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DOCTOR OF NURSING PRACTICE (DNP) PROGRAM

A DNP PROJECT

MENTORSHIP MEDIATED CLINICAL SITE ORIENTATION FRAMEWORK

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Abstract

Beginning the clinical phase of nurse anesthesia education has been identified as a time of high stress and anxiety for registered resident nurse anesthetists (RRNAs). Elevated stress and anxiety levels associated with this event have been shown to inhibit the retainment of information and lead to a poor clinical performance. This mixed-methods research study was designed to investigate if a formalized mentorship mediated clinical site orientation would decrease stress and anxiety as well as increase confidence for RRNAs entering clinical for the first time. A baseline mean stress score was assessed in both third year and second year RRNAs using the Perceived Stress Scale (PSS) and were compared using an independent t-test. The Mentorship Mediated Clinical Site Orientation (MMCSO) was conducted for second year RRNAs at ▮▮▮▮▮▮▮▮▮▮ (n = 22), and a post-interventional survey was completed by participants. Survey responses were expressed as percentages. Descriptive statistics were used to analyze all open-ended questions. 95.4% of participants strongly agreed that the orientation decreased their stress and anxiety, and 100% of participants strongly agreed that the orientation increased their confidence towards the clinical year. 100% of participants strongly agreed that the MMCSO was beneficial to their education, and that they would recommend integrating it into a front-loaded nurse anesthesia program. The findings of this study suggest the MMCSO should be permanently incorporated into the nurse anesthesia program at ▮▮▮▮▮▮▮▮▮▮.

Keywords: nurse anesthesia resident, graduate nursing education, clinical rotation, role transition, pre-clinical, mentor, mentorship, preceptorship, peer mentor, anxiety, and stress.

Introduction

Nurse anesthesia residents are likely to endure high levels of stress and anxiety throughout the duration of their education. The successful completion of a nurse anesthesia program requires dedication, diligence, and most importantly, a strong support system. Providing peer support through a mentorship program during nurse anesthesia education has shown to have positive effects on morale, self-confidence, and retention rates (Nick et al., 2012; Pollock, 1996). Currently, there is an established mentorship program at ███████████, however there are significant limitations that arise with the current practice model when residents transition from the didactic only phase to part-time clinical phase of the nurse anesthesia program. With the current model, mentees may be assigned to a clinical site that their mentor has never rotated through, thus decreasing the efficacy of the peer support system. The aim of the study was to investigate if a formalized mentorship mediated clinical site orientation would decrease stress and anxiety as well as increase self-confidence for RRNAs entering clinical for the first time.

The results of this study have the potential to change current practice. The investigators of this study expected that the mentorship mediated clinical site orientation framework would reduce stress and anxiety, as well as improve self-confidence in RRNAs, therefore easing the transition into the clinical phase of nurse anesthesia education. The results of this study showed positive outcomes and acceptance of the framework by the study's participants. Nurse anesthesia programs across the country should consider adopting this framework when orienting RRNAs to their first clinical site.

Background and Significance

Both the physical and emotional stress that RRNAs endure during nurse anesthesia programs has been well documented in the literature. Chiffer McKay, Buen, Bohan, and Maye

(2010) found that stress can produce physiological responses that include increased release of salivary alpha-amylase, perspiration levels, and heart rate, which can in turn adversely affect a RRNA's clinical performance. While stress can serve as a motivator, it can also be detrimental to one's health and self-efficacy (Chipas & McKenna, 2011). Prolonged stress that is not properly managed can invoke negative consequences on both physical and emotional health and can prevent a resident from completing an anesthesia program leading to higher attrition rates (Perez & Carroll Perez, 1999).

Rigorous program curriculums combined with entering clinical for the first time as an RRNA is a challenging and arduous time. The anticipation and anxiety of beginning clinical has been identified as an event that can negatively impact an RRNA by inhibiting the retainment of information and producing a poor clinical performance (Chipas et al., 2012; Chiffer McKay et al., 2010; Beck, 1993). The immersion process for RRNAs entering clinical demands a new skill set, knowledge, and many first-time experiences that have been shown to increase stress levels (Chipas et al., 2012; Perez & Carroll-Perez, 1999). Information overload and clinical error were reported as sources of high stress in first time clinical residents (Perez & Perez-Carroll, 1999).

Registered resident nurse anesthetists across the country have expressed that a high level of anxiety and stress occur prior to entering clinical for the first time. This sentiment holds true within the ▮▮▮▮▮▮▮▮ Nurse Anesthesia Program. The fear of entering the operating room as an anesthesia provider and performing in a completely new role is a daunting task. After speaking with colleagues within our cohort, we discovered that common fears related to entering clinical for the first time was due to multiple aspects such as unfamiliar environment and staff, unaware of expectations on the first day, and a fear of not performing to a level that was adequate. Each clinical site is unique and different from one another. A common theme amongst

our colleagues was that they wished there was an individualized orientation for each site in order

to be better acclimated prior to entering clinical. Becoming more familiar with the operating

rooms and where equipment and medications stored can alleviate stress and lead to better

performance.

Our faculty is extremely supportive and offers multiple workshops and events to prepare

residents for clinical. Countless hours are spent in the simulation lab in order to provide RRNAs

with the foundation and skills necessary to enter clinical. Simulation has been utilized in

anesthesia programs as a means to provide RRNAs with the ability to practice skills and

participate in high fidelity situations to increase preparedness prior to entering clinical rotations.

The Institute of Medicine (IOM) (2011) promotes the use of simulation for educational and team

training. While human based simulation can be used to facilitate the transition from classroom

into the operating room, it has also been shown as an origin of stress for RRNAs (Chiffer McKay

et al., 2010).

A proven method to ease anxiety and facilitate an enhanced learning environment has

been the implementation of a resident-driven mentorship program. Mentees benefit from their

mentors by building strong, supportive relationships that allow for professional growth

(Murdock, Stipanovic, & Lucas, 2012; Pethrick et al., 2017). By providing an encouraging

environment, the mentee is allowed to think independently and formulate ideas based on the

mentor's guidance and advice (Nick et al., 2012). The current mentorship program at █████

██████ fosters peer support and encourages confidence in practice and enhanced leadership

skills (Brander & Meringer, 2018). We were interested in determining if a mentorship driven

clinical site orientation could lower anxiety and stress levels in nurse anesthesia residents prior to

entering clinical. This would foster an enhanced learning environment and lead to better

performance of skills and retainment of pertinent information.

Needs Assessment

A formalized mentorship program was created at ███████████ in 2016 with the

goal of decreasing stress and anxiety through a peer support system. Currently, mentees are able

to choose an individual in the cohort above them as a mentor after attending a meet and greet

event prior to starting the first semester of classes. An issue with this current practice model

arises when RRNAs transition from the didactic only phase to the part time clinical phase of the

nurse anesthesia program. Imus, Burns, Fisher, and Ranalli (2015) suggest the time of greatest

anxiety and trepidation during a nurse anesthesia program occurs during the transition into

clinical education. Informal discussions with current nurse anesthesia resideents at ███████

███████ have shown this sentiment to hold true. In addition to an increased level of anxiety,

RRNAs at ███████████ have expressed feeling unsupported and lost during this critical

time. With the current model, mentees may be assigned to a clinical site that their mentor has

never rotated through. Expectations of an RRNA on the first day of clinical have been observed

to be different at each specific clinical site, therefore the lack of knowledge by the mentor

pertaining to a specific clinical site may decrease the efficacy of the peer support system during

this time of high stress. We proposed that the creation of a formalized clinical mentorship

framework would help ease the transition into the clinical phase of the nurse anesthesia program

for second year RRNAs. Our framework allowed for second year RRNAs to be paired with third

year RRNAs at specific clinical sites, who conducted a guided, site specific orientation for them.

Problem Statement

Stress and anxiety can lead to poor outcomes. Students experiencing high levels of stress have difficulty retaining information and adapting new skills (Chipas et al., 2012; Chiffer McKay et al., 2010; Beck, 1993). In our program, RRNAs have expressed that the time prior to entering clinical brought overwhelming feelings of anxiety and fear. These feelings along with the stress of didactic material and maintaining a healthy lifestyle outside of school is an arduous job. We want to address this issue and incorporate an element into the program that will encourage RRNAs to be enthusiastic and excited about beginning clinical rather than fearful.

Our mentorship program has proven to be successful in helping RRNAs make the transition into graduate school. It has fostered professional relationships and peer growth. The current mentorship program is lacking formalized guidelines for a site-specific clinical orientation for RRNAs who are entering the clinical role for the first time. This is an anxiety inducing time for RRNAs and can impede their learning capabilities. Will a formalized mentorship mediated clinical site orientation alleviate the stressors for RRNAs entering clinical for the first time and translate into improved performance?

Clinical Question

Population: Second year doctoral nurse anesthesia residents entering their first clinical rotation

Intervention: Mentorship mediated clinical site orientation

Comparison/control: Second year and third year residents in the ▮▮▮▮ Nurse Anesthesia program who did not participate in a formalized orientation process prior to their first clinical rotation

Outcome: Decrease in stress and anxiety levels and an increase in self-confidence, thus ultimately leading to improved performance and patient outcomes

Time: Week prior to the start of the clinical rotation (June)

Objectives and Aims

Aims

- To reduce stress and anxiety for second year RRNAs at ████████████ who are starting the clinical phase of the nurse anesthesia program.

- To increase self-confidence of second year RRNAs at ████████████ who are starting the clinical phase of the nurse anesthesia program.

Objectives

- To create a formalized mentorship mediated clinical site orientation framework

- To create an orientation checklist to be utilized by mentors during the clinical orientation

- To assess the efficacy of the mentorship mediated clinical site orientation framework

- To ensure the mentorship driven clinical orientation program continues with each nurse anesthesia cohort

Review of the Literature

Search Strategy for Identification of Studies

A review of both past and present clinical and scholarly literature was conducted with the assistance of the medical librarian at our university. The following databases were used to obtain evidence-based practice guidelines, recommendations, and supportive evidence to achieve an in-depth understanding of the stress that nurse anesthesia residents experience from entering clinical and whether a peer-mentorship driven clinical site orientation would be effective in alleviating this anxiety: CINAHL, MEDLINE, EBSCOhost, Google Scholar, and the Joanna

Briggs Institute of Evidence-Based Practice Database. Multiple searches were completed with selected search terms used and interchanged in various ways. The combination of key terms including nurse anesthesia, nurse anesthesia resident, graduate nursing education, clinical rotation, role transition, pre-clinical, mentor, mentorship, preceptorship, peer mentor, anxiety, and stress were used in the databases previously mentioned. Once duplicates were removed, our search yielded 175 articles. Upon further review, 28 scholarly articles and 7 additional sources were applicable to our project and of relevance to the stress that nurse anesthesia residents experience when entering clinical for the first time as well as the efficacy of a mentorship program in nurse anesthesia programs. Only one article focused on the impact that a pre-clinical program would have on students preparing to begin their first clinical rotation. The Table of Evidence can be referenced in Appendix A. The PRISMA diagram for review is available in Appendix B.

PRISMA Flow Diagram Exclusions

A total of 131 records were excluded from the 175 articles that were screened. The focus of our research was on alleviating stress and anxiety as registered residents nurse anesthetists enter clinical for the first time through the use of peer mentorship. A majority of these articles described the transition from student to licensed practitioner. A number of articles also described methods to increase the teaching methods of preceptors in the clinical setting. Certain articles lacked any correlation to our research question and therefore were not included in the full-text assessment.

There were 8 total articles that were excluded from the full-text articles that were assessed. These articles did not focus on the stress that students experience in their transition

from didactic to clinical. Articles that were not chosen focused on different aspects that make clinical stressful such as bullying and personality traits.

Evolution of Nurse Anesthesia Education

Nurse anesthesia education has continued to evolve over the last century. Prior to 1910, hospitals developed their own educational programs for anesthetists. The establishment of the American Association of Nurse Anesthetists (AANA) in 1939 facilitated the institution of the first accreditation program for nurse anesthesia education in 1952. This one-year program transitioned into a two-year program twenty years later and included an increase in the curriculum requirements for both the didactic and clinical component (Gunn, 1991). In 1975, the Council on Accreditation of Nurse Anesthesia Educational Programs (COA) was chosen as the accrediting agency for nurse anesthesia programs and with this came modifications in the guidelines and regulations of programs across the United States (Council on Accreditation of Nurse Anesthesia Educational Programs [COA], 2014). Beginning in 1998, nurse anesthesia programs moved to university based-graduate programs that included more formalized training and the completion of a master's degree (COA, 2014). The COA (2014) has put forth additional standards and policies to ensure that the doctoral degree will be fully implemented by 2022. Throughout the evolution of nurse anesthesia programs, the emphasis on clinical experience has always remained at the forefront.

In 1999, the IOM published a report titled "To Err is Human: Building A Safer Health System", which explained a four-tiered approach to combat the increasing medical errors seen in hospitals each year (Institute of Medicine [IOM], 1999). Higher error rates were reported to occur in operating rooms (IOM, 1999). The report promotes improvements in training programs and developing higher standards of care to facilitate increased patient safety. The operating

room is a stressful environment and can create negative outcomes for students that are unable to cope appropriately. A certain level of stress can serve as a motivator, but too much can lead to a failure in the ability to retain information and decreases in performance level (Chipas et al., 2012; Perez & Carroll-Perez, 1999; Wildgust, 1986). The initial clinical experience has been documented as being one of the most anxiety inducing aspects for students (Beck, 1993; Imus, Burns, Fisher, & Ranalli, 2015; Jimenez, Navia-Osorio, & Diaz, 2009; Wildgust, 1986). The use of a mentorship-driven clinical site orientation can reduce this level of stress and lead to increased patient safety and improved outcomes.

Impact of Stress on Resident Nurse Anesthetist

The COA requires a resident to complete a minimum of 2,000 hours and 600 cases prior to graduation (COA, 2014). The demands placed on RRNAs is very high throughout their training which can lead to increased levels of anxiety. Both the positive and negative effects it can bestow are well documented in the literature. It can impede a person's ability to learn and lead to negative consequences on both an emotional and physical level leading to a decline in academic and clinical performance (Chiffer McKay et al., 2010, Jimenez et al., 2009). It can impair an individual's ability to create new memories by obstructing the delivery of glucose to the brain (Tunajek, 2006).

Chiffer McKay et al. (2010) utilized a prospective descriptive design to determine the impact that stress has on performance levels. It can evoke a multitude of physiological responses including increases in heart rate, blood pressure, perspiration levels and salivary alpha amylase levels (Chiffer McKay et al., 2010). The researchers found an inverse relationship between clinical performance and level of stress based on salivary alpha amylase levels. Measurements were taken on students before and after participation in a simulation sequence. Programs often

utilize simulation technology as a means to prepare students for the transition from didactic into clinical. The study by Chiffer McKay et al. (2010) also shows that this can be a source of stress for students despite its purpose as a teaching tool. Additional physiologic and homeostatic imbalances have been seen in RRNAs as a consequence of increased stress levels that have not been properly dealt with. These include chronic back and neck pain, headaches, weight gain, weight loss, gastroesophageal reflux disease, compulsive behavior, difficulty sleeping, hypertension, tachycardia, and substance abuse (Chipas et al., 2012; Tunajek, 2006)

Stress can be extremely detrimental and progress to depression and thoughts of suicide. Chipas et al. (2012) conducted a qualitative, cross-sectional study and determined that stress in the RRNA population was higher than in CRNAs. The study reported that 47.3% of participants conveyed being depressed during school and even more concerning was the 21.2% of participants who described having suicidal ideation (Chipas et al., 2012). Coping mechanisms were detailed by the participants. Unconstructive and potentially deleterious coping mechanisms included in the responses were the use of alcohol, giving up, gossiping to release unpleasant feelings, criticizing one's self, and the expression of negative feelings (Chipas et al., 2012).

Another concern that develops from professional stress is burnout. Burnout is considered a type of stress that is generated from increased demands and exhibits a pattern of emotional exhaustion, depersonalization, and diminished personal accomplishments (Cordes & Dougherty, 1993). Chipas and McKenna (2011) conducted a study using a Stress and Burnout Survey and found that RRNAs had the highest mean stress score of a 7.2 on a 10-point Likert scale when compared to educators, administrators, and CRNAs.

Sources of Stress

Life and death decision making rests in the hands of anesthesia providers (Tunajek, 2006). It is no wonder that completing a nurse anesthesia program has been documented as a highly stressful endeavor. Nurse anesthesia residents have been described as highly motivated, ambitious, and meticulous individuals. These traits can be a manifestation of stress when the individual transitions from the expert on their nursing units and moves into the classroom or clinical as a novice with a loss of autonomy (Chipas et al., 2012; Perez & Carroll-Perez et al., 1999; Wildgust, 1986). Chipas et al. (2012) explains that there are three types of stressors that have the potential to be prevalent during a nurse anesthesia program: academic stressors, clinical stressors, and external stressors.

There are multiple sources of stress that an RRNA may encounter throughout different points of their education. Academic stressors include information overload, fear of failing an exam, demanding workload, and adapting to different teaching styles (Chipas et al., 2012, Jimenez et al., 2009; Stone, 2012; Wildgust, 1986). This can also lead to more external stressors. These include financial burdens, work-life balance, altered sleep patterns, and family commitments (Chipas et al., 2012; Jimenez et al., 2009; Tunajek, 2006).

Lastly, clinical stressors have been identified. The many "firsts" that clinical brings such as "the first intubation" or "the first case" in the operating room is daunting for students (Chipas et al., 2012; Wildgust; 1986). Additional clinical stressors are related to role ambiguity, lack of skills necessary for clinical, advanced technology, time management, critically ill patients, and medication errors (Chipas et al., 2012; Jimenez et al., 2009; Tunajek, 2006; Wildgust, 1986). Wildgust (1986) studied the stress levels of eight junior students and found the highest clinical stressors to be associated with a lack of confidence in their introductory clinical rotation. Perez

and Carroll-Perez (1999) developed a questionnaire for nurse anesthesia students to determine

stress management therapies and to assess what stressors were the most severe. The fear of

clinical error was the source of the highest amount of anxiety for first year students (Perez &

Carroll-Perez, 1999). Jimenez et al. (2009) employed a quantitative and cross-sectional design to

analyze the types of stressful events and the level of stress during different stages of anesthesia

education related to clinical. Their findings expressed that clinical stressors including a lack of

knowledge and skills and workload caused higher degrees of anxiety than both academic or

external stressors (Jimenez et al., 2009).

An additional component leading to increased levels of stress and decreased self-efficacy

that has been identified is the type of program that a student is enrolled in. Chipas et al. (2012)

found that students in front loaded programs had a 10% reduction in stress levels when compared

to students in an integrated program. As previously explained, clinical causes a high degree of

anxiety and nervousness amongst RRNAs. This difference in perceived stress may be related to

students in integrated programs lacking the proper didactic foundation and knowledge necessary

to enter the operating room with confidence during their initial clinical experience (Chipas et al.,

2012). Students may feel incompetent which could create a negative learning environment and

lead to poor communication and performance.

The First Clinical Experience

Jaybird (2003) stated the following:

Tomorrow is my first day of clinicals in anesthesia school! I have these mixed emotions

of excitement and pure terror. Can anyone share some stories to make me laugh? I know

the CRNAs and MDAs will not expect a whole lot from me on my first day, but that does

little to ease my anxiety. I've never really worked in the O.R. before, but I hear it can be

quite intimidating (Jaybird, 2003).

There is a vast amount of literature identifying the tremendously high levels of stress that

nursing students experience prior to their initial clinical rotation (Bayoumi, Elbasuny, Mohamed

Mofereh, Mohamed assiri, & Al Fesal, 2012; Beck, 1993; Beck & Srivastava, 1991; Imus et al.,

2015; Jimenez et al., 2009; Pagana, 1988; Sheu, Lin, & Hwang, 2002; Wildgust 1986). The

many "firsts" that arise when entering clinical are anxiety inducing (Wildgust, 1986).

Kleehammer, Hart, and Keck (1990) asked 39 junior and 53 senior nursing students to complete

a questionnaire regarding their clinical experience and found that the highest levels of anxiety

were attributable to the initial clinical experience and fear of making mistakes. Juniors expressed

a higher anxiety level than the seniors and it was recommended that ways to acquaint students to

their clinical site prior to patient care be utilized as a means of alleviating stress (Kleehammer et

al., 1990).

Beck (1993) conducted a phenomenological study to assess the experiences and emotions

of nursing students regarding their first clinical experience. Statements and data from eighteen

students were assessed and six clusters of themes emerged: pervading anxiety, envisioning self

as incompetent, feeling abandoned, encountering reality shock, doubting choices, and uplifting

consequences (Beck, 1993). Prior to beginning the initial clinical rotation, students have reported

feelings of fear, doubt, and incompetence (Beck, 1993; Kleehammer et al., 1990). These

thoughts are often attributed to a lack of professional knowledge and the stress and difficulties of

mastering a new skillset (Beck et al., 1991; Sheu et al., 2002).

Pagana (1988) designed a Clinical Stress Questionnaire to evaluate what nursing students

find threatening about their first clinical experience. The mean stress level was a 2.7 and the

mode was 3 on a scale from 0 (none) to 4 ("quite a bit") (Pagana, 1988). Threats expressed by

the participants included inadequacy, errors, and uncertainty. Students expressed fear of the

unknown and not knowing what was expected of them on their first day (Pagana, 1988). The fear

of a new environment and stress of a new role was expressed in the questionnaire (Pagana,

1988). Role ambiguity can make learning difficult and decrease a student's performance level

(Cordes & Dougherty, 1993).

Mentorship in Nurse Anesthesia Programs

The positive outcomes of a mentorship program are expressed in the literature.

Mentorship has gained popularity across disciplines as a way to further leadership and

professional development. There are numerous benefits to the institution of a mentorship

program including increased retention rates, higher morale, greater satisfaction rates, and

improved self-confidence (Nick et al., 2012; Pollock, 1996). Nick et al. (2012) explain that it can

build a sense of community and augment an individual's level of commitment.

Pollock (1996) states, "The idea behind mentoring is simple: an older, more experienced

individual helps or shepherds a younger person to grow and advance in the formative years of the

individual's career by providing advice, support, and encouragement" (p. 227). The mentor

should not be a peer, but someone who has more experience in the role that the mentee is about

to assume (Pollock, 1996). CRNAs have been recognized as leaders in healthcare. This essential

quality is necessary to the mentorship program in order to empower the mentee (Faut-Callahan,

2001). Demonstrating these leadership qualities as a mentor are imperative to the nurse

anesthesia profession to facilitate trust and confidence in the mentor-mentee relationship (Faut-

Callahan, 2001; Pollock, 1996). Effective leaders in a nurse anesthesia program must be

attentive, motivated, and advocate for change in order empower fellow colleagues (Chan,

Pallaria, McLaughlin, 2016). RRNAs are the future of the nurse anesthesia profession and failing

to mentor colleagues can jeopardize the nurse anesthesia community (Pollock, 1996).

Sambunjak, Straus, and Marusic (2009) conducted a systematic review to determine the

development and outcomes of the mentor-mentee relationship in academic medicine. It was

found that mentors enable mentees to excel in difficult clinical transitions through the

implementation of emotional and moral support which cultivated an increased sense of

motivation and self confidence in the mentee (Sambunjak et al., 2009). In order for a mentorship

program to succeed, an environment that fosters cultivation of commitment to this process is

essential (Ramani, Gruppen, Krajic Kachur, 2006; Sambunjak et al., 2009).

The implementation of a mentorship program in advanced practice nurses has proven to

advance professional growth and performance in the workplace and ease the transition from

graduate student to licensed practitioner (Baumgartner & Williams, 2014; Scott-Herring &

Singh, 2017). This has also been shown in the RRNA population. Peer mentorship and its

positive effects on psychosocial outcomes provide RRNAs with the encouragement that is

needed to cope with the stressors and difficulties of various transitions that are experienced in

nurse anesthesia programs (Meno, Keaveny, & O'Donnell, 2003). Meno et al. (2003) conducted

a study using a descriptive design to discover the opinions of RRNAs on mentorship in the

clinical setting. It was found that RRNAs highly value a mentor to guide them throughout the

program who is knowledgeable, approachable, and encouraging (Meno et al., 2003). Another

theme emerged from this study that differentiated a mentor and an educator. Meno et al. (2003)

found that 93% (n = 1,161) of students believed there were distinctive differences in the

characteristics of educators and mentors and viewed a mentor as a student who was more senior

than them.

Chipas et al. (2012) reported on the negative outcomes that stress can produce. Wellness suggestions provided by students in this study included both peer support and the ability to contact other students in their anesthesia school more often (Chipas et al., 2012). A support system has been identified as one of the most significant ways to decrease stress in RRNAs by confiding in peers and sharing frustrations and feelings (Perez & Carroll-Perez, 1999; Tunajek, 2006). As evidenced in the literature, the use of a social support system is a very valuable coping mechanism and enables information sharing, encouragement, and increased self-efficacy (Conner, 2015; Wildgust, 1986).

A review of the grey literature also found the implementation of a mentorship program as a means to decrease stress and anxiety in RRNAs. Johnson (2018) included open-ended questions in a survey of 237 RRNAs and found that participants suggested a mentorship program where senior students guide newer students through support and leadership as a coping mechanism. Garcia Head (2015) also found that the use of a peer mentoring program in RRNAs was effective in decreasing stress and was a valuable coping mechanism.

Mentorship Mediated Clinical Site Orientation

According to the literature, the utilization of a resident driven peer mentorship program fosters leadership development, professional advancement, improved academic and clinical performance, and a decrease in stress and anxiety levels in the RRNA. As previously stated, the transition into clinical is one of the most stressful times during a nurse anesthesia program. However, there is limited research on the utilization of a mentorship mediated clinical site orientation program to facilitate this transition in nurse anesthesia programs at both the doctorate and master's prepared level.

The effectiveness of a clinical site orientation program has been utilized in other medical disciplines. Baksi, Gumus, and Zengin (2017) conducted a randomized experimental controlled trial to determine if a clinical preparatory education given to freshmen nursing students would decrease stress and anxiety levels. The clinical preparatory education consisted of three sessions with the final session consisting of an introduction to the clinical environment. They were given information on the functional aspects of the site and expectations for the first day (Baski et al., 2017). A statistically significant reduction in anxiety and stress levels were observed in the intervention group after the implementation of the pre-clinical training (Baksi et al., 2017). Kleehammer et al. (1990) also determined that anxiety levels in undergraduate nursing students were extremely high prior to the first clinical day and suggested that strategies to increase familiarity with the unit and better acquaint students would be beneficial.

An introduction to clinical has been documented as a successful strategy to ease the transition from the classroom to the hospital environment in medical residents. Alford and Currie (2004) found that the implementation of a peer shadowing program in which pre-clinical medical students observed and participated in certain aspects of training with a third-year student was highly valued and regarded as a beneficial learning experience for the first-year medical students. Turner, White, Poth, and Rogers (2012b) instituted a near-peer shadow-based experience for pre-clinical medical students. A randomized controlled trial was used and compared to students in the control group, the students in the intervention group found themselves more prepared to enter clinical and understood their new role and expectations to a higher degree (Turner et al., 2012b). A total of 63 students from the intervention group responded to the questionnaire following the pre-clinical shadow program and 93.6% enjoyed their participation and 90.5% stated they would participate again (Turner et al., 2012b). In addition, 98.4% of the responding students from the

intervention group and 100% of responding students from the control group felt that the program

should be available the following year (Turner et al., 2012b).

Turner, White, and Poth (2012a) devised twelve tips that were drawn from experience

and the literature to maximize the success and value of a near-peer shadowing program in order

to decrease anxiety and increase preparedness in students getting ready to transition into clinical.

One of the twelve tips is to ensure the program objective are aligned with the needs of the

students in order to overcome barriers and challenges that the students may face (Turner et al.,

2012a). An appropriate tutor population must also be selected that includes peers in a more

advanced stage of learning rather than staff (Turner et al., 2012a). The authors found that

medical students reported colleagues to be "more approachable" and "less intimidating" (Turner

et al., 2012a). Another tip is base the program in the clinical arena. (Turner et al., 2012a). It is

imperative to immerse the pre-clinical students in the environment in which they will be training

in. This allows students to observe the new role that they will be in and apply their didactic

knowledge to the real clinical environment. According to Turner et al. (2012a), students rated

that as one of the most important aspects of their pre-clinical preparatory program.

Imus et al. (2015) conducted a descriptive study to assess perceptions of a pre-clinical

experience in a front-loaded nurse anesthesia program. The participants were nurse anesthesia

students that partook in a four-hour pre-clinical experience during their didactic education. This

allowed them to integrate the knowledge and skills they learned in both the classroom and the

simulation lab and apply them into the clinical environment (Imus et al., 2015). Imus et al.

(2015) stated that students were able to conduct an anesthesia machine checkout, practice

drawing up medications, and perform airway management during their experience. Surveys were

completed by 24 out of the 29 participants. Furthermore, 100% of the students recommended the

pre-clinical experience for the didactic portion of a front-loaded nurse anesthesia program (Imus et al., 2015). This study clearly demonstrates the benefits of a pre-clinical site orientation program and serves as a foundation for future research regarding this practice.

Theoretical Framework

The selection of an appropriate theoretical framework was imperative for the successful creation of a mentorship mediated clinical site orientation framework. The authors of this study selected to use an adapted version of the theoretical framework described by Nick et al. (2012) entitled, "Best Practices in Academic Mentoring: A Model for Excellence" (Figure 1) of Appendix C.

This theoretical framework was initially designed to provide guidance when developing a formalized mentorship program for nurse educators at higher education institutions. The basis of this framework focuses on six specific "best practice" themes, which the authors have identified as essential components of a successful mentorship program, including appropriately matched dyads, specific goals, solidification of the mentor/mentee relationship, advocating for the mentee, integrating the mentee into the academic culture, and utilizing institutional resources for support. Together, these six themes build a foundation on which a successful mentorship program is built. Within each theme, subcategories provide evidence-based guidelines to follow during the creation of a mentorship program. The authors also suggest that the success of a mentorship program can be determined by evaluating if four specific outcomes have been met. These four outcomes are referred to by the authors as the "four mentoring outcome pillars", and include orientation to the faculty role, socialization to the academic community, development of teaching, research, and service skills, and facilitation of the growth of future leaders in nursing and nurse education.

The theoretical framework described by Nick et al. (2012) provides the structural model the mentorship mediated clinical site orientation framework will be designed from. The six themes will be considered during the creation of the framework, and each subcategory will be utilized to ensure the framework follows the best practice model of mentoring excellence. The four outcome pillars will be utilized to assess the efficacy of the newly created program.

Although the theoretical framework described by Nick et al. (2012) is the best choice to follow when creating a mentorship mediated clinical site orientation framework, the framework has few shortcomings. The framework focuses specifically on nurse educators, therefore some of the goals and themes do not translate into the development of a clinical education mentorship program for RRNAs. In order to overcome these shortcomings, the authors have chosen to integrate the "STAR Map" mentorship framework described by Brander and Meringer (2018) (Figure 2 of Appendix C) into the overall theoretical framework. The STAR Map framework was designed specifically to evaluate the success of a mentorship program for RRNAs and focuses on five points including utilizing a mentorship framework, establishing an open line of communication, performing a time out before mentorship interactions, utilizing teaching strategies during educational opportunities, and debriefing at the conclusion of an interaction.

The finalized, adapted theoretical framework (Figure 3) of Appendix C is a combination of the "Best Practices in Academic Mentoring" framework described by Nick et al. (2012) and the "STAR Map" framework described by Brander and Meringer (2018). The adapted framework was specifically tailored to the clinical education component of nurse anesthesia education.

Methodology

Study Design

The project was a mixed-methods research design that encompassed a clearly defined mentorship driven clinical site orientation curriculum that was site specific for the residents of the second-year cohort who were entering clinical for the first time. The mentors in the third-year cohort received a formalized training on the expectations and guidelines for conducting the clinical site orientation. Residents from the third-year cohort who previously rotated at a designated clinical site were assigned to orient RRNAs from the second-year cohort who were appointed to that specific clinical site. In addition, a clinical site orientation checklist was provided by the investigators to guide the mentorship mediated clinical site orientation process. The checklist ensured that residnents received a physical tour of the hospital campus with a focus on the operating room suites, pre-operative area, post anesthesia care unit, equipment rooms, locker rooms, parking and public transportation, anesthesia office and lounge, and cafeteria which differs between institutions. The checklist also confirmed that RRNAs understood the documentation system, policies and procedures, clinical schedule, coverage and different care team models, and the patient assignment process which also varies amongst institutions. There was an emphasis on clinical components such as the location of controlled substances and where they are stored and reconciled, how to complete an anesthesia machine checkout, equipment setup and organization, medication administration, emergency management, and a review of a proper induction for a patient undergoing general anesthesia. The orientation checklist can be found in Appendix D.

A clear introduction and description of the scope of practice for RRNAs was provided along with expectations for the first day of clinical. The role and responsibility of a CRNA

differs immensely from that of a critical care nurse. RRNAs needed a clear understanding of the

expectation and requirements in order to perform at the highest level. Any questions that the

residents from the second-year cohort needed answered were resolved by the guidance and

support of the RRNAs in the third-year cohort.

The Perceived Stress Scale (PSS) was administered anonymously to the residents in the

third-year cohort in order to gauge the level of stress that was experienced prior to entering their

first clinical rotation in their second year of nurse anesthesia school. The third-year cohort did

not have a mentorship mediated clinical site orientation. The PSS was developed by Sheldon

Cohen and his colleagues (Cohen, Kamarck, & Mermelstein, 1983) It is the most widely used

psychological instrument for measuring stress. It is comprised of ten questions that relate to

feelings and thoughts during the last month and the degree to which certain situations are

measured as stressful (Cohen, 1999). Residents in the third-year cohort were asked to recall these

feelings during the month prior to their first clinical rotation in order to answer the questions.

The PSS can be found in Appendix E.

The PSS mentioned above was also administered to the second-year cohort to determine

their level of stress prior to entering clinical and participating in the mentorship driven clinical

site orientation. In addition, a second anonymous, descriptive survey was administered to the

RRNAs at the completion of the orientation. It consisted of 17 Likert- style questions along with

three open ended questions. It was an adaptation of a 19-item Likert style survey that was

formulated and used by Imus et al. (2015). It was utilized in this study to explore the benefits of

the program and the orientation's effect on stress, anxiety, and self-confidence as second year

RRNAs transitioned into clinical. This can be found in Appendix F.

Setting and Resources

An in-depth information session detailing the formalized mentorship driven clinical site orientation program and guidelines was presented to the third-year cohort and second-year cohort at 65 Bergen Street in Newark, New Jersey in classroom GA-60 on June 3, 2019. A PowerPoint presentation was provided to ensure that the mentors understand their responsibility and role as they provide the clinical site orientation.

Residents from the second-year cohort experienced the mentorship driven clinical site orientation at their assigned hospital with the supervision and guidance of a mentor from the third-year cohort that had the opportunity to rotate at that site previously. This occurred the week of June 10, 2019. Printed copies of the clinical site orientation checklist were provided. This can be found in Appendix D.

Study Population

Study participants included current RRNAs at ▮▮▮▮▮▮▮▮▮ (21residents from the third-year cohort (excluding the two investigators of this study) and, 22 residents from the second-year cohort). The second-year cohort partook in the clinical site orientation since they had not begun their clinical rotations. The clinical site orientation checklist was uploaded to the nurse anesthesia program portal on Canvas by the program administrator. Matriculated residents and faculty were informed how to locate it. All DNP Project team members were present.

Eligibility criteria to participate in this study required current status as a full-time matriculated RRNA at ▮▮▮▮▮▮▮. Exclusion criteria included individuals who were not enrolled in the nurse anesthesia program at ▮▮▮▮▮▮▮▮

Study Intervention

The study intervention consisted of the creation and application of a mentorship driven clinical site orientation for residents entering clinical for the first time. The control group was comprised of residents from the third-year cohort since they did not receive a formalized clinical site orientation prior to beginning their first clinical rotation. The intervention group consisted of the 22 residents from the second year cohort who were about to begin the clinical component of the program. All individuals from these cohorts were offered the option to participate in this study, and participation was completely voluntary.

The first element of this project took place on June 3, 2019 with the distribution of the PSS by the program administrator to the third-year cohort and second-year cohort to determine stress levels prior to beginning clinical in their second year. This cohort served as the intervention group. This helped us to determine the perception of stress during the month before RRNAs begin their clinical rotation.

As previously discussed in the study design section of this project, the second component of this intervention involved the mentors in the third-year cohort receiving a formalized training on the expectations and guidelines for conducting the clinical site orientation. This was conducted on June 3, 2019 at 65 Bergen Street in Newark, New Jersey in classroom GA-60.

The principal intervention took place the week of June 10, 2019. This was the week before the second-year cohort was scheduled to begin their first day of clinical. Clinical assignments for the RRNAs in the second-year cohort were made by the program director. Mentors from the third-year cohort were assigned to conduct the orientation at one hospital site based on previous clinical settings that they have rotated through. No mentor conducted an orientation at a site that they did not complete a clinical rotation at. There was a ratio of one

resident mentor to one to two residents. The clinical site orientation checklist was filled out by each RRNA in the second-year cohort during their clinical site orientation to verify completion and to ensure all key elements have been met. Mentorship pairings were posted on the nurse anesthesia portal by the program administrator.

The mentors from the third-year cohort conducted the clinical site tour at their assigned location. This included a tour of the perioperative setting, lockers rooms, anesthesia office, and cafeteria. A demonstration of a proper anesthesia setup and machine check was completed. In addition, an overview on where equipment and medications are stored was also performed. The workflow of the site was also be discussed.

At the conclusion of the intervention, the second-year cohort completed a second anonymous, descriptive survey. A 17-item Likert style survey that was formulated and used by Imus et al. (2015) was utilized in this study to explore the benefits of the program and its effects on stress reduction as RRNAs transition into clinical. The adapted survey consisted of 17 Likert-style questions along with three open ended questions. This can be found in Appendix F.

Outcome Measures

Outcome measures focused on any decrease in stress and anxiety and an increase in self-confidence prior to RRNAs entering their first clinical rotation as well as the benefits and perceptions of the pre-clinical orientation experience. The PSS was administered to all study participants from the third-year cohort and second-year cohort. A second survey was administered to the RRNAs that participated in the pre-clinical experience. It was a 17-item Likert-style survey that explored the benefits of the intervention program and their perceived anxiety toward beginning clinical following the mentorship driven clinical site orientation. These surveys were administered through the Qualtrics online survey software.

Another tool that was employed was PowerPoint to create and present instructions and guidelines to the mentors in the third-year cohort conducted the orientations at the designated clinical sites.

The purpose of the pre-clinical experience was to allow for a smoother transition into clinical. Measuring levels of stress prior to clinical in both the intervention and control group and then measuring stress levels following the orientation process in just the control group allowed the investigators to gauge any positive or negative outcomes related to the implementation of the orientation. It also identified any benefits of the program or elements that needed to be included if this program continues in the future.

The project created positive outcomes. It is our aspiration that this framework could serve as the foundation for a component of the ████ Nurse Anesthesia Program that is implemented for years to come as a method to ease the transition into clinical for residents in their second year of the doctoral program.

Benefits/Risks/Ethics and Human Subjects Protection

Nurse anesthesia residents within the nurse anesthesia community are considered a vulnerable population. However, mentorship in nurse anesthesia program has been shown to have positive outcomes on well-being and stress management. Instituting a mentorship driven clinical site orientation can alleviate anxiety and improve clinical performance by making the transition into clinical practicum easier. This was done by giving RRNAs clear expectations for the first day of clinical and orienting them to their assigned site. All participation in this study was voluntary. By volunteering to be a participant in this study, the amount of vulnerability was decreased in this study population. Furthermore, this project did not begin until approval from the IRB was obtained on July 9th, 2019 (Appendix G).

Subject Recruitment

The population that was being studied was very specific. Residents enrolled in the

███████████ Nurse Anesthesia Program were sent a recruitment flyer via e-mail informing

them of the information session that will be held on May 28, 2019. The program administrator

dispersed the recruitment flyer via e-mail. This can be found in Appendix H. During the

information session, RRNAs were informed of the voluntary based participation and the goals

and expectations of this study. The roles of participants were clearly defined.

Consent Procedures

Consent forms were distributed to each RRNA at the first summer program meeting on

June 3, 2019 in the third-floor auditorium at 65 Bergen Street, Newark NJ. This hard copy of the

consent was reviewed by all participants before the implementation of the mentorship mediated

clinical site orientation and before any data collection begins. The consent was thoroughly

defined and discussed with each resident. Risks associated with this project were limited but

were highlighted along with the benefits of the intervention. Participants had the choice of opting

out of the research study at any time and without any repercussion. The consent can be found in

Appendix I.

Subject Costs and Compensation

Subject participation in a mentorship mediated clinical site orientation entailed no cost to

both the participants and the primary investigators. The orientation did not require any payment

to participate. Participation was voluntary and there was no compensation of any nature given to

the individuals that partook in the intervention. In addition, the mentors that were assisting in the

orientation process received no compensation for their time. They volunteered to assist in this

project with the understanding that they were dedicating their own time for the continued success

of the ████ Nurse Anesthesia Program and to foster professional relationships amongst colleagues. The implementation of the project required no allocation of monetary means and required no funding. Sustainability of this intervention did not require any costs or financing in the future.

Project Timeline

Vast research and planning were instituted by the developers of this project. Following IRB approval, an educational session that described the expectations and objectives for the third-year cohort to serve as mentors during the orientation was provided. A clinical site orientation checklist was developed and made available to participants. The recruitment flyer was emailed to all current nurse anesthesia residents at ███████████ by the program administrator. Thereafter, the first PPS survey was made available to the third-year cohort and second-year cohort. Any resident who wished to participate in the study had the opportunity to enroll at the first program meeting of the summer semester on June 3, 2019. Further information regarding the clinical site orientation was distributed including consent forms and the recruitment flyer. Following this meeting, an educational session with the utilization of PowerPoint was given to the third-year cohort to discuss expectations and the role of the mentor in the guidance of the clinical site orientation. Responsibilities were reviewed, and any questions were answered. A final step was the dyad matching based on clinical assignments provided by the program director. During the week of June 10, 2019, the mentorship mediated clinical site orientation was conducted. Upon completion of the orientation framework, a post clinical site orientation survey was administered to the participants. Please see the Gantt timeline in Appendix J for further explanation.

Resources Needed/Economic Considerations

No financial costs were necessary in order to develop, implement, or complete this study. Resources that were necessary to create and execute the study were covered by each individual's tuition. This included access to ▇▇▇▇▇▇▇ facilities, technology, and programs such as Microsoft Word, PowerPoint, Excel, and the Qualtrics database.

Evaluation Plan

Data Maintenance/ Security

In accordance with IRB approval, the safety and anonymity of each participant remained vital to the implementation and completion of the study. Each survey utilized in this study was created and stored online with the use of Qualtrics XM software. The Qualtrics software allowed for the study's participants to access the surveys anonymously from their personal computer or mobile device, and stores responses without any personal identifiers. Both privacy and confidentiality were further ensured through the Qualtrics database which required a login password to gain access to stored data. Furthermore, all synthesized data was stored in a locked computer that required a password in order to gain entry. Only the primary investigators had access to the password and computer. Once data was analyzed and distributed, all responses were permanently eliminated.

Data Analysis

Analysis of data and evaluation of results was completed with the utilization of the Qualtrics XM software. A perceived level of stress prior to entering clinical was analyzed for both the control group and intervention group. Any level of alleviated stress and anxiety was examined in the intervention group following the implementation of the orientation. In addition, elements related to the clinical site orientation were assessed.

The sample used was a non-probability sample since all participants had volunteered to engage in the study. All significant results had a p-value of less than 0.05 with a confidence interval of 95%. Both of the surveys used in the study were validated by the survey's creators using Cronbach's alpha to assess the internal consistency. Both surveys are used with permission from the original authors. Mean values for the third-year cohort and the second-year cohort obtained from the PSS were compared using an independent t-test. The results of the post Mentorship Mediated Clinical Site Orientation survey were expressed as percentages. Descriptive statistics were used to analyze all open-ended questions in order to gain further insight into the benefits of the project, and to determine if any changes needed to be made in the future.

Anticipated Findings

Positive outcomes associated with the inclusion of a mentorship program during nurse anesthesia education are well documented within the literature (Nick et al., 2012; Pollock, 1996). The investigators of this study anticipated the implementation of a mentorship mediated clinical site orientation framework would have a similar effect. With regards to overall RRNA stress and anxiety level and self-confidence, the investigators expected the intervention would reduce stress and anxiety and improve self-confidence, thus easing the transition into the clinical phase of nurse anesthesia education.

Translation

The findings of this study have the potential to change how nurse anesthesia programs across the country prepare their residents for the transition into the clinical phase of their education. The key to the translation of this project to a larger group is the orientation checklist, which mentors used as a guide to orient their mentees to each clinical site. The orientation

checklist provided specific tasks to be completed by the mentee during the orientation process. Being that the same orientation checklist will be utilized at various clinical sites during this study, there should be no issues when implementing the same procedure at clinical sites affiliated with other nurse anesthesia programs.

Dissemination

After data analysis was completed and the results were reviewed, participants of the study were notified of the results by means of a PowerPoint presentation during a ███████ ███████ Nurse Anesthesia Program meeting. Furthermore, the details and results of the project will be publicly reported at a defense presentation at Rutgers University on January 27, 2020.

Professional Reporting

The results of this study will be reported in several ways. First, the results were presented at the Fall 2019 New Jersey Association of Nurse Anesthetist meeting. Attendees of this meeting included CRNAs and RRNAs from New Jersey as well as presenters from across the nation. Secondly, the results of this study will be presented via a poster at the American Association of Nurse Anesthetists' Assembly of Didactic and Clinical Educators conference in February of 2020. This conference is designed specifically for nurse anesthesia educators, who may be interested in utilizing the framework for their programs across the United States. Finally, a manuscript has been developed and will submitted to a peer reviewed journal.

Results

Perceived Stress Scale

The Perceived Stress Scale (PSS) was sent to all residents in the third-year cohort and the second-year cohort. The survey was completed by 100% of the residents in the third-year cohort

(21/21) and 100% of the residents in the second-year cohort (22/22). Self-reported survey

responses were assessed on a 5-point Likert scale. Participants were able to choose "never",

"almost never", "sometimes", "fairly often", or "often in response to the 10 survey questions,

and numerical values were assigned from 0-4, respectively. Mean values were calculated,

statistical testing was completed using the Qualtrics software, and results are shown in Table 1.

The mean overall pre-clinical stress scores for the third-year cohort and second-year cohort were

3.38 and 3.18, respectively. The difference in mean stress was not found to be statistically

significant between the two cohorts (t=-0.91, p= 0.368). The third-year cohort felt less like things

were going their way (t= 4.62, p <0.0001) than the second-year cohort. The third-year cohort

also felt as though they were less likely to be able to control irritations in their lives (t= 2.51, p =

0.015) than the second-year cohort.

Table 1. PSS results

	Third-year cohort	Second-year cohort	t-value	df	p-value
In the last month, how often have you been upset because of something that happened unexpectedly?	2.57	2.33	-0.94	41	0.347
In the last month, how often have you felt that you were unable to control the important things in your life?	2.52	2.19	-1.18	41	0.246
In the last month, how often have you felt nervous and "stressed"?	3.38	3.19	-0.91	41	0.368
In the last month, how often have you felt confident about your ability to handle your personal problems?	1.86	2.18	1.54	41	0.126
In the last month, how often have you felt that things were going your way?	1.57	2.62	4.62	41	**< 0.0001**
In the last month, how often have you found that you could not cope with all the things that you had to do?	2.43	2.24	-0.94	41	0.352
In the last month, how often have you been able to control irritations in your life?	1.67	2.33	2.51	41	**0.015**
In the last month, how often have you felt that you were on top of things?	2.00	2.43	1.93	41	0.061
In the last month, how often have you been angered because of things that were outside of your control?	2.48	2.00	-1.64	41	0.071
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	2.43	1.91	-1.86	41	0.066

Mentorship Mediated Clinical Site Orientation Assessment Survey

A link to the mentorship mediated clinical site orientation assessment survey was sent to study participants. The survey was completely by 100% (22/22) of the individuals who were sent the survey. When asked if the mentorship mediated clinical site orientation (MMCSO) increased confidence towards the clinical year, 100% strongly agreed. 100% of participants also strongly agreed that the MMSCO was beneficial to their education. When asked if the MMCSO helped to reduce stress and anxiety towards the clinical year, 95.45% strongly agreed and 4.55% agreed (Table 2). 100% of participants were able to obtain hands on practice doing an anesthesia machine checkout. Only 68.18% of participants were able to get hands on practice with a pre-operative evaluation. 100% of study participants stated they would recommend the MMCSO to be integrated into a front-loaded program as it was presented to them (Table 3). 63% of participants suggested that 2-4 hours would be the most beneficial amount of time allotted to complete the MMCSO (Table 4).

All qualitative comments were examined by the principal investigators. When asked to describe any other hands on experience participants had during their pre-clinical experience, responses indicated, "Sim lab, airway workshop, and anesthesia machine checkout" (Table 5). Participant suggestions on how to improve the MMCSO included, "spending an entire day with a senior" and "should be two days" (Table 6).

Table 1. Survey question responses (%)

Item	Question	SA	A	N	D	SD
1	The MMCSO was beneficial to my education	100				
2	The MMCSO helped to reinforce the didactic curriculum	90.91	9.09			
3	The MMCSO increased my confidence towards the clinical year	100				
4	The MMCSO helped reduce my stress and anxiety towards the clinical year	95.45	4.55			
5	The MMCSO increased my time spent reviewing didactic content	63.64	23.73	9.09		

6	The MMCSO encouraged me to want to learn the theory behind what I experienced	77.27	18.18	4.55		
7	The MMCSO motivated me to study	81.82	13.64	4.55		
8	The MMCSO created an understanding of the impact of anesthesia and surgery on patient's lives	86.36	13.64			
9	The MMCSO promoted professional association	90.91	9.09			
10	The MMCSO promoted the integration of prior knowledge and new knowledge	95.45	4.55			

Note. MMCSO: Mentorship Mediated Clinical Site Orientation; SA: strongly agree; A: Agree; N: Neutral; D: Disagree; SD: Strongly Disagree

Table 2. Survey question responses (%)

Item	Question	VH	H	N	NH	NR
11	Describe the MMCSO in improving your understanding of the future responsibilities of a CRNA	90.91	9.09			
12	Describe the MMCSO in improving your professional development as a CRNA	85.71	14.29			

Note. CRNA: Certified Registered Nurse Anesthetist; VH: very helpful; H: helpful; SH: somewhat helpful; NH: not helpful; NR: no response.

Table 3. Survey question responses (%)

Item	Question	YES	NO	NR
13	During the MMCSO, were you able to get hands on practice with the airway equipment?	95.45	4.55	
14	During the MMCSO, were you able to get hands-on practice doing an anesthesia machine checkout?	100		
15	During the MMCSO, were you able to get hands-on practice with pre-operative evaluation?	68.18	31.82	
16	Would you recommend the MMCSO to be integrated into a front-loaded CRNA program as it has been presented to you?	100		

Table 4. Survey question responses (%)

Item	Question	0-2	2-4	4-8	8-12	>12	NR
17	How many hours in the MMCSO do you consider would be the MOST beneficial	9.09	63.64	18.18	4.55	4.55	

Table 5. Pre-clinical experience hands-on practice

Item	Question
18	**Please describe any other hands-on practice you had during your pre-clinical experience**
	Machine pre-check, setting up airway equipment, suction
	Anesthesia machine, airway setup, fluid warmer setup, OR table arm board placement, drug cart
	Anesthesia room set up
	Previous OR experience made being in the OR much more comfortable
	Simulation would have been much more beneficial had it taken place in a real OR
	Setting up fluid warmer
	Induction and emergence sequences

Sim lab. However, since we had out checkout on a machine that didn't work and was out of date, it was hard to fully conceptualize the idea. I would suggest to have the machine checkout AFTER MMCSO

My onsite mentor was extremely helpful and patient. I genuinely believe this experience was beneficial

Discussing medications and dosages was also extremely helpful

Airway workshop was also very helpful, prior to starting clinical

During the MMSCO, I was shown supply rooms, where to find equipment, how to set up the fluid warmer, we went through the entire machine checkout together then independently, and the mentor reviewed my entire pre0op assessment. During the MMCSO, we also reviewed computer documentation and how to obtain patient data prior to pre-op. This experience was truly incredible in providing me with confidence prior to my first day of clinical.

Room setup

I had no hands-on experience before clinical unless it was in sim or with my mentor

We practiced setting up the equipment and supplies needed throughout the perioperative period

Sim was the closest thing but hard because the machine is not the same everywhere

Table 6. MMCSO improvement suggestions

Item	Question
19	**Is there anything else you would like to see incorporated in the MMCSO**
	No, it was great!! We will always have stress, but this helped reduce some of our stress before beginning
	I would have appreciated being able to shadow a RRNA/CRNA for a pre-op assessment and induction
	No
	Spending an actual clinical day with the senior
	Should be 2 days. One night where you go through everything on the sheet provided. Nest where you shadow the mentor all day for a real life case/ experience
	It should be done on a day where the clinical site mentor does not have clinical that day
	Fantastic idea, alleviated so much anxiety!
	I think the MMCSO did a fantastic job alleviating our anxieties. While sim lab is great, it's such a difference experience than the real thing. Thank you so much for doing this.
	Nothing.
	It was a fantastic experience that helped to ease pre-clinical jitters. I would love to see two, two-hour sessions in total before starting. I think this should be implemented at every program across the country
	No, The MMCSO was more than adequate in easing a novice RRNA into the clinical setting
	I cannot think of anything. My mentor spent so much time with me reviewing everything in the OR and getting me familiar with the layout of the department. This was an incredible experience and extremely grateful
	Medication preparation
	No, you guys did a great job
	It would be great if it could be maintained for each clinical site that we rotate through. It's a great program
	I don't believe more is needed
	This decreased my anxiety so much! Was so helpful

Discussion

Implications for Clinical Practice

The mentorship mediated clinical site orientation framework can be instituted into nurse anesthesia programs throughout the country as an effective way to immerse RRNAs into the clinical experience prior to the beginning of the first rotation. As described in the results section, the implementation of this program shows that it can lead to decreased levels of stress and anxiety in nurse anesthesia residents. Theoretically, this can lead to improved self-confidence amongst RRNAs during their clinical practicum. A better understanding of expectations, the operating room environment, and the workflow of the designated clinical site can increase professional collaboration and teamwork in the operating room.

Implications for Healthcare Policy

The World Health Organization (2019) defines health policy as "decisions, plans, and actions that are undertaken to achieve specific health care goals within a society" (para. 1). The AANA foundation has recognized three domains to further healthy policy research that include policy, education, and practice. The practice domain explores initiatives to secure the future of the quality of care that is delivered by nurse anesthetists (American Association of Nurse Anesthetists, 2019). Identifying events and triggers of high levels of stress and anxiety in nurse anesthesia residents and developing ways to alleviate it can improve their emotional and physical well-being. As previously described, high levels of stress can impede a person's ability to learn and lead to negative consequences on both an emotional and physical level leading to a decline in academic and clinical performance (Chiffer McKay et al., 2010, Jimenez et al., 2009). It can also impair an individual's ability to create new memories (Tunajek, 2006). Creating methods to alleviate these sources of stress can foster a healthier learning environment and lead to

improvements in the quality of care that is delivered by nurse anesthesia residents during their training. This in turn can translate to improved delivery of care as they progress throughout their career as an anesthesia provider.

Implications for Quality/Safety

Medical errors still exist in our society today despite advancements in healthcare technology. As previously discussed, a certain level of stress can serve as a motivator, but too much can lead to a failure in the ability to retain information and decreases in performance level (Chipas et al., 2012; Perez & Carroll-Perez, 1999; Wildgust, 1986). The institution of a framework to decrease the effects of increased stress in RRNAs may lead to increased performance levels. The ultimate goal is that the decline in stress levels will improve clinical skills and lead to less medical errors in the operating room.

Implications for Education

As described in the results section, the development and implementation of a mentorship mediated clinical site orientation has advantageous effects in nurse anesthesia residents. These include increased confidence and decreased stress and anxiety toward entering the first clinical rotation. Nurse anesthesia residents felt more prepared to begin clinical and apply what they learned in the classroom to the operating room. The goal is to advance patient safety and care by enhancing the health and well-being of the provider.

The positive results of this project can encourage future RRNAs to apply to nurse anesthesia programs. The benefits of this formalized orientation can encourage individuals to endure the demands of a nurse anesthesia program. Having the opportunity to see residents providing guidance and advice to other residents during such a difficult part of the program can

inspire others to do the same and give back in order to promote the education of future nurse anesthetists.

Plans for Future Scholarship

The results of this study suggest that implementing this program for future nurse anesthesia cohorts at ███████████ would be beneficial. Future mentorship coordinators should educate underclassmen about the program as well as pair mentees with mentors based on the methods discussed in this study. Data may be collected annually after nurse anesthesia residents complete the Mentorship Mediated Clinical Site Orientation.

The ████ University Nurse Anesthesia Program's mentorship program has evolved immensely since it was formalized in 2016. Our findings should be combined with the research conducted by previous mentorship coordinators, and the complete mentorship program should be provided to other nurse anesthesia programs with the hope of improving resident outcomes across the country.

Conclusion

A decrease in stress and anxiety and an increase in self-confidence can lead to a better transition into clinical practicum for nurse anesthesia residents who are beginning their initial clinical rotation. The implementation of a MMCSO can improve preparation and establish expectations for RRNAs. This early integration into the operating room setting with the guidance of a third-year resident serving as a mentor substantiates the need for a pre-clinical orientation prior to the first clinical rotation that an RRNA experiences.

This current project serves as a foundation for future research to explore the beneficial effects of implementing a pre-clinical orientation experience. Research can be conducted in other nurse anesthesia programs as well as other medical and clinical specialties.

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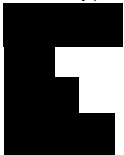
Appendix A: Table of Evidence

Article #	Author & Date	Evidence Type	Sample, Sample Size, & Setting	Study Findings That Help Answer the EBP Question	Limitations	Evidence Level and Quality
1. Introducing first-year medical students to clinical practice by having them "shadow" third-year clerks	Alford, C. L., & Currie, D. M. (2004)	Qualitative analysis	Sample: First year medical students Sample size: N/A Setting: N/A	Responses to three open-ended statements support that shadowing a third-year medical student is beneficial and highly valued from first year medical students. Unsolicited opinions and other reports also support this finding.	Only qualitative data was provided. No quantitative data was reported. Sample size was not stated so it is difficult to determine the relevance of the findings.	Level V
2. Effectiveness of the preparatory clinical education on nursing students anxiety: A randomized controlled trail	Baksi, A., Gumus, F., & Zengin, L. (2017)	Randomized controlled trial	Sample: freshmen nursing students Sample size: 67 students (intervention group=31, control group=35) Setting: health college in Turkey	State anxiety mean score of the intervention group was reduced and found to be statistically significant (p <0.05)	Study was conducted at only one college and therefore had a small sample size. The students from the control group and intervention group still had interaction	Level I

					through the study.	
3. Advanced Practice Provider Mentoring Pilot Project: Program Development and Evaluation	Baumgartner, R., & Williams, T. (2014)	Qualitative analysis	Sample: advanced practice providers including nurse practitioners, CRNAs, and physician assistants Sample size: 19 participants with 9 mentors and 10 mentees Setting: ■■■■	100% of participants stated that the group mentoring pilot enhanced understanding of their new role as advanced practice providers. Allowed for enhanced professionalism and career development in the transition from student to licensed practitioner.	This was a pilot project that utilized a convenience sample. Participants were recommended by leadership and peer recommendations rather than randomization.	Level III
4. Evaluating nursing students' anxiety and depression during initial clinical experience	Bayoumi, M. M. M., Elbasuny, M. M. M., mofereh, A. M., Mohamed assiri, M., & Al fesal, A. H. (2012)	Cross sectional study	Sample: female nursing students Sample size: 30 participants Setting: ■■■■	Nursing students identified the initial clinical experience as a cause of anxiety. Anxiety and depression increased from the first exposure to clinical	This study used a small sample size that only consisted of female students. The students that were assessed were undergraduate and not graduate nurse	Level II

					anesthesia students. The discussion in the article focused more on other studies than on the actual study conducted for this article.	
5. Nursing students' initial clinical experience: A phenomenological study	Beck, C. T. (1993)	Phenomenological study	Sample: undergraduate nursing students who just completed their first clinical course Sample size: 18 participants Setting: state university in southeastern U.S.	Six clusters of themes were extracted from the 18 written descriptions regarding the first clinical experience: pervading anxiety, envisioning self as incompetent, feeling abandoned, encountering reality shock, doubting choices, and uplifting consequences.	A small sample size was used in undergraduate nursing students. Only qualitative data was extracted.	Level III
6. Perceived level and sources of stress in baccalaur	Beck, D. L., & Srivastava, R. (1991)	Descriptive, correlational study	Sample: students enrolled in at least their	Difficulty with patient responsibilities was identified as	The small sample size does not allow for generalizati	Level III

eate nursing students			second year of a Bachelor of Nursing program Sample size: 94 participants Setting: ███████	a source of high stress. Lacking clinical knowledge to accomplish task was also noted to be a frequently reported stressful event.	ons. No comparison group was used in this study. The scale used in the study was a combination of multiple scales and was not pre-tested on the study population. The authors noted that further testing of the scale should have been done.	
7. Guidelines for the nurse anesthesia mentorship program at Rutgers University (Unpublished Doctoral Dissertation)	Brander, R., & Meringer, P. (2018)	Unpublished doctoral dissertation	N/A	Identifies the success of the peer mentorship program at ██████	Not a published study.	NA
8. Mentoring in a nurse anesthesia program: Cultivating wellness and	Chan, G., Pallaria, T. J., & McLaughlin, M. (2016)	PowerPoint slides	N/A	Described characteristics of effective mentors that align with other sources that were	Not a published study.	N/A

developing leaders [PowerPoint Slides]				described in the literature review	
9. Determining the relationship of acute stress, anxiety, and salivary α-amylase level with performance of student nurse anesthetists during human-based anesthesia simulator training	Chiffer McKay, K. A., Buen, J. E., Bohan, K. J., & Maye, J. P. (2010)	Prospective, descriptive study	Sample: student nurse anesthetists Sample size: 18 participants (15 men, 3 women) Setting: ▮▮▮ Bethesda, Maryland	Statistically significant differences in physiologic measures of stress were detected between baseline and acute levels of salivary alpha-amylase (P= .017), heart rate (P= .003), and anxiety levels (P= .001). analysis shows there is a positive correlation between stress level and student performance.	A small size was used to make comparisons among low, moderate, and high performers. The checklist that was used to measure performance requires further investigation to determine it reliability. The rater's assessment of each student participating in the simulation may have been affected by the limited views of the monitors. Outside stressors such as family and finances could have impacted	Level III

				stress levels. Physiologic responses to simulation are variable.		
10. Stress: Perceptions, manifestations, and coping mechanisms of student registered nurse anesthetists	Chipas, A., Cordrey, D., Floyd, D., Grubbs, L., Miller, S., & Tyre, B. (2012)	Qualitative, cross sectional study	Sample: nurse anesthesia students from numerous programs across the country Sample size:1,282 participants Setting: ▆	Stress is a leading cause of depression in RRNAs (47.3%, n=554). 21.2% of participants (n=245) reported suicidal ideation. RRNAs experience back and neck pain, headaches, obesity, hypertension, gastroesophageal reflux, compulsions, and substance abuse/misuse. Analysis shows a statistically significant relationship between stress and negative outcomes such as decreased	Despite the large sample size, a limitation exists due to the perception of stress being highly subjective.	Level III
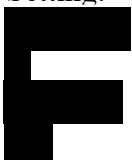
				performance, health, and increased sick days.		
11. Stress and burnout in nurse anesthesia	Chipas, A., & McKenna, D. (2011)	Qualitative, cross sectional study	Sample: CRNAs and RRNAs who had emails on file with the AANA Sample size:7,537 respondents (85% were AANA members and 15% were associate or student members) Setting: ■■■■	Most frequent method for handling stress was reported as support from others. RRNAs were found to be suffering from higher levels of stress than CRNAs. RRNAs had a mean stress score of 7.2 and CRNAs had a score of 4.25.	Stress is highly subjective making it difficult to assess. Most of the participants were CRNAs rather than RRNAs.	Level III
12. Self-efficacy, stress, and social support in retention of student registered nurse anesthetists	Conner, M. (2015)	Literature review	Sample: N/A Sample size: N/A Setting: N/A	This article summarizes the literature and emphasizes that the use of a social support system is a	This literature review touched upon the stressors of anesthesia programs and its negative effects on	Level V

| | | | | very valuable coping mechanism and enables information sharing, encouragement, and increased self-efficacy. Explains that RRNAs are under high levels of stress related to the time constraints and the many life changes that are associated with beginning the program. This high level of stress can lead to negative outcomes if not addressed. | self-efficacy. In addition, it used research to support different coping mechanisms. A limitation to this article is the lack of thoroughness in review of the literature with only 11 supporting articles. | |
| 13. A review and an integration of research on job burnout | Cordes, C. L., & Dougherty, T. W. (1993) | Literature review | <u>Sample:</u> N/A <u>Sample size:</u> N/A <u>Setting:</u> N/A | Burnout is considered a type of stress that is generated from increased demands and exhibits | This article utilized extensive literature, but the studies used many of the same methodolog | Level V |

				a pattern of emotional exhaustion, depersonalization, and diminished personal accomplishments. It has been proven to be very costly in the nursing profession and it related to high levels of anxiety that go untreated.	ies. One study used a case study design while 7 used a structural equation model, 5 used a longitudinal design, and the remaining ones used cross-sectional correlational designs. The authors expressed that the studies that were references could have applied more research rigor with statistical analysis. In addition, qualitative research could also have been beneficial.	
14. Mentoring: A call to professional responsibility	Faut-Callahan, M. (2001)	Educational information: clinical expertise	Sample: N/A Sample size: N/A Setting: N/A	Empowering mentees is a key element of the mentoring experience. There is	This article was neither a study or a literature review. It was based on clinical and	Level V

				value in a mentorship program that can increase success rates in the nurse anesthesia profession.	professional expertise but did use supporting articles and studies to support the information.	
15. The use of peer mentoring to decrease stress in student registered nurse anesthetists. (Unpublished Doctoral Dissertation)	Garcia Head, E. (2015)	Unpublished doctoral dissertation	Sample: three classes of RRNAs enrolled in a single doctoral-level nurse anesthesia program Sample size: 57 students Setting: ▇▇▇▇ research university with Southern Regional Education Board- Level 1 designation	Mentoring in nurse anesthesia programs was found to decrease daily stress levels. This was found to be statistically significant. Average daily stress of non-mentored students (n=11) was 6.73+1.56 while the average daily stress of mentored students (n=26) was 5.46+1.48 (p=0.025).	Limitations include a small sample size based upon students in the same anesthesia program. This could lead to confounding factors that may have influenced the survey.	Level V
16. The history of nurse anesthesia education: Highlights and Influences	Gunn, I. P. (1991)	Monograph	Sample: N/A Sample size: N/A Setting: N/A	A historical account on the changes that nurse anesthesia programs have undergone	This article is neither a study or a literature review. It is a historical account on the	Level V

				over the years. Also explains the development of the COA and the increased focus on clinical and didactic requirements for nurse anesthesia programs.	evolution of nurse anesthesia programs.	
17. Students perceptions on pre-clinical experience in a front-loaded nurse anesthesia program	Imus, F. S., Burns, S. M., Fisher, R., & Ranalli, L. (2015).	Descriptive study	Sample: nurse anesthesia students from the same cohort Sample size: 29 students Setting: Glendale, Arizona	A pre-clinical experience can effectively reduce stress and increase confidence in students that are entering clinical for the first time. 100% of students strongly agreed that the pre-clinical experience helped to reinforce the didactic curriculum and increased their confidence and reduced	This study was conducted on one small cohort in one university. The authors explain that this study needs to be conducted on a larger scale on multiple programs in order to make generalizations and determine benefits. In addition, the study may have been biased because the students may have felt the	Level III

				their anxiety prior to entering clinical for the first time. 96% felt that it benefited their nurse anesthesia education.	need to make a positive impression on the faculty that was conducting the study. Also, a larger study using the survey needs to be done to determine its reliability and validity.	
18. *To err is human: Building a safer health system*	Institute of Medicine. (1999)	Report	Sample: N/A Sample size: N/A Setting: N/A	In order to improve patient safety and patient outcomes, the IOM promotes the use of simulation for educational and team training.	This is not a study or a literature review. This is a report put out by the Institute of Medicine on patient safety	Level V
19. Stress and health in novice and experienced nursing students	Jimenez, C., Navia-Osorio, P., & Diaz, C. (2009)	Quantitative, Cross-sectional study	Sample: Students in a three-year nursing program. (All three grade levels were included)	Clinical stressors, including a lack of knowledge and skills and workload, caused higher degrees of anxiety than	First, this study is specific to nursing students rather than nurse anesthesia students. Second, the study takes place in	Level II

			Sample size: 372 Setting: ▮▮ Andalusia, Spain	both academic or external stressors	Spain, and it is uncertain exactly what the program entails. Finally, the cross-sectional study design only investigates stress at one time. There is no data how perception of stress changes throughout the program.	
20. Stress and Coping Strategies: Perceptions of Student Registered Nurse Anesthetists. (Ph.D.)	Johnson, A. L. (2018)	Unpublished doctoral dissertation	Sample: RRNAs currently enrolled in a nurse anesthesia program Sample size: 237 RRNAs Setting: RRNAs from 120 accredited nurse anesthesia programs in the U.S. were	The researcher utilized open ended questions to investigate what coping mechanisms RRNAs use to deal with stress. The researcher found, that participants felt a mentorship program where senior students guide newer students through	This was an unpublished doctoral dissertation. Of the 3000 surveys that were sent out, only 247 individuals responded, and only 237 were included in the study. The response rate is only 7.9%.	Level V

			contacted to participate in the study.	support and leadership was an effective coping mechanism		
21. Nursing students' perceptions of anxiety-producing situations in the clinical setting	Kleehammer, K., Hart, A. L., & Keck, J. F. (1990)	Quantitative, Cross-sectional study	Sample: Junior and senior nursing students Sample size: (n= 92) 39 juniors and 53 seniors Setting: A small BSN program in a large midwestern city.	In regard to the clinical experience of nursing students, the highest levels of anxiety were attributable to the initial clinical experience and fear of making mistakes. Also, juniors expressed a higher anxiety level than the seniors	This study was completed in 1990. Although the core information is still relevant, the study is outdated. This study also pertains to nursing students rather than nurse anesthesia students.	Level II
22. Mentoring in the operating room: A student perspective	Meno, K. M., Keaveny, B. M., & O'Donnell, J. M. (2003)	Descriptive research survey	Sample: RRNAs (807 1st year, 336 2nd year, 108 3rd year) Sample size: 1251 RRNAs Setting: N/A	RRNAs highly value a mentor to guide them throughout the program who is knowledgeable, approachable, and encouraging. Students viewed mentors differently than	The data collected in this study came from response to a survey. Of the surveys that were distributed, the response rate was only 65%.	Level V

				educators, and stated that senior students were viewed as the best person to take on the "mentor" role		
23. Best practices in academic mentoring : A model for excellenc e	Nick, J. M., Delahoy de, T. M., Del Prato, D., Mitchell, C., Ortiz, J., Ottley, C., … Siktberg, L. (2012)	Literature review	Sample: N/A Sample size: N/A Setting: N/A	Nick et al. (2012) is the theoretical framework being utilized to complete our study.	This article is an extensive literature review on best practice for creating academic mentorship programs. The limitation of the research is that it specifically tailored to the mentorship of nurse educators. To overcome this limitation, the authors of this study have chosen to integrate the STAR framework (Brander & Meringer,	Level V

					2018) into the theoretical framework.	
24. Stresses and threats reported by baccalaureate students in relation to an initial clinical experience	Pagana, K. D. (1988)	Quantitative, Cross Sectional Study	Sample: Baccalaureate nursing students in their first medical-surgical clinical experience. Sample size: (n= 262) Setting: Seven different colleges in Pennsylvania	Undergraduate nursing students rated stress as a 2.7 out of 4 when starting their first semester of clinical education. Students expressed fear of the unknown and not knowing what was expected of them on their first day.	Being that data came from a self-reporting method, it is possible the data is not completely accurate. Also, each nursing student was based in PA, therefore there is a lack of diversity within the sample.	Level II
25. A national study: Stress perception by nurse anesthesia students.	Perez, E. C., & Carroll-Perez, I. (1999)	Quantitative, Cross sectional study	Sample: RRNAs in the U.S. Sample size: (n = 1400) Setting: N/A	Prolonged stress can have severe negative effects on physical and emotional health. New experiences, such as starting clinical for the first time, can increase stress levels. In regard to stress from clinical,	This study was conducted in 1999. Although the results are still relevant, the results may be slightly outdated. Also, the researchers utilized a questionnaire method to collect data. The response	Level II

				students identified "informatio n overload" & "clinical errors" as the greatest source of stress.	rate was only 68%, so a significant portion of the population was not represented.	
26. Practice issues. We are all leaders	Pollock, G. S. (1996)	Monograph	Sample: N/A Sample size: N/A Setting: N/A	This article defines mentorship, and the value of mentorship within the CRNA community. The author states that the mentor should not be a peer, but someone who is more experienced .	This article is neither a study or a literature review. It is an article discussing mentorship.	Level V
27. Twelve tips for developin g effective mentors	Ramani, S., Gruppen, L., & Krajic Kachur, E. (2006)	Literature review	Sample: N/A Sample size: N/A Setting: N/A	The researchers of this article performed a review of the literature and came up with 12 tips for developing effective mentors. These tips will be utilized during the	This review of the literature looked at 21 different journal articles and devised 12 tips for developing effective mentors. The authors do not mention how many articles were	Level V

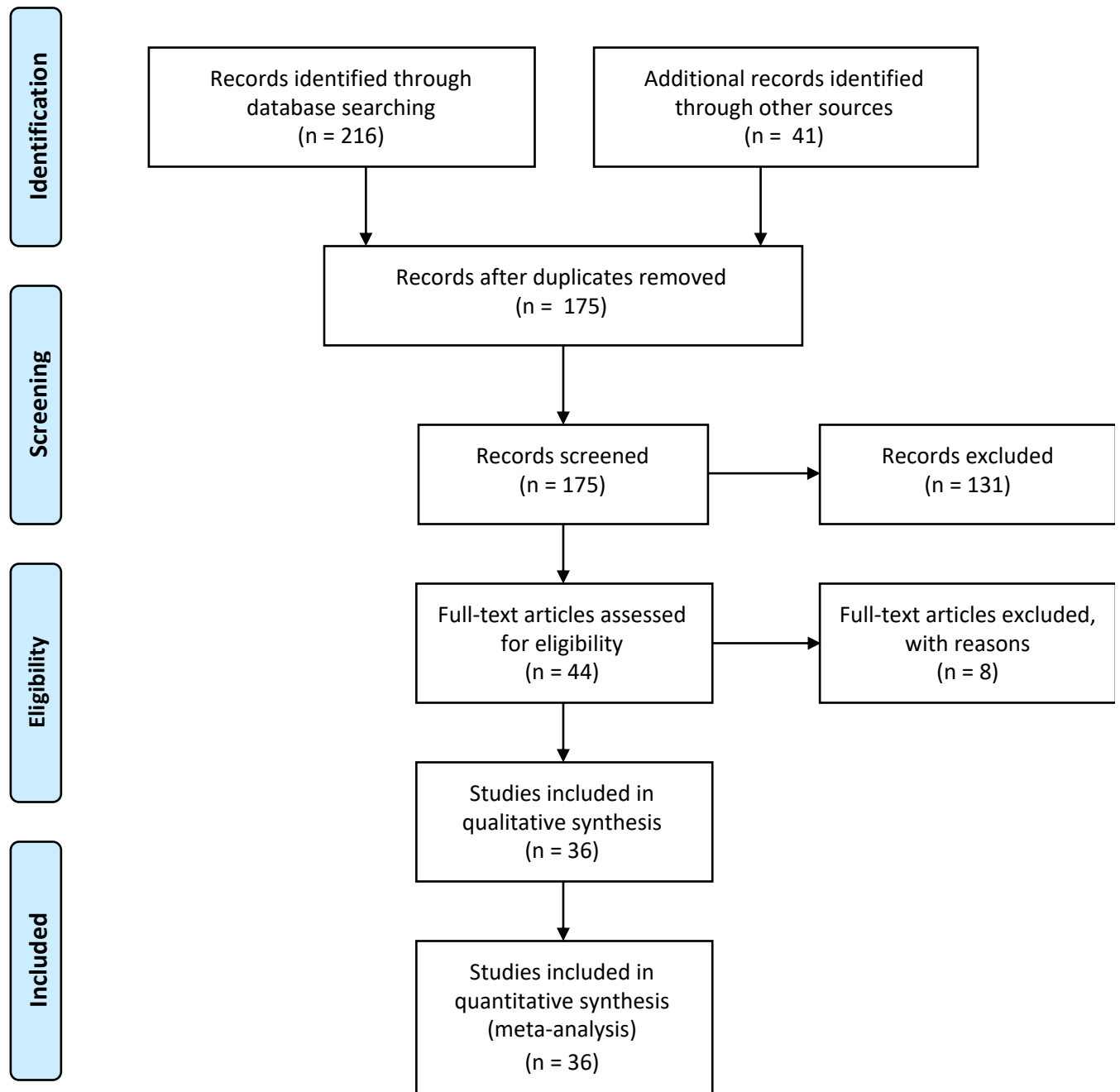|				development of the clinical mentorship program.	excluded or what the exclusion/ inclusion criteria was.	
28. A systematic review of qualitative research on the meaning and characteristics of mentoring in academic medicine	Sambunjak, D., Straus, S. E., & Marusic, A. (2009)	Systematic Review	Sample: Nine research studies reviewed Sample size: N/A Setting: N/A	Mentors enable mentees to excel in difficult clinical transitions through the implementation of emotional and moral support which cultivated an increased sense of motivation and self confidence in the mentee.	At the time of the systematic review, the authors noted that the existing body of research on mentorship within the medicine community was limited. Specific mentorship events were not described, just the overall effect off the mentorship experience.	Level IV
29. Development, implementation, and evaluation of a certified registered nurse anesthetist preceptorship mentorship program	Scott-Herring, M., & Singh, S. (2017)	Quantitative, Cross sectional study	Sample: CRNA preceptors Sample size: 12 experienced CRNAs & 5 newly hired CRNAs Setting:	Participation on a preceptorship-mentorship program significantly increased CRNA preceptor satisfaction and comfort. Also, the program helped to	This study was limited by a small convenience sample (n=17). It was also conducted at the same site, so participants had similar background, concerns, and biases.	Level II

				The CRNA division of an anesthesia department in a large academic center in the mid-Atlantic area	advance personal growth and aid with the transition from RRNA to CRNA.		
30. Perceived stress and physio-psycho-social status of nursing students during their initial period of clinical practice: The effect of coping behaviors	Sheu, S., Lin, H., & Hwang, S. (2002)	Quantitative, Cross sectional study	Sample: Nursing students who had completed their initial clinical practice. Sample size: (n= 561 nursing students) Setting: The largest nursing school in Taiwan.	A large portion of stress faced by student nurses can be attributed to lack of professional knowledge and difficulties with mastering a new skillset.	This study was conducted on nursing in Taiwan. It is unclear what type of training nursing students in Taiwan receive prior to starting clinical, however there are common themes that seem to translate to any individual beginning a clinical experience.	Level II
31. Stress in nurse anesthesia educators and students	Stone, L. (2012)	Monograph	Sample: N/A Sample size: N/A Setting:	Academic stressors for RRNAs include information overload,	This is a monograph discussing stress in nurse anesthesia	Level V

			N/A	fear of failing an exam, demanding workload, and adapting to different teaching styles.	educators and students. It is not a study or a literature review.	
32. Student stress: A question of balance	Tunajek, S. (2006)	Monograph	<u>Sample:</u> N/A <u>Sample size:</u> N/A <u>Setting:</u> N/A	Nurse anesthesia programs are recognized to be highly stressful. Stress may be viewed as a motivator or detrimental. Excessive stress can have a significantly negative impact on learning.	This article is neither a study or a literature review. It is a review of how stress effects the body, and identifies stressors associated with being enrolled in a nurse anesthesia program.	Level V
33. Twelve tips for developing a near-peer shadowing program to prepare students for clinical training	Turner, S. R., White, J., & Poth, C. (2012a)	Literature review	<u>Sample:</u> N/A <u>Sample size:</u> N/A <u>Setting:</u> N/A	The author's identified 12 tips to maximize success and value of peer shadowing programs. Consideration of tips when designing a peer mentorship program	This literature review suggested 12 things that should be incorporating in the design of a peer-shadowing program. 14 references were provided for this	Level V

				will promote success.	review. There is no way to determine if other studies were omitted or unidentified.	
34. Preparing students for clerkship: A resident shadowing program	Turner, S. R., White, J., Poth, C., & Rogers, W. T. (2012b)	Randomized controlled trial	Sample: First year medical students who had been paired with first year residents Sample size: 63 students Setting: ▉▉ in Edmonton, Alberta, Canada	A peer shadow-based experience for pre-clinical medical students lead to students feeling more prepared to enter the clinical aspect of their education, as well as helped them to better understand the expectations associated with their new role when compared to students that did not participate in the program.	Although students reported that participation in the shadow program made them feel more prepared for the clinical component of their education, there was a lack of direct evidence that students who participated performed better clinically than students who did not participate.	Level I

35. Stress in the anesthesia student	Wildgust, B. M. (1986)	Quantitative; Cross-sectional study	Sample: Eight junior students and ten senior students enrolled in a two-year anesthesia program Sample size: 18 students Setting: Two-year anesthesia program. Specific location not disclosed.	Junior students rated "Lack of confidence" as their number one stressor before starting their introductory clinical rotation.	Limitations include a small sample size based upon students in the same anesthesia program. This could lead to confounding factors that may have influenced the survey.	Level II

Appendix B: PRISMA Diagram

PRISMA 2009 Flow Diagram

Identification

| Records identified through database searching (n = 216) | Additional records identified through other sources (n = 41) |

Screening

Records after duplicates removed (n = 175)

Records screened (n = 175) → Records excluded (n = 131)

Eligibility

Full-text articles assessed for eligibility (n = 44) → Full-text articles excluded, with reasons (n = 8)

Included

Studies included in qualitative synthesis (n = 36)

Studies included in quantitative synthesis (meta-analysis) (n = 36)

Appendix C: Theoretical Models
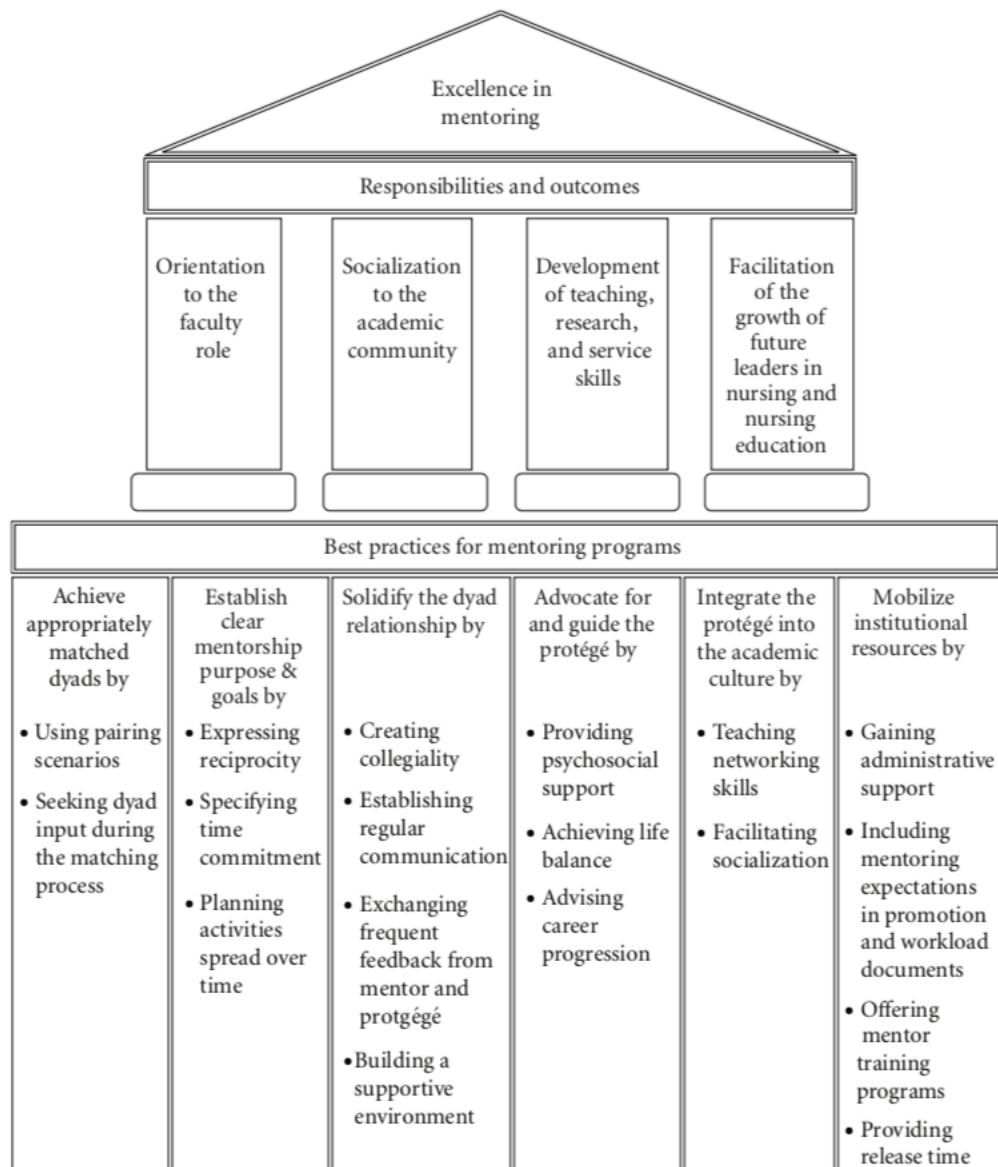
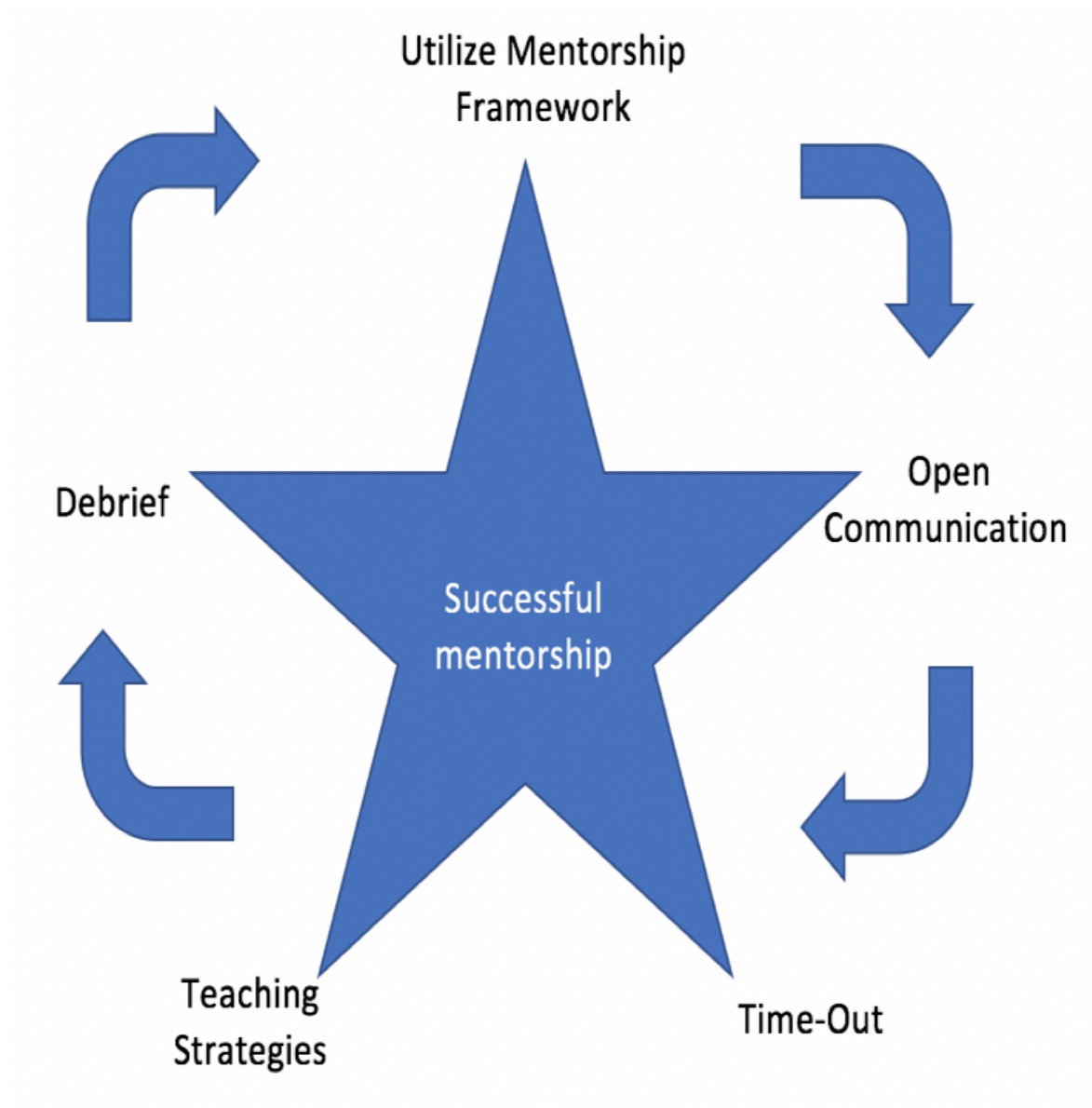Figure 1: Nick et al. (2012), *Best Practices in Academic Mentoring: A Model for Excellence.*

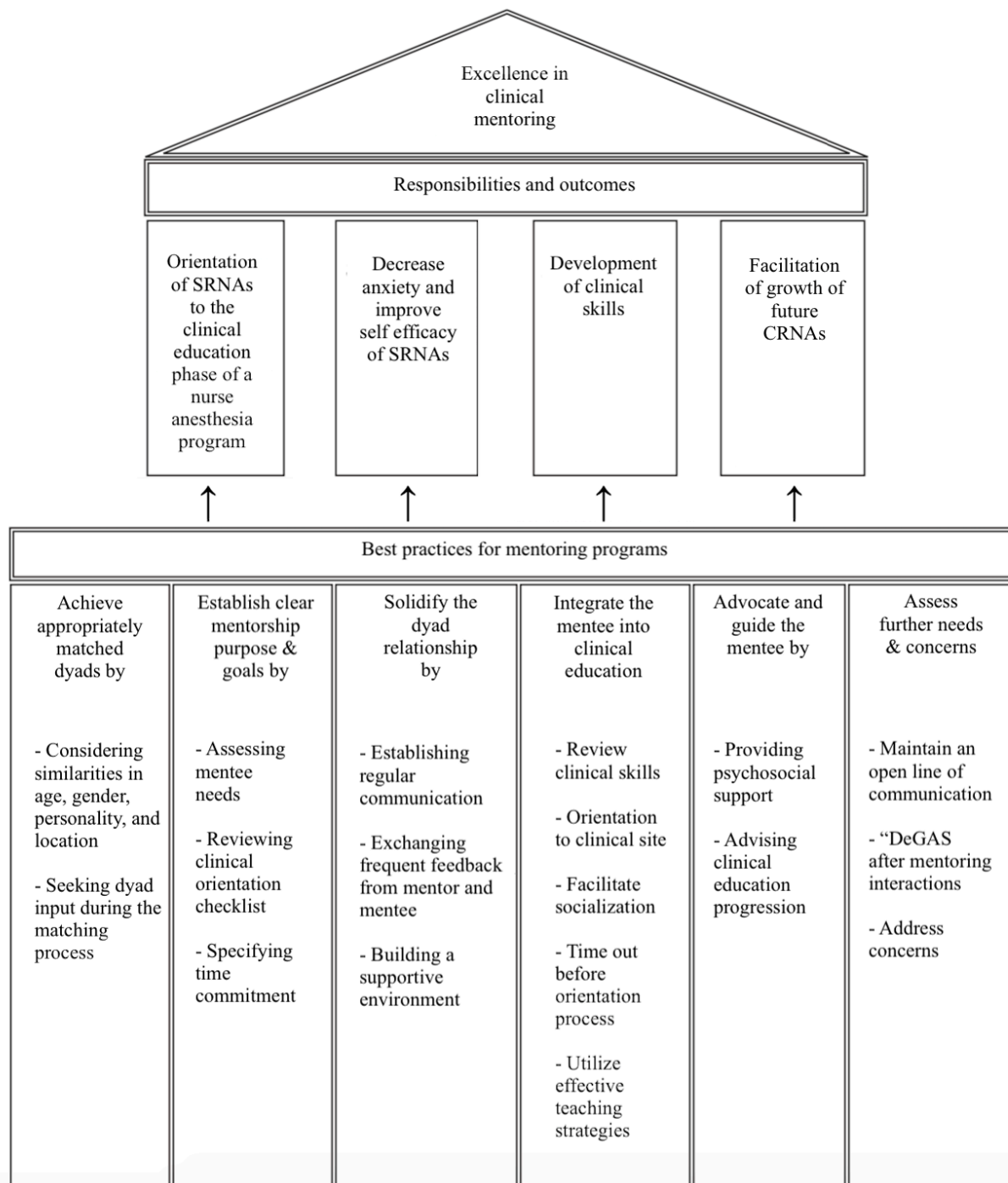Figure 2: Brander and Meringer (2018), *STAR Map Mentorship Framework.*

Figure 3: Adapted theoretical framework.

Appendix D: Clinical Site Orientation Checklist

RUTGERS
School of Nursing

Nurse Anesthesia Program
Mentorship Mediated Clinical Site Orientation Checklist

Mentee: _____ Clinical Site: _____

Mentor: _____ Date of Orientation: _____

Site Orientation:
- ☐ Parking and building access
- ☐ Introduction to clinical staff & exchange of contact information
- ☐ Tour of facility (locker room, bathrooms, cafeteria, lounge, pre-op area, & PACU)
- ☐ Pre-operative interview/assessment review & expectations
- ☐ PACU transport process & report

OR Orientation:
- ☐ OR location and proper attire
- ☐ Anesthesia supply closet location and codes
- ☐ Malignant hyperthermia cart location/ review
- ☐ Anesthesia technician role review & introduction
- ☐ Anesthesia machine checkout
- ☐ Suction & Airway equipment setup
- ☐ Monitor set up, ECG lead placement, & pulse oximeter placement
- ☐ IV fluid location, IV line setup, & Fluid warmer setup
- ☐ Medication setup & review
  - o Medication expectations for the first day
  - o Syringe setup and labeling
  - o Phenylephrine/Ephedrine dilution
- ☐ Care plan review/ expectations
- ☐ OR bed manipulation/ controller
- ☐ Induction sequence review
- ☐ Charting (pre-op evaluation, intra-op charting, and post-op notes)
- ☐ Clinical forms review (verification of experience & student evaluation)

Clinical Coordinator Orientation:
- ☐ ID badges and scrub access
- ☐ Computer access, pharmacy access, & process for reconciliation of controlled substances
- ☐ Clinical schedule reviewed
- ☐ Procedure for notification in the event of the SRNA's absence reviewed
- ☐ Departmental policies & procedures reviewed
- ☐ Scope of practice & goals for the rotation reviewed

Signatures:

Mentee: _____ Mentor: _____

Clinical Coordinator: _____

Appendix E: Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts <u>during the month prior to entering your first clinical rotation</u>. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

Date: _____   DNP Cohort (Please circle):   2   3   4

0 = Never   1 = Almost Never   2 = Sometimes   3 = Fairly Often   4 =Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly?   0   1   2   3   4

2. In the last month, how often have you felt that you were unable to control the important things in your life?   0   1   2   3   4

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

4. In the last month, how often have you felt confident about your ability to handle your personal problems?   0   1   2   3   4

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

6. In the last month, how often have you found that you could not cope with all the things that you had to do?   0   1   2   3   4

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

m✿nd garden

Info@mindgarden.com
www.Mindgarden.com

References

The PSS Scale is reprinted with permission of the American Sociological Association, from Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24,* 386-396.

Cohen, S. and Williamson, G. Perceived Stress in a Probability Sample of the United States. Spacapan, S. and Oskamp, S. (Eds.) *The Social Psychology of Health.* Newbury Park, CA: Sage, 1988.

Appendix F: Post Clinical Site Evaluation Survey

Please answer the following questions related to the Mentorship Mediated Clinical Site Orientation (MMCSO).

Note: SA= Strongly Agree   A= Agree   N=Neutral   D= Disagree   SD=Strongly Disagree

Question	SA	A	N	D	SD
1. The MMCSO was beneficial to my education.					
2. The MMCSO helped to reinforce the didactic curriculum.					
3. The MMCSO increased my confidence towards the clinical year.					
4. The MMCSO helped to reduce my stress & anxiety towards the clinical year.					
5. The MMCSO increased my time spent reviewing didactic content.					
6. The MMCSO encouraged me to want to learn the theory behind what I experienced.					
7. The MMCSO motivated me to study.					
8. The MMCSO created an understanding of the impact of anesthesia and surgery on patient's lives.					
9. The MMCSO promoted professional association.					
10. The MMCSO promoted the integration of prior knowledge and new knowledge.					

References
Imus, F. S., Burns, S. M., Fisher, R., & Ranalli, L. (2015). Students perceptions on pre-clinical experience in a front-loaded nurse anesthesia program. *Journal of Nursing Education and Practice, 5*(10), 22-27. doi:10.5430/jnep.v5n10p22

Please answer the following questions related to the Mentorship Mediated Clinical Site Orientation (MMCSO).

Note: VH= Very Helpful   H= Helpful   SH= Somewhat Helpful   NH= Not Helpful
NR= No Response

Question	VH	H	SH	NH	NR
11. Describe the MMCSO in improving your understanding of future responsibilities of a CRNA.					
12. Describe the MMCSO in improving your professional development as a CRNA.					

Please answer the following questions related to the Mentorship Mediated Clinical Site Orientation (MMCSO).

Note: Y= Yes   N= No   NR= No Response

Question	Y	N	NR
13. During the MMCSO, were you able to get hands on practice with airway equipment?			
14. During the MMCSO, were you able to get hands-on practice with an anesthesia machine check-out?			
15. During the MMCSO, were you able to get hands-on practice with pre-operative evaluation?			
16. Would you recommend the MMCSO for the didactic portion of a front-loaded CRNA program as it has been presented to you?			

Please answer the following questions related to the Mentorship Mediated Clinical Site Orientation (MMCSO).

Question	0-2	4-8	8-12	>12	NR
17. How many hours in the MMCSO do you consider most beneficial?					

References
Imus, F. S., Burns, S. M., Fisher, R., & Ranalli, L. (2015). Students perceptions on pre-clinical experience in a front-loaded nurse anesthesia program. *Journal of Nursing Education and Practice, 5*(10), 22-27. doi:10.5430/jnep.v5n10p22

Please answer the following questions related to the Mentorship Mediated Clinical Site Orientation (MMCSO).

18. Describe the difference between shadowing a nurse anesthetist before started the nurse anesthesia program at ███████████ and the hands-on-mentorship mediated clinical site orientation.

_____

_____

_____

19. Please describe any other-hands-on practice you had during your pre-clinical experience?

_____

_____

_____

20. Is there anything that you would like to see incorporated into the MMCSO?

_____

_____

_____

References

Imus, F. S., Burns, S. M., Fisher, R., & Ranalli, L. (2015). Students perceptions on pre-clinical experience in a front-loaded nurse anesthesia program. *Journal of Nursing Education and Practice, 5*(10), 22-27. doi:10.5430/jnep.v5n10p22

Appendix H: Recruitment Flyer

NURSE ANESTHESIA STUDENTS

ARE YOU STRESSED ABOUT STARTING CLINICAL?

DO YOU WANT TO BE A MENTOR FOR A SRNA WHO IS STARTING CLINICAL?

We invite you to participate in our mentorship driven clinical site orientation process, and a voluntary study that investigates how a mentorship driven clinical orientation framework effects the stress level of SRNA's

Version Number: #1   Version Date: 3/27/2019

RUTGERS

UNIVERSITY | NEWARK

Rutgers School of Nursing
Stanley S. Bergen Building
Rutgers, The State University of New Jersey
65 Bergen Street
Newark, NJ 07101-1709

DATE & TIME
JUNE 3, 2019
7:00 AM

WHERE

IF INTERESTED OR HAVE ANY QUESTIONS, PLEASE CONTACT THE PRINCIPAL INVESTIGATORS

Maria Tomasetti

Stephen Pilot

RESERVED FOR IRB STAMP

Appendix I: Consent

RUTGERS

Rutgers School of Nursing
Stanley S. Bergen Building
Rutgers, The State University of New Jersey
65 Bergen Street
Newark, NJ 07101-1709

Participant Consent form
Mentorship Mediated Clinical Site Orientation Framework at ▆▆▆▆▆

Principal Investigators
Thomas Pallaria, DNP, CRNA-APN may be reached at ▆▆▆▆▆
Stephen Pilot, BSN, RN, CCRN may be reached at ▆▆▆▆▆
Maria Tomasetti, BSN, RN, CCRN may be reached at ▆▆▆▆▆

▆▆▆▆▆▆▆▆▆▆▆

This document provides informed consent regarding your voluntary participation in the following research study. Please be advised that participation is free of cost and voluntary without reimbursement. Since participation is voluntary, you are free to withdrawal from this study at any point in time without consequences. Please feel free to ask any questions and/or voice any concerns you may have. If you still wish to partake in the following research study, please sign the informed consent form detailed below. You are not giving up any of your legal rights by agreeing to take part in this research study or by signing the consent form below.

Who is conducting the research?
Thomas Pallaria DNP, CRNA-APN is the Principal Investigator of this research study. Stephen Pilot, BSN, RN, CCRN and Maria Tomasetti, BSN, RN, CCRN are the Co-Investigators. Thomas Pallaria can be reached at ▆▆▆▆▆ Stephen Pilot may be reached at ▆▆▆▆▆ ▆▆▆ and Maria Tomasetti can be reached at ▆▆▆▆▆ *A Principal Investigator has the overall responsibility for the conduct of the research. However, there are often other individuals who are part of the research team.*

Stpehen Pilot, BSN, RN, CCRN and Maria Tomasetti BSN, RN, CCRN or another member of the study team will also be asked to sign this informed consent. You will be given a copy of the signed consent form to keep.

Why is this study being done?
The purpose of this study is to develop a formalized mentorship mediated clinical site orientation framework in order to alleviate the stressors and anxiety that arise when RRNAs are beginning their first clinical rotation. By allowing knowledge sharing and professional growth in a supportive setting from experienced upperclassmen, residents have the ability to be more prepared and confident as they begin their clinical rotation. Mentors can alleviate anticipated stressors, which in turn can increase the mentee's physical and emotional health.

Who may and may not participate in this Study?
All participants must be RRNA's currently enrolled in the ▆▆▆▆▆ Nurse Anesthesia Program. Exclusion criteria consists of all individuals that are not RRNA's currently enrolled in the Rutgers Nurse Anesthesia program at ▆▆▆▆▆.

Why have I been asked to take part in this study?
You, the participant, have been asked to take part in this study because you are a current RRNA enrolled in the CRNA program at ▆▆▆▆▆

How long will the study take and how many subjects will take part?

The time requested from each participant to partake in the mentorship mediated clinical site orientation will be roughly 2 hours. We estimate that the Perceived Stress Scale (PSS) should take about 10 minutes to complete and the post evaluation survey should take about 15 minutes.

What will I be asked to do if I take part in this study?

You will be asked to participate in the mentorship mediated clinical site orientation at your assigned clinical site. A clinical site orientation checklist will be completed during this time. in addition, the PSS will be completed prior to the orientation and the study will conclude with a post evaluation survey.

What are the risks and or discomforts I might experience if I take part in this study?

There is no participant risk expected from the participation of this study. Any obtained information will remain anonymous and kept confidential. All participant involvement will remain anonymous and data collected will be kept confidential, only to be analyzed by the Principal Investigators. Each survey is maintained as an anonymous entry and no personal information will be required. All data from the surveys will be stored in a locked safe within Rutgers University Newark campus within out DNP chairs office.

Are there any benefits to me if I choose to take part in this study?

The benefits of taking part in this study pertain to decreased stress and anxiety levels prior to entering the first clinical rotation. Senior RRNAs will conduct a guided, site specific orientation, which will support RRNAs in the transition into clinical education.

What are my alternatives if I do not want to take part in this study?

There are no alternatives available. Your only alternative is to not partake in this study.

How will I know if new information is learned that may affect whether I am willing to stay in the study?

During the course of the study, you will be updated about any new information via your ██████ ████████ email, that may affect whether you are willing to continue taking part in the study.

Who might benefit financially from this research?

No financial gain will occur from the participation and or completion of this research.

Will there be any cost to me to take part in this study?

There is no cost to participate in this study. It is free for all participants who choose to take part in this study.

Will I be paid to take part in this study?

No, you will not be paid to take in this study.

How will information about me be kept private or confidential?

All efforts will be made to keep your personal information in your research record confidential, but total confidentiality cannot be guaranteed. Each survey is maintained as an anonymous entry. The survey questions do not request personal information about the participant. All data from the surveys will be collected and stored via the Qualtrics XM software provided by ██████████. No personal identifiers will be used. The Qualtrics software allows for the study's participants to access the surveys anonymously from their personal computer or mobile device, and stores responses without any personal identifiers. Both privacy and confidentiality will be further ensured through the Qualtrics database which requires a login password to gain access to stored data.

What will happen if I do not wish to take part in the study or if I later decide not to stay in the study?

It is your choice whether to take part in the research. You may choose to take part, not to take part or you may change your mind and withdraw from the study at any time. Participation is strictly voluntary. You may also withdraw your consent for the use of data already collected about you, but you must do this in writing to:

Stephen Pilot, BSN, RN, CCRN and Maria Tomasetti, BSN, RN, CCRN
Rutgers University School of Nursing
65 Bergen Street
Newark, NJ 07107

Who can I call if I have questions?

If you have questions about taking part in this study or if you feel you may have suffered a research related injury, you can call the primary investigator or co-investigators at:

Stephen Pilot, BSN, RN, CCRN may be reached at ██████████
Maria Tomasetti, BSN, RN, CCRN may be reached at ██████████
Thomas Pallaria, DNP, CRNA-APN may be reached at ██████████

If you have questions about your rights as a research subject, you can call the IRB Director at:

Newark Health Sciences IRB, Director: (973) 972-3608
or
Newark Rutgers Human Subjects Protection Program: (973) 972-1149

Appendix J: Gantt Timeline

Mentorship Mediated Clinical Site Orientation Timeline

	26-Jan	17-Mar	6-May	25-Jun	14-Aug	3-Oct	22-Nov	11-Jan	1-Mar

Task 1: IRB Proposal Writing
Task 2: Submit to IRB
Task 3: Develop information session for thid-year cohort
Task 4: Develop new clinical site orientation checklist
Task 5: Present Proposal at Program Meeting
Task 6: Send out PPS survey to the second and third-...
Task 7: Revise and review components of intervention
Task 8: Enroll participants into study
Task 9: Mentor education session for the third-year...
Task 10: Assign Mentors to Mentees for each clinical site
Task 11: Mentorship Mediated Clinical Site Orientation
Task 12: Post Clinical Site Orientation Evaluation survery
Task 13: Collection and interpretation of data
Task 14: Final Paper
Task 15: Presentation of project at NJANA Fall Meeting
Task 15: Defend