking and decision-making steps which were designed to facilitate safe and effective utilization of research findings (Stetler, 2001). The model has undergone three major revisions including the emerging concept of evidence-based practice. The Stetler Model complimented the DNP project nicely. The Stetler Model allowed for the DNP student project manager to examine how to use evidence to effectively create formal change. The DNP student project manager was easily able to incorporate and utilize the five phases of the Stetler Model which detailed each of the steps of the EBP project throughout project development, implementation, evaluation, and dissemination of project results. Initially, the DNP student project manager identified potential nursing student issues. The project manager decided to focus on the issue of stress in undergraduate nursing students

which seemed to be epidemic at the University where the student project manager is employed. Phase two allowed the DNP student project manager to assess and critically appraise each source of evidence for its overall credibility, applicability, and operational details. Phase three allowed the student project manager to determine that it was desirable to apply the findings to the current EBP project. During this phase the DNP student project manager did find that the evidence was applicable to the EBP project, and thus was utilized for the literature review. The fourth phase, the translation and application phase, gave the DNP student project manager feedback on how to carry out the EBP project intervention implementation phase. Lastly, in phase five the DNP student project manager effectively evaluated the results. During this phase the DNP student project manager decided that guided imagery was applicable to apply to future undergraduate nursing courses. This step of the phase also allowed for the student project manager to sit down and discuss with the project facilitator, plans for future stress interventions within the project facilitator's classroom. This was positive, indicating that other faculty members were assessing the applicability of the stress intervention in the classroom setting.

Overall, the Stetler Model allowed for the DNP student project manager to easily use each phase to guide the flow of the EBP project. The seamless flow allowed for the DNP student project manager to assure that each critical stage of the project had been appropriately met. The DNP student project manager plans to utilize the Stetler Model in future projects assessing the effects of various stress interventions on student perceived stress levels.

### **Strengths and Limitations of the EBP Project**

Strengths of the EBP project included: (a) participant anonymity, (b) instrument choice, (c) project facilitator's plans to utilize stress interventions in future courses, (d) implementation of intervention at start of class, and (e) positive post intervention self-

report of usefulness survey results and direct quotes from students. A significant strength of the EBP project was the care the DNP project manager took with maintaining participant confidentiality and anonymity in regards to all data collection. The project manager took special precautions and prepared detailed scripts to be read to participants both before and after the guided imagery intervention. The prepared steps and scripts were approved by the Midwestern University's IRB committee. In addition, the DNP student project manager created a special codebook that the project facilitator utilized to keep the participant's data and provide each participant with a code number, to be later utilized for input into SPSS. By allowing for complete participant anonymity, there was no added pressure or stress on the student as to whether they chose to participate or not in data collection.

Although many of the articles reviewed in the literature chose to use different instruments for testing student anxiety and stress, the DNP student project manager chose to utilize the PSS. The PSS has a history of excellent reliability and validity and was an excellent measure of perceived stress, which is what the student project manager wanted to evaluate and assess in the project. The DNP student project manager felt the PSS tied nicely into the project, was user friendly, and took a small amount of time to complete. The DNP student project manager was happy with the scale and will likely utilize the same scale again when working on future research related to perceived stress.

During the evaluation and data analysis phase of the project, the DNP student project manager met with the project facilitator. The project facilitator was evaluating several shorter stress intervention options for implementation into her class setting. The DNP student project manager spent time reviewing the various intervention options. The project facilitator ultimately decided to utilize a shorter version of guided imagery for her future fundamental classes. The DNP student project manager was pleased that the

project facilitator saw the value of the stress intervention and wanted to continue with a weekly intervention in her future classes. This was a significant strength and outcome of the EBP project.

Another strength of the project included implementing the guided imagery at the beginning of the class, allowing students to relax and reduce any lingering stressors prior to preparing to listen and participate in class. This timeframe was decided upon between the project facilitator and the DNP project manager prior to the implementation of the intervention. The project facilitator and DNP project manager both felt that students would not be as focused at the end of the class. Many of the students on the post intervention self-report survey of usefulness commented on how they enjoyed the guided imagery taking place at the beginning of the class especially if they had a rushed morning. Due to the positive response from student participants in regards to the implementation of the intervention at the beginning of the class period, the project facilitator will be implementing all future stress interventions at the start of all classes. There was no identifiable benefit to implementing the guided imagery after class.

As discussed earlier in this chapter, the post intervention self-report surveys of usefulness results were overwhelmingly positive indicating that student participants enjoyed the guided imagery and found themselves utilizing the imagery outside of the classroom setting. The majority of students reported that they would recommend guided imagery to friends, family, and future patients. A study conducted by Kvale and Romick (2000) found similar positive student participant responses, where a majority of students who participated in imagery sessions found them beneficial and enjoyed the time spent during the imagery.

Limitations of the EBP project included: (a) timeframe of the study, (b) attrition rate, (c) illness in two participants on last day of intervention during data collection, (d) participants' outside personal stressors, (e) limited demographic data collection, (f)

atypical mean age of student participants, and (g) small sample size. The first limitation of the EBP project was the timeframe in which the study was conducted. The project manager strategically chose the beginning of the semester to start the project. The rationale was to allow the student participants to become acquainted with the project manager as opposed to starting the project mid semester and changing the atmosphere and routine of the weekly course. The DNP student project manager felt strongly about meeting with the students on their first day of class. This initial start time allowed for students to see the guided imagery as part of the semester's weekly routine as opposed to starting mid semester and changing the normal flow of the class. However, it is possible the results of the study would have been significantly different had the project manager evaluated students perceived levels of stress at different time frames during the semester. One option would have included giving students the PSS for the first time in the middle of the semester and again at the end of the semester. Another option would have been to evaluate the students' perceived levels of stress at the beginning of the semester and again at the end of the semester. The PSS is an instrument that evaluates stress back over the previous month. At the beginning of the semester, students were imagining events a month prior which would have included the summer. It is possible that students were less stressed in the summer than when reevaluated for stress again in the middle of the semester. In the middle of the semester the students were fully functioning within the clinical setting, and preparing for their second exam in their fundamental class in addition to outside stressors, therefore increasing the likelihood of perceived stress. If the students had been tested at the end of the semester, it is possible that students would feel relieved and excited for the holidays, thus leading to an overall decrease in perceived stress. Future research should reconsider the timeframe for testing students. Due to the high stress of the nursing curricula and its courses, students will have a tendency to be more stressed throughout

the semester as opposed to the beginning and the end of the semester when the coursework is completed. There was no evidence in the literature to support whether a specific timeframe for the project would have been beneficial.

Another limitation noted in the EBP project was the 12.5% attrition rate. One student missed the first day of data collection, therefore removing that participant from data analysis. Two additional students missed class on the final day of data collection, therefore excluding them from data analysis. Overall, the student project manager was happy with 21 out of 24 students completing the project and data collection.

On the final day of data collection, the instructor of the course reported to the DNP student project manager that two students who were in class that day, reported illness with flu like symptoms. These two ill students may have been experiencing more stress than usual due to coursework and illness combined, thus altering their post intervention PSS results.

An additional limitation included the participants' outside, extraneous stressors or life changing events, all potentially affecting levels of perceived stress during the PSS distribution. It is possible that some students were experiencing higher levels of perceived stress from outside factors when completing the first or second PSS. Some students may have had a stressful event that occurred around the time when the PSS was distributed. The project manager had no way to account for additional outside stressors and their effect on the PSS scores.

Due to the strict regulations of the Midwestern University's IRB, the DNP student project manager was limited in the type of demographic and personal data that could be collected from students. In addition, the project manager had to assure that complete anonymity of students was maintained throughout the data collection and evaluation process. Therefore, the DNP student project manager was unable to collect demographic data that included characteristics such as income, race, cultural

background, academic GPA, clinical evaluation and examination scores for the fundamentals class, among other data. The DNP student project manager could not address the possible effect of these additional variables on students' perceived level of stress.

The mean age of the participants was 24.71 years. The mean age of 24.71 years is atypical for college aged students. Typical fourth semester college students are in their sophomore year and approximately 19 years old. The mean age of 24.71 years is significantly older than age 19, which may have had an impact on the EBP project outcomes.

The small sample size of the EBP project may affect the generalizability of the EBP project results to other populations. Small sample sizes may limit the ability of a statistical test to show traits that truly exist within a population. As a sample size decreases, the statistical power of the study also decreases.

### **Implications for the Future**

The EBP project was developed and implemented because there was evidence supporting the use of guided imagery in undergraduate nursing students, professional nurses, and healthcare providers. The positive outcomes of this EBP project are noted in the positive post intervention self-report survey of usefulness results. Overall this EBP project demonstrated a positive relationship between guided imagery and decreased perceived levels of stress, demonstrating 13 participants had a decrease in the level of perceived stress following the intervention. The EBP project was well received by the participants, many of whom indicated they would utilize guided imagery in the future and recommend imagery to family, friends, and future patients. The following sections will discuss the effects of the EBP project focusing on nursing practice, theory, research, and education.



**Practice.** Implications for the future include educating nursing faculty about the positive effects of guided imagery on nursing students' perceived levels of stress. Nursing schools can work together to incorporate stress intervention practices into their nursing curricula design. Stress interventions can also be applicable to both the practicing APN role and professional nurses. As the healthcare setting becomes more stressful, professional nurses can benefit from stress relieving interventions and practices. Professional nurses can also provide education for their patients on different stress interventions.

The project facilitator for the EBP project is in the process of implementing a stress intervention into her next fall fundamental class at the start of each lecture. She felt that it was important to assist students in reducing stress. This is one change in outcomes within the Midwestern University facility that will hopefully lead to many others in the future. The project facilitator would like to utilize guided imagery but is evaluating use of a shorter version of the original guided imagery. Class time is at a premium and twenty minute sessions may take away from needed class time.

Stress interventions, particularly, guided imagery have been shown to have a significant impact on patient outcomes. Guided imagery has also been shown to decrease stress, anxiety, pain, depression, among other medical issues within a multitude of patient populations. Therefore, patients may also benefit from the utilization of guided imagery.

Future studies assessing which type of stress intervention is most successful within the professional nursing population are warranted. Providing nursing students with stress reducing behaviors early on in their training can have a positive impact upon their future nursing experiences both in school and professional careers.

**Theory.** The Neuman Systems Model was utilized to guide this EBP project. The Neuman Systems Model is focused predominately on stress prevention and the

promotion of wellness, making it complimentary to the EBP project. This particular framework allowed for the EBP project manager to look at the student as a whole and provide the student with evidence-based tools to reduce perceived stress levels. The Neuman Systems Model also considered the student's interaction with their environment and the environmental stressors that they may encounter daily. The guided imagery served to provide students with a stress reduction tool to reduce perceived stress levels. Providing students with stress reducing exercises allowed them to move closer to maintaining a state of wellness and a reduced level of perceived stress.

Nursing students will be faced with the challenge of working within a complex healthcare system, thus they need to be provided the tools in which to succeed in such an environment. The student participants in this EBP project openly accepted the guided imagery intervention and gave positive feedback in regards to how it improved their lifestyle and level of wellness on the post intervention surveys of usefulness. The Neuman Systems Model served as an excellent framework to guide the positive outcomes of this EBP project. The DNP student project manager plans to utilize the model again in future studies assessing various stress interventions in the nursing student population.

**Research.** Despite the overall positive results with previous research studies, and this EBP project; nursing student stressors remain a concern for nursing schools. This EBP project, as designed and implemented, did not track nursing student examination scores, clinical experiences and progress, or students GPA. The DNP student project manager was unable to evaluate whether students who perceived less stress on the post intervention PSS were students who were performing better academically and clinically. Future research should incorporate assessment and evaluation of the above stated items. Several previous research studies reviewed (Speck, 1990; Stephens, 1992; Wright et al., 2008), indicated that students who were exposed to guided imagery

performed statistically significantly better in completing clinical skills as compared to their control group counterparts. Charlesworth et al. (1981) found a decrease in anxiety in students who were exposed to an experimental five week guided imagery series, although the experimental imagery group did not show a statistically significant difference in grades compared to the control group. Additional research is needed to determine whether students who are exposed to guided imagery perform better, both on examinations, and in the clinical setting.

Future research should also consider a multi-center study that encompasses a larger sample population. Many of the previous research studies have included only a small sample size. The multi-center sample would allow for a more diverse population, and the larger sample size would allow for more generalizable study results.

Lastly, nursing educators should be involved in the future research and evidence-based project process. Educators need to be at the frontline for assisting and educating nursing students to develop stress interventions to assist them throughout their schooling and long into their future professional careers.

**Education.** The critical appraisal of literature supports the utilization of guided imagery in nursing education and professional nursing environments. Although it is recognized that undergraduate nursing students have high stress levels, little is being done by nursing faculty to assist in reducing nursing student stressors (Clark & Pelici, 2011; Moscaritolo, 2009). Nursing educators need to accept responsibility for preparing students to deal with clinical and academic related stressors. It is feasible for nursing educators to form a committee to discuss options for instilling a variety of stress interventions into the classroom and clinical settings. Engaging faculty in the change process will allow them to be accountable for educating their students on how to reduce stressors. Educators will then be able to provide students with a solid foundation for implementing stress interventions early on in their careers. When nursing educators

show concern and take responsibility for the well-being and health of their students they will produce a stronger professional nursing workforce.

### **Conclusion**

Guided imagery was implemented as a stress intervention in a fourth semester undergraduate fundamental nursing class for the first half of the semester. The Neuman Systems Model was utilized as the guiding framework for the EBP project and worked seamlessly with the intervention. A Belleruth Naparstek stress relief guided imagery CD was played for the first twenty minutes of the class each week for eight weeks. Statistical analysis was performed to evaluate the effect of guided imagery on student's perceived levels of stress and measured by the PSS. Although, there was no statistically significant improvement in the post intervention PSS scores, the post intervention self-report surveys of usefulness results were all optimistic indicating a positive experience for student participants.

Although the evidence-based project had limitations, the project did support the evidence that guided imagery does reduce stress. More importantly the anecdotal responses of the student participants were all positive. Thirteen of twenty one students had reduced levels of perceived stress following the guided imagery. Nineteen of 21 students indicated they would use or recommend guided imagery or some form of stress intervention for family, friends, and future patients, while 14 out of 21 participants stated they practiced the guided imagery outside of the classroom setting. Twenty of 21 students felt that the guided imagery was helpful when dealing with school related stressors, while 18 of 21 students stated they would use guided imagery and/or deep breathing in the future as a source of stress relief.

Nursing faculty should also support the literature and actively introduce stress interventions into the classroom for students. Faculty support would show students that faculty respects the health and well-being of the students. Students may perceive

faculty, clinical and academic requirements, and examinations as less threatening and stressful when faculty is actively engaged in activities to reduce student stressors.

As discussed previously in this chapter, future research should consider a multitude of different methods including measuring different outcomes such as clinical skills, clinical evaluation scores, exam grades, and GPA. Other areas for future research include assessing for outside personal stressors, or life changing events that can highly impact the level of perceived stress for each individual student. Increasing demographic data collection would also be beneficial in assessing for outside personal stressors. Future studies should address cultural background, income level, and social support structure, among other factors deemed necessary for each individual study. Timeframe of the study intervention should also be considered by future researchers.

**REFERENCES**

- Ackerman, C., & Turkoski, B. (2000). Using guided imagery to reduce pain and anxiety. *Home Healthcare Nurse, 18*, 524-530.
- Academy for Guided Imagery (2013). About guided imagery. Retrieved from: <http://www.acadgi.com/abouttheacademy/aboutguidedimagery/index.html>
- Beddoe, A. E., & Murphy, S. O. (2004). Does mindfulness decrease stress and foster empathy among nursing students? *Journal of Nursing Education, 43*, 305-312.
- Burnard, P., Rahim, H. T., Hayes, D., & Deborah, E. (2007). A descriptive study of Bruneian student nurses' perceptions of stress. *Nurse Education Today, 27*, 808-818.
- Capp, S. J., & Williams, M. G. (2012). Promoting student success and well-being. *Holistic Nursing Practice, 26*, 272-276.
- Charlesworth, E. A., Murphy, S., & Beutler, L. A. (1981). Stress management skill for nursing students. *Journal of Clinical Psychology, 37*, 284-290.
- Clark, C. S., & Pelicci, G. (2011). An integral nursing education: A stress management and life balance course. *International Journal for Human Caring, 15*(1), 13-22.
- Cohen, S. Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 84*, 385-396.
- Cohen, S. & Williamson, G. M. (1988). Perceived stress in a probability sample of the United States. In Spacapan, S. & Oskamp, S. (Eds.). *The Social Psychology of Healthy*. Newbury Park, CA: Sage, 31-67.
- Contrades, S. (1991). Guided imagery use in nursing education. *Journal of Holistic Nursing, 9*, 62-68.
- Godbey, K. L., & Courage, M. M. (1994). Stress management program: Intervention in nursing student performance anxiety. *Archives of Psychiatric Nursing, 8*, 190-199.

Grossman, S., & Wheeler, K. (1999). Integrating multidimensional stress management into a baccalaureate nursing curriculum. *Nursing Connections, 12*(2), 23-29.

Hensel, D., & Stoelting-Gettelfinger, W. (2011). Changes in stress and nurse self-concept among baccalaureate nursing students. *Journal of Nursing Education, 50*, 290-293.

Iglesias, S. L., Azzara, S., Argibay, J. C., Arnaiz, M. L., Carpineta, M. D., Granchetti, H., & Lagomarsino, E. (2012). Psychological and physiological response of students to different types of stress management programs. *American Journal of Health Promotion, 26*, 149-158.

Jallo, N., Cozens, R., Smith, M., & Simpson, R. (2013). Effects of a guided imagery intervention on stress in hospitalized pregnant women: A pilot study. *Holistic Nursing Practice, 27*, 129-139.

Jones, M. C., & Johnston, D. W. (2000). Reducing distress in first level and student nurses: A review of the applied stress management literature. *Journal of Advanced Nursing, 32*, 66-74.

Jones, M. C., & Johnston, D. W. (2006). Is the introduction of a student-centered, problem-based curriculum associated with improvements in student nurse well-being and performance? An observational study of effect. *International Journal of Nursing Studies, 43*, 941-952.

Kang, Y. S., Choi, S. Y., & Ryu, E. (2009). The effectiveness of a stress coping program based on mindfulness meditation on the stress, anxiety, and depression experienced by nursing students in Korea. *Nurse Education Today, 29*, 538-543.

Kendrick, P. (2000). Comparing the effects of stress and relationship style on student and practicing nurse anesthetists. *American Association of Nurse Anesthetists Journal, 68*, 115-122.

Kim, K. H. (2003). Baccalaureate nursing students' experiences of anxiety producing situations in the clinical setting. *Contemporary Nurse, 144*, 145-155.

Kolkmeier, L. G. (1989). Clinical application of relaxation, imagery, and music in contemporary nursing. *Journal of Advanced Medical Surgical Nursing, 1*(4), 73-80.

Kruschke, K. A. (2008). *The impact of guided imagery on healthcare employees as a means to lower their blood pressure, pulse, and perceived level of stress* (Doctoral dissertation). Available from Proquest Dissertations and Thesis. (Proquest ID no. 304537016.)

Kvale, J. K., & Romick, P. (2000). Using imagery for role transition of midwifery students. *Journal of Midwifery & Women's Health, 45*, 337-342.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer Publishing Company.

Linden, W., Turner, L., Young, L. E., & Bruce, A. (2001). Student nurse health promotion: Evaluation of a mindfulness-based stress reduction intervention. *The Canadian Nurse, 97*(6), 23-26.

Melnyk, B. M. & Fineout-Overholt, E. (2011). *Evidence-based practice in nursing and healthcare* (2<sup>nd</sup> ed.) Philadelphia, PA: LWW.

Mizrahi, M. C., Reicher-Atir, R., Levy, S., Haramati, S., Wengrower, D., Israeli, E., & Goldin, E. (2012). Effects of guided imagery with relaxation training on anxiety and quality of life among patients with inflammatory bowel disease. *Psychology & Health, 27*, 1463-1479.

Moscaritolo, L. M. (2009). Interventional strategies to decrease nursing student anxiety in the clinical learning environment. *Journal of Nursing Education, 48*(1), 17-23.

Neuman, B. & Fawcett, J. (2002). *The Neuman systems model*. Upper Saddle Ridge, NJ: Prentice Hall.



Prato, C. A. & Yucha, C. B. (2013). Biofeedback-assisted relaxation training to decrease test anxiety in nursing students. *Nursing Education Perspectives, 34*(2), 76-81.

Pulido-Martos, M., Augusto-Landa, J., & Lopez-Zafra, E. (2012). Sources of stress in nursing students: A systematic review of quantitative studies. *International Nursing Review, 59*, 15-25.

Ross, C. A., & Goldner, E. M. (2009). Stigma, negative attitudes and discrimination, towards mental illness within the nursing profession: A review of the literature. *Journal of Psychiatric and Mental Health Nursing, 16*, 558-567.

Speck, B. J. (1990). The effect of guided imagery upon first semester nursing students performing their first injections. *Journal of Nursing Education, 29*, 346-350.

Stephens, R. L. (1992). Imagery: A treatment for student anxiety. *Journal of Nursing Education, 31*, 314-320.

Stetler, C. B. (2001). Updating the Stetler model of research utilization to facilitate evidence-based practice. *Nursing Outlook, 49*, 272-279.

Tsai, S., & Crockett, M. S. (1993). Effects of relaxation training, combining imagery, and meditation on the stress level of Chinese nurses working in modern hospitals in Taiwan. *Issues in Mental Health Nursing, 14*, 51-66.

Watanabe, E., Fukuda, S., & Shirakawa, T. (2005). Effects of healthy subjects of the duration of regularly practicing a guided imagery program. *BMC Complementary & Alternative Medicine, 5*, 1472-1479.

Wilkinson, L., Buboltz, L., & Seeman, E. (2001). Using breathing techniques to ease test anxiety. *Guidance & Counseling, 16*(3), 76.

Wright, C., Hogard, E., Ellis, R., Smith, D., & Kelly, C. (2008). Effect of PETTLEP imagery training on performance of nursing skills: Pilot study. *Journal of Advanced Nursing, 63*, 259-265.

Yonge, O., Myrick, F., & Haase, M. (2002). Student nurse stress in the preceptorship experience. *Nurse Education, 27*(2), 84-88.

Zahourek, R. P. (1997). Overview: Relaxation and imagery tools for therapeutic communication and intervention. *Alternative Nurse Practitioner, 3*(2), 89-115.

Zupiria, X., Huitzi, X., Alberdi, M. J., Uranga, M. J., Eizmendi, I., Barandiaran, M., & Sanz, X. (2007). Stress sources in nursing practice. Evolution during nursing training. *Nurse Education Today, 27*, 777-787.

## **Autobiographical Material**

### **Jennifer S. Bauer**

Mrs. Bauer graduated from Purdue University, West Lafayette with a Bachelor of Science degree in Nursing in 2000. She began her nursing profession working on a medical surgical floor at Elkhart General Hospital before later returning to Purdue University for her Master of Science in Nursing and family nurse practitioner degree.

Mrs. Bauer graduated in the fall of 2003 with a 4.0 GPA and is certified through the American Academy of Nurse Practitioners as a Family Nurse Practitioner. Mrs. Bauer has extensive experience in multiple specialties including otorhinolaryngology, lifestyle weight loss centers, and urgent care clinics. Jennifer has also performed in a leadership role when she assisted in the development and implementation of a congestive heart failure clinic in 2010. Jennifer is currently a Clinical Lecturer at Indiana University of South Bend's School of Nursing, a CCNE accredited nursing program. Mrs. Bauer demonstrates exceptional teaching styles that transcend both the undergraduate and graduate nursing programs. Mrs. Bauer is currently attending Valparaiso University and is slated to receive her Doctorate of Nursing Practice Degree in the spring of 2014.

Jennifer is a member of the American Academy of Nurse Practitioners and is a member of the Michiana Nurse Practitioner Forum. Jennifer became interested in the phenomena of stress among undergraduate nursing students as part of her teaching experience.

Mrs. Bauer observed a negative relationship between an increase in stress levels and a decreased ability to function within both the classroom and clinical settings. Jennifer's EBP project originated out of this adverse relationship. Mrs. Bauer plans to continue her research in the area of nursing students and stress, in an effort to, incorporate stress reduction interventions into the nursing curricula at the University of Indiana, South Bend. Mrs. Bauer's work in stress perception and nursing students has led to four

invitations at Regional and National conferences including the American Association of College of Nursing in New Orleans, 2013. Jennifer plans to continue her research in the hopes of offering stress reduction interventions for future nursing students.

**ACRONYM LIST**

ADN: Associates Degree in Nursing

AGI: Academy for Guided Imagery

ANCOVA: Analysis of covariance

ANOVA: Analysis of variance

BSN: Bachelor of Science in Nursing

CB: Cognitive Behavioral

CGHQ: Chinese General Health Questionnaire

CINAHL: Cumulative Index for Nursing and Allied Health Literature

Cs: Salivary Cortisol Levels

DNP: Doctor of Nursing Practice

EBP: Evidence-based practice

ERIC: Educational Resources Information Center

GI: Guided Imagery

IBS: Irritable Bowel Disease

IRB: Institutional Review Board

MBSR: Mindfulness Based Stress Reduction

MIQ-R: Movement Imagery Questionnaire-Revised

MMS: Multiple Mood Scale

NRSS: Numeric Rating Scale of Stress

NSC: Nurse Stress Checklist

OSCE: Objective Structural Clinical Examination

PETTLEP: Physical, Environment, Task, Timing, Learning, Education, and Perspective

Proquest: Proquest Nursing and Allied Health

PSS: Perceived Stress Scale

PTSD: Post-Traumatic Stress Disorder

QMI: Betts Shortened Questionnaire on Mental Imagery

RRGI: Response, Relaxation, Guided Imagery

RRGICB: Response, Relaxation, Guided Imagery, and Cognitive Behavioral

SPSS: Statistical Package for the Social Sciences

STAI: State-Trait Anxiety Inventory

VAS: Visual Analog Scale

## Appendix A

## Demographics

Study ID Number \_\_\_\_\_

Demographic Questionnaire for Stress Intervention:

What is your age? \_\_\_\_\_

For the following questions, please circle the correct answer.

What is your gender?

- Female
- Male

Are you currently employed while in school?

- Yes
- No

Are you currently married?

- Yes
- No

Do you have children at home?

- Yes
- No

Appendix B

Self-Report of Usefulness

Self-Report of Usefulness

1. Did you utilize the stress intervention outside of class time?
  
2. If so when and how?
  
  
  
  
  
  
  
  
  
  
3. Did you feel the stress intervention was helpful when dealing with school related stressors?
  
  
  
  
  
  
  
  
  
  
4. Would you recommend guided imagery and/or deep breathing to a colleague, friend, patient or family member for use in stress relief?
  
  
  
  
  
  
  
  
  
  
5. Do you plan on using guided imagery and/or deep breathing in the future for stress relief?



## Appendix C

### Pre Intervention Script

My name is Jenna Bauer and I am a Doctor of Nursing Practice, DNP, student at Valparaiso University in Valparaiso Indiana. I am currently working on an evidenced-based practice project. An EBP project is a project in which a person utilizes evidence from previous research studies to answer a clinical question in a selected population. My DNP project will be assessing the effectiveness of a stress intervention on perceived stress levels among college nursing students. Previous research studies have shown that it is important to integrate stress management techniques to give nursing students skills to counter the many stressors they may encounter not only as a student but also as a professional nurse. I invite any students from this NURS B248 course lecture to participate in the project. The project will include collection of demographic data including name, gender, age, marital status, job status, and parental status as well as completion of the Cohen's perceived stress test. In addition at the end of the study the Cohen's perceived stress test will again be completed as well as a self-report of usefulness survey to evaluate student's perception as to whether the intervention was helpful or not.

Students will be expected to participate in the stress intervention which will include deep breathing and guided imagery as they are part of the NURS B248 nursing class. Participation includes 2 minutes of deep breathing followed by 18 minutes of guided imagery led by a Belleruth Naparstek stress relief guided imagery CD for 8 weeks. However the student may chose not to participate in the project component which includes filling out the consent form, demographic sheet, Cohen's perceived stress tests results, and the self-report of usefulness survey. If you choose not to participate in the project, there is no direct or indirect impact on your grade in this course, nor is there any

effect on any aspect of your progression or grades at Indiana University South Bend.

Students who would like to opt out of the project may do so at any time. Students may tell the course instructor or the project manager that they no longer want to be a part of the project. The course instructor will shred any of their paperwork that has been collected to date.

Thank you for your consideration,

Jenna Bauer

## Appendix D

## Post Intervention Script

Now that you have completed the evidenced based project intervention of the guided imagery I would like to evaluate the intervention by having you complete two surveys. One is the Cohen's perceived stress test. The second survey will allow me to assess whether students have implemented a form of stress intervention into their personal and professional lives. This information will assist in determining whether a stress intervention is something that could be helpful for future students in the School of Nursing. Again, remember that your participation is voluntary and you may opt out of the project at any time and turn your paper work in blank if you choose. There is no repercussion or effect on your grade or your progression at IUSB if you choose not to participate.

I appreciate your time!

Regards,

Jenna

## Appendix E

## Perceived Stress Scale

This is a measure of the degree to which you are experiencing stress in your various life situations. For each item, choose the number that best describes you by clicking one of the five circles to the right of the statement according to the following scale:

0=never      1=almost never      2=sometimes      3=fairly often      4=very often

In the last month, how often have you been upset

1. because of something that happened  0  1  2  3  4  
unexpectedly?

In the last month, how often have you felt that you

2. were unable to control the important things in your  0  1  2  3  4  
life?

3. In the last month, how often have you felt nervous  0  1  2  3  4  
and "stressed"?

In the last month, how often have you felt confident

4. about your ability to handle your personal  0  1  2  3  4  
problems?

5. In the last month, how often have you felt that  0  1  2  3  4  
things were going your way?

In the last month, how often have you found that

6. you could not cope with all the things that you had  0  1  2  3  4  
to do?

7. In the last month, how often have you been able to control irritations in your life?  0  1  2  3  4
8. In the last month, how often have you felt that you were on top of things?  0  1  2  3  4
9. In the last month, how often have you been angered because of things that were outside of your control?  0  1  2  3  4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?  0  1  2  3  4

Adapted from Cohen, S. (1994). Perceived Stress Scale

## Appendix F

## PSS Scoring

PSS-10 scores are obtained by reversing the scores on the four positive items, e.g., 0=4, 1=3, 2=2, etc. and then summing across all 10 items. Items 4,5, 7, and 8 are the positively stated items.

PSS-4 scores are obtained by reverse coding items # 2 and 3.

PSS-14 scores are obtained by reversing the scores on the seven positive items, e.g., 0=4, 1=3, 2=2, etc., and then summing across all 14 items. Items 4, 5, 6, 7, 9, 10, and 13 are the positively stated items.

The PSS was designed for use with community samples with at least a junior high school education. The items are easy to understand and the response alternatives are simple to grasp. Moreover, as noted above, the questions are quite general in nature and hence relatively free of content specific to any sub population group. The data reported in the article are from somewhat restricted samples, in that they are younger, more educated and contain fewer minority members than the general population. In light of the generality of scale content and simplicity of language and response alternatives, we feel that data from representative samples of the general population would not differ significantly from those reported in the article.

## Appendix G

## Informed Consent

**Study Number:** \_\_\_13070\_\_\_

**INDIANA UNIVERSITY SOUTH BEND****INFORMED CONSENT STATEMENT**

**Study Title:** The Use of Stress Reducing Techniques in Nursing Education.

**EBP project manager:** Jennifer S. Bauer, RN, BSN, FNP-c

**Purpose:** I, \_\_\_\_\_, understand that I am being asked to take part in an evidence-based practice research project assessing nursing students' perceived stress both before and after a project manager guided stress intervention.

**Procedure:** As part of my regular class I will be participating in a stress intervention. I understand that I am being invited to also participate in a research project regarding this intervention. The evidence-based research will include filling out some demographic information and then completing a survey about my perceived stress (Cohen's perceived stress test). The survey will be given at the beginning of the semester and then again at the end. There will also be a self-report of usefulness survey to complete at the end. Completing the paperwork for the evidence-based research part of this project should take about 5 to 10 minutes and I will be 1 out of approximately 24 participating taking part in the evidence-based research.

**Risks:** There are no physical or other known risks to participating in the project.

**Benefits:** While there are no direct benefits from participating in this evidence-based research, the researchers hope to learn if incorporating a stress intervention into the nursing school curricula early on in a nurses training will make an impact on their level of perceived stress. The information provided through the pre and post stress results may help further evidenced based practice on the usefulness of stress interventions in college nursing students. The information provided through data collection may also lead to a permanent stress intervention program incorporated into the nursing curricula.

**Voluntary participation/withdrawal:** I understand that whether or not I choose to participate in the evidence-based research, there will be no impact on my grade in this course, nor will there be any impact on my progression or grades at Indiana University South Bend. I understand that participating in this project is my choice, and I am free to withdraw at any time by telling the course instructor or the project manager that I no longer want to be a part of the project. The course instructor will then shred any of their paperwork that has been collected to date.

**Questions:** If I have any questions about being in the project now or in the future, Jennifer Bauer may be contacted at (574) 276-8941 or jennas28@hotmail.com. Jennifer's office is located in Northside Hall 4<sup>th</sup> floor, office number 432. Carole Pepa, RN, PhD, Valparaiso University College of Nursing is faculty advisor for Jennifer. She may also be utilized as a contact for any concerns. Dr. Pepa's office number is (219) 464-5287. Email is carole.pepa@valpo.edu



If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact the Indiana University South Bend Institutional Review Board for the Protection of Human Research Subjects, 1700 Mishawaka Ave., A247, South Bend, IN 46634, 574-520-4181, by e-mail at [sbirb@iusb.edu](mailto:sbirb@iusb.edu).

**Confidentiality:** Although the information and answers I give will be used and reported by the project manager, my name and other facts that would identify me will be kept strictly confidential. I understand that quotes from my self-report of usefulness survey may be used in the reporting of the project results.

**Consent to participate in the DNP project:** I have read of the above information about this DNP project, the procedure, possible risks, and potential benefits to me, and I understand them. All of my questions have been answered. I give my consent freely, and offer to participate in this DNP project.

---

Participant signature

---

Date

Appendix H

Approval Email to use Belleruth Naparstak CD

From: [ehauser@healthjourneys.com](mailto:ehauser@healthjourneys.com)  
To: [jennas28@hotmail.com](mailto:jennas28@hotmail.com)  
Subject: RE: Contact Us  
Date: Thu, 6 Jun 2013 10:24:32 -0400

Dear Jenna:

You absolutely have permission to use the audio. Please make sure you always reference the author, Belleruth Naparstek in all your spoken and written communications.

The only other caveats that apply are related to copyright (i.e. don't copy the CD and distribute, etc).

If you need brochures or sample CDs of guided imagery – complimentary, of course – just let me know.

Warm regards and best of luck!  
Elizabeth.

**-- Elizabeth C. Hauser Prof. Relationships Mgr Health Journeys Inc. 891 Moe**

**Dr - Ste C Akron OH 44310 800.800.8661 x100**

## Appendix I

## Email requesting permission of use of CD

**Subject:**Contact Us

**Date:**Wed, 5 Jun 2013 22:53:51 -0400

**From:**[<info@healthjourneys.com>](mailto:info@healthjourneys.com)

**To:**[<cstalnaker@healthjourneys.com>](mailto:cstalnaker@healthjourneys.com)

**CC:**[<cpomeraning@healthjourneys.com>](mailto:cpomeraning@healthjourneys.com)

Name/Address: Jenna Bauer

US

Phone: (574)276-8941

Fax:

Email: [jennas28@hotmail.com](mailto:jennas28@hotmail.com)

Newsletter:

Printed Newsletter:

Printed Catalog:

Comments: Hello!

I was e-mailing to see if I could obtain permission to utilize Belleruth Naparstak's stress relief guided imagery CD for my DNP EBP project this fall. I plan to utilize the CD for a nursing student stress intervention that will take place once a week for 8 weeks. The students will be guided through a 1 to 2 minute deep breathing session, and then the CD will be played for the students for 15 to 20 minutes before their fundamental lecture begins. I am hoping that the project will be successful in decreasing stress in the nursing student as measured by perceived stress scale.

Thank you for your time,

Jenna Bauer, MSN, FNP-C, DNP student at Valparaiso University