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Implementation of a Formal Preceptor Teaching Tool in the Clinical Setting to Promote a Learner-Centered Teaching Environment

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Implementation of a Formal Preceptor Teaching Tool in the Clinical Setting to Promote a Learner-Centered Teaching Environment

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ABSTRACT

Background: Preceptor-led education is a crucial component of clinical learning for nursing students and residents. A well-prepared and knowledgeable preceptor can make a significant impact on the student's overall educational experience and future clinical practice. However, the current practice of relying on individual preceptors to plan, design, and deliver educational experiences can result in inconsistent quality of education. A standardized tool that enhances the role of the preceptor in the educational process can improve the quality and consistency of clinical learning. The purpose of this quality improvement project was to implement a standardized teaching tool to guide the role of the preceptor in the clinical education of resident registered nurse anesthetists (RRNAs). The tool aims to support the preceptor in facilitating learning experiences that are meaningful, relevant, and engaging for graduate nurse anesthetist students.

Methods: The theoretical framework referenced for this intervention is the Plan-Do-Study-Act cycle. The site where this intervention was implemented is a large teaching hospital in Miami. The primary methodology of this quality improvement project was to present an educational module that highlights the benefits of implementing a formal teaching tool in the clinical setting to promote a learner-centered environment. The implementation stage of this project was conducted in three different phases: pre-assessment, educational training module, and post assessment. Demographic data was collected from each participant. Each survey item was scored on a 5-point Likert type scale. Data was stored in an electronic database. Only the primary investigator will have the password to this database. No direct identifiers will be collected in this investigation, and all results will be reported. Surveys will be scored, and the total score, means of the total scores, and sub-scores were compared before and after the intervention.

Results: The data shows that there was an increase in participant knowledge after completing the educational module and PowerPoint presentation on the Implementation of a Formal Preceptor Teaching Tool in the Clinical Setting to Promote a Learner-Centered Teaching Environment. After assessing the results of this study, most participants increased their knowledge of preceptorship, adult learning, the OMP, and SNAPPS. The study showed that over 66% of participants are likely to use one of the teaching tools in their practice. Furthermore, 75% of participants would rather implement the OMP over SNAPPS in the clinical setting.

Discussion: Overall, the results indicated an increase in knowledge and a positive attitude towards implementing the OMP into their preceptorship teaching model. There are two main limitations of this study. The first limitation is the small sample size. A higher number of participants would have been ideal to increase the power of the study. The second limitation of this project is the absence of a comparison group. The findings of this project can allow teaching hospitals to provide valuable training to CRNAs without having to use extensive resources or money. The project's findings also enhance existing literature, which is lacking new findings on the topic of using a teaching model for graduate nursing students in the clinical care setting. In conclusion, the implementation of teaching tools such as OMP or SNAPPS in the clinical setting has the potential to transform the educational experience, fostering a learner-centered teaching environment. By empowering learners, enhancing critical thinking skills, and promoting active engagement, these tools contribute to the development of competent and confident healthcare professionals who are capable of delivering high-quality patient care.

Keywords: Teaching tool, preceptor, preceptor-led education, resident registered nurse anesthetists (RRNAs), student registered nurse anesthetists (SRNAs), Certified Registered Nurse Anesthetists (CRNAs), learner-centered teaching environment, preceptor teaching tool, one-minute preceptor (OMP), SNAPPS

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INTRODUCTION

The preceptorship model has been widely accepted in many different disciplines. The purpose of a preceptorship is to augment student learning, provide opportunities for hands-on experience, allow students to demonstrate competence, advance critical thinking skills, and build the confidence of the preceptee.[1] When looking at nursing, preceptorship is the main form of clinical training. Hence, preceptors play a vital role in the clinical education arena. Due to the fundamental role, it is imperative for formal training to be provided.

Background

The use of preceptorship in the healthcare setting dates back to the 1940s.[2] During this time, Moore[2] researched the use of preceptorship in the clinical education of medical students and its effect on the student's educational process. Overall, this initial study emphasized the importance of developing an effective teaching-learning environment. Furthermore, the study concluded that to develop a positive learning environment, one must bring together the teacher, the patient, the nurse, and the student in a favorable environment for everyone involved.[2] Since then, many other medical professions have adopted the use of preceptorship in the clinical setting. One example is both undergraduate and graduate nursing.

Problem Identification

In the clinical setting, preceptorship provides a one-on-one training experience. Preceptorship is an effective teaching and learning model used in clinical education.[3] This experience is designed to enhance the preceptee's skills by translating didactic knowledge into clinical practice. Certified Registered Nurse Anesthetist (CRNA) preceptors have the critical task of transferring high-quality patient care and patient safety skills to their preceptee.[3,4] However, many CRNAs do not receive formal training to precept resident registered nurse anesthetists

(RRNAs).[2] Furthermore, there is currently no formal preceptor teaching tool in the clinical setting, and both issues can potentially limit the outcomes of the preceptor-to-preceptee education model.

After conducting a literature review, various themes prevailed regarding preceptorship. First, CRNAs do not receive adequate training before being placed into a preceptor role.[5] Furthermore, most CRNAs have minimal exposure to adult learning principles or practical experience in educational theory.[5] Therefore, many preceptors do not know different learning techniques or how to implement them in a manner that effectively teaches RRNAs.[5] Another finding was that preceptors considered the role of having an increased workload; they reported difficulties balancing their usual workload with the addition of being an educator.[1] Due to the feeling of having increased work, many CRNA preceptors do not implement adult learning principles into their clinical teaching approaches because they are too busy to do so and do not know how.[1] A subsequent finding was that preceptors felt there was a lack of support from leadership, so they were less inclined to precept.[1] Another study found that preceptors do not clearly understand how to report student performance due to different reporting platforms used by different universities.[6] Furthermore, preceptors were unclear about student expectations due to different program layouts.[6] Hence, some preceptors started evaluating students based on their personal grading scale instead of using a structure evaluation for each different RRNA level.[6] Overall, it is evident that many challenges come with preceptorship, but perhaps implementing a formal preceptor teaching tool would be beneficial.

Scope of the Problem

On average, 35 to 45 resident registered nurse anesthetists (RRNAs) graduate annually from an accredited doctoral nurse anesthesiology program.[3] Even more, an average of 90 to 110

RRNAs from a single program interact with clinical preceptors at any given time.[3] Currently, RRNAs are required to complete a minimum of 600 anesthesia cases, and 2000 hours of clinical; this provides more than 50,000 opportunities yearly for preceptors to transfer patient care and patient safety skills to RRNAs attending a single university.[3] This data indicates that CRNAs have a significant role in the clinical education arena. However, CRNAs have no formal training on precepting adult learners, nor is a formal teaching tool used to enhance clinical education.

Consequences of the Problem

There are two significant consequences if a formal teaching tool is not implemented in clinical education. The first consequence is that RRNAs will continue to be taught based on individual perceptions instead of fundamental teaching theories. The second consequence is that RRNAs will encounter negative clinical teaching strategies that prevent them from learning and growing as clinicians. Several studies have proven that dissatisfying clinical factors include inconsistent feedback/evaluation, lack of interest by the preceptor, poor preceptor teaching skills, inadequate or unprofessional communication, and instances of intimidation or harassment.[7] For example, out of 1274 residents, 86% had experienced learner belittlement, 39% experienced physical abuse, and 32% had received threats about their reputation/future career.[7] Another study assessed attrition rates of nurse anesthesia programs; this study found that 9% of the students who start a nurse anesthesia program do not end up completing the program.[8] Furthermore, 48% of student incompletion was due to withdrawal due to personal reasons, negative clinical experiences, or the realization that anesthesia was not their field of interest.[8] Overall, RRNAs are experiencing diminished clinical learning, weak critical thinking skills, and undesirable teaching practices due to the lack of formal preceptor training and implementation of a clinical teaching tool.

Knowledge Gaps

Many different theories explain how adults learn. There are six different categories that a learning theory can fall under.[9] The first is instrumental learning theories; these theories focus on individual experience, behavior, and cognition.[9] The second classification is humanistic theories; these theories promote individual development and self-learning to create a learner-centered environment.[9] The third category is a transformative learning theory, which addresses how critical reflection can challenge the learner's beliefs and assumptions on a specific matter.[9] The fourth learning theory group is social theories. Social learning theories address the context and community in which learning occurs, such as the social factors, the environment/setting, and the tools available during the learning.[9] The fifth learning theory category is motivational models; these models focus on the 2 critical elements of motivation and reflection.[9] Basically, a motivational model states that the more an individual expects to succeed and values success, the more motivated that individual is to learn. The last learning theory group is reflective models. Reflective change models emphasize that individual reflection leads to an action leading to a change.[9] Overall, all 6 categories convey a different portion of how and why adults learn.

The educational theory that is most significant in the medical profession is Knowles' adult learning theory; this theory addresses the difference between how adults and children learn. The main difference found is that adults have different motivations to learn when compared to a child.[9] Moreso, Knowles' adult learning theory states that adults differ from children learners in 6 respects: (1) adults need to know why they need to know the information being presented to them, (2) adult learners have the understanding that they are responsible for their own decisions, (3) adults have life experiences that are valued and that need to be respected, (4) adults are ready to learn when life circumstances are changing, (5) adults realize that by learning new

information, it will help them in their current situation, and (6) adults learn because they want to learn.[9] The theory makes 5 assumptions about the adult learner based on these motivational differences. The first assumption is that adults are self-driven learners.[10] The second idea is that adults use their life experiences to supplement learning.[10] The third belief is that adults value information relevant to their roles and duties.[10] The fourth idea is that adults learn best through problem-based learning.[10] Finally, the last assumption is that adults are intrinsically motivated to learn.[10] Overall, this theory clarifies how adults learn best and their attitude toward learning.

As shown above, adult learning and educational theory topics are vast and multifaceted. Most CRNAs have minimal exposure and experience with these principles and theories due to their complexity.[5] However, CRNAs are expected to teach RRNAs to promote the transference of didactic knowledge into clinical practice via critical thinking and tactile skills. Hence, the implementation of these principles in the healthcare setting is essential to promote a learner-centered teaching environment.[9,10]

Proposed Improvement of Issue

One way the issues stated above can be improved is by introducing a formal preceptor teaching tool via a preceptorship training course. One study found that implementing an evidenced-based CRNA preceptor training improved the quality of the clinical environment, which in turn promoted learning by RRNAs.[3] Furthermore, it was concluded that CRNAs and SRNAs value debriefing and verbal communication;[3] hence, the teaching tool chosen to implement should include an opportunity for preceptor-to-preceptee debriefing so that feedback and suggestions can be communicated. Overall, the preceptorship training course included education on teaching methods that enhance adult learning, education on implementing the

teaching tool, and education on formal techniques for evaluating preceptees. Providing this edification to CRNAs will significantly improve the preceptor-to-preceptee education model.

PICO Question

The PICO question that was used to guide the search was, "For resident registered nurse anesthetist (RRNA) (P), does the implementation of the formal preceptor teaching tool SNAPPS (I) compared to the One-Minute Preceptor (OMP) tool (C) promote the optimization of a learner-centered teaching environment (O)?" With the focused PICO question, relevant studies provided information about current clinical practice and possible interventions to allow growth and improvement.

LITERATURE REVIEW

Literature Search Criteria

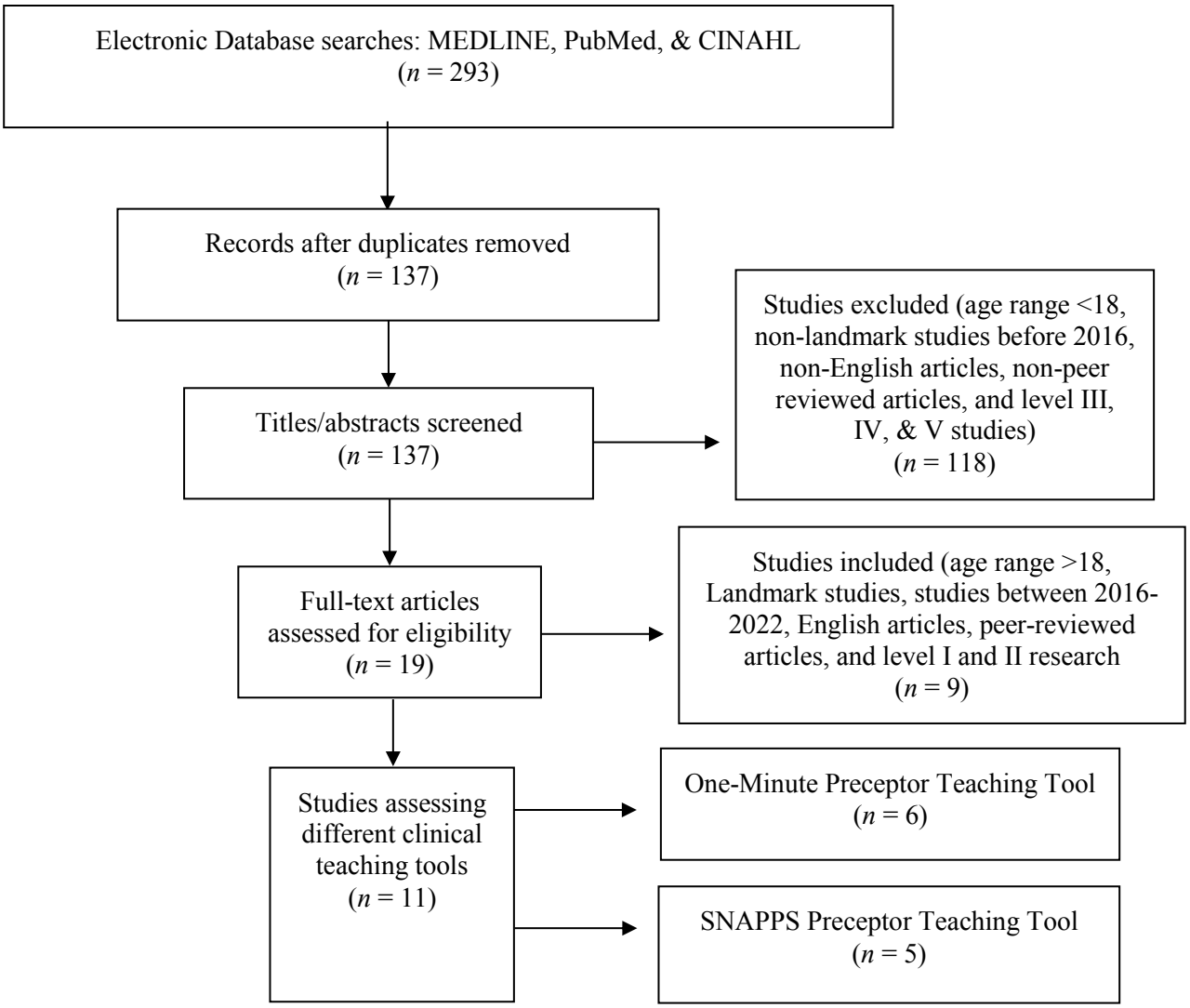
The PICO question prompted the exploration of articles that support or disprove the question. A literature review was conducted using Cumulated Index to Nursing and Allied Health Literature (CINAHL), MEDLINE, and PubMed. The terms search included "preceptorship," "preceptorship program," "preceptor," "SNAPSS," "one-minute preceptor," "teaching tool," "adult learning tool," "nurse anesthesia," "nurse," "student registered nurse anesthetists (SRNA)," "resident registered nurse anesthetist (RRNA)," "certified registered nurse anesthetists (CRNA)," "graduated level nursing," "doctoral," "improve," "impact," "enhance," and "effectiveness." The linking words AND, OR, and NOT were used along with the phrases listed above to obtain relevant research study results. The search was not limited to a specific study design or level of evidence; however, randomized controlled trials and qualitative studies were of preference. The filters applied to the search were peer-reviewed journals, full-text

articles, English language, and published between 2016-2022. The results yielded many articles referencing preceptorship training for clinical educators, preceptor experience, CRNA's thoughts towards preceptorship, the current clinical learning environment, adult learning theories and strategies, RRNA clinical learning, and RRNAs' clinical experience. The relevant articles were checked for duplicates. The inclusion criteria included articles published between 2016-2022, landmark studies published earlier than 2016, articles written in English, adults 18 years or older, peer-reviewed articles found in nursing or medical journals, graduate and undergraduate nursing preceptorship, resident preceptorship, and full-text articles. The exclusion criteria included non-English articles, non-landmark studies written before 2016, and articles that included participants 17 years old or younger.

Literature Search Results

After narrowing articles based on the eligibility criteria listed above, 9 articles were found and used in the formal literature review. Figure 1 describes the literature review and search process in the form of a PRISMA diagram. Table 1 contains an overview of the 9 articles, including the study details and findings.

Figure 1. PRISMA Diagram



Literature Review Findings

In the clinical setting, preceptorship provides a one-on-one training experience. Preceptorship is an effective teaching and learning model used in clinical education.[3] This experience enhances the preceptee's skills by translating didactic knowledge into clinical practice. CRNA preceptors have the critical task of transferring high-quality patient care and patient safety skills to their preceptee.[3,4] Several clinical teaching tools have been created for utilization during patient care to help bridge the gap between self-regulated learning and the barriers clinical preceptors face when teaching preceptees essential clinical competencies. However, one of these formal teaching tools has yet to be implemented in the clinical arena to assist CRNA preceptors and RRNAs.[2] After conducting a literature review, various themes prevailed regarding different preceptor teaching tools and the tool that best promotes a learner-centered environment in the clinical setting. Based on the literature review, two different teaching tools were selected, including guidelines for the preceptor to plan, design, and deliver student educational experiences. Research indicates that two main teaching tools are helpful in the healthcare clinical setting: Summarize, Narrow, Analyze, Probe, Plan, and Select (SNAPPS) and the One-Minute Preceptor (OMP).

The SNAPPS learning tool is a 6-step model that provides residents with a systematic approach to transition from directed learning in the classroom to self-regulated learning in the clinical environment. The 6 steps in the SNAPPS model include summarizing patient findings concisely, narrowing differential diagnosis, analyzing, and justifying the differential diagnosis adequately, probing the preceptor regarding uncertainties, planning the patient's management, and selecting case-related issues for self-study.[11-13] Overall, the SNAPPS model aims to enhance

critical thinking skills and self-regulated learning among residents providing patient care in the healthcare setting.

There were many different findings when assessing research on implementing the SNAPPS learning tool in the clinical setting. Jain et al[11] conducted a trial that compared the difference in clinical reasoning, case-based uncertainties, and self-directed learning of residents during case presentations. The study discovered that the residents who implemented the SNAPPS model for their case presentation showed increased effective clinical reasoning skills, enhanced autonomous learning, and decreased case-based hesitancies compared to the residents who did not use SNAPPS.[11] Wolpaw et al compared a traditional case presentation group to a SNAPPS case presentation group. One finding was that students who used SNAPPS were more concise when providing patient summaries and spent more time discussing clinical reasoning related to patient management than their counterparts.[12] Furthermore, students in the SNAPPS group provided twice as many differential diagnoses, justified their decisions 5 times more often, and brought up questions and uncertainties 8 times more often than students in the traditional presentation group.[12] A similar study was conducted by Wolpaw et al; however, this study compared the nature of the uncertainties expressed by residents using the SNAPPS technique for case presentation versus those expressed by residents doing traditional case presentations and how preceptors responded. The first result showed that SNAPPS residents expressed twice as many uncertainties during case presentations as students with traditional case presentations.[13] Another finding was that preceptors responded with comments, and teaching aligned with the uncertainties expressed during the case presentations.[13] Hence, the results suggested that students can drive the content taught to them by asking the preceptor questions about the areas of uncertainty.[13] Overall, the studies above suggest that when SNAPPS is implemented in the

clinical setting, it increases practical clinical reasoning skills, stimulates questions, increases self-directed learning, and enhances uncertainty-guided teaching.

The One-Minute Preceptor (OMP) learning tool consists of 5 microskills that provide preceptors with a basic teaching framework built upon throughout the course of the preceptor's career. The 5 steps of the OMP are: get a commitment, probe for supporting evidence, teach general rules, reinforce what is going right, and correct mistakes. Overall, OMP aims to enhance clinical teaching skills that will shift learners from identifying basic objective information to focusing on the deeper decision-making process within a clinical encounter.

There were many different findings when assessing research on implementing the OMP learning tool in the clinical setting. Irby et al[14] examined the teaching points made by preceptors to determine if different preceptors use similar teaching points in response to the same case, if preceptors' teaching points varied by case, and if preceptors' teaching points varied when using the OMP teaching model compared to traditional teaching. The first finding was that most preceptors used 3 to 5 teaching points that varied significantly by case and model.[14] The second result was that preceptors using the traditional precepting model were more likely to teach generic skills.[14] The third finding was that preceptors using the OMP teaching model were more likely to teach about illness, focusing on differential diagnosis, diagnostic tests, and disease presentation.[14] Overall, the results suggest that the OMP model shifts teaching points away from generic skills towards disease-specific and patient-specific teaching.[14] In another study, Chan et al[15] assessed the difference in perceived student learning when comparing the implementation of the OMP to traditional teaching methods. The trial results indicated that the use of OMP did not stimulate students to think more, nor did students feel the teacher could understand their knowledge level and teach them accordingly.[15] However, the study did conclude that the use of

the OMP by novice educators may increase student learning.[15] Furney et al[16] compared the use of the OMP model to traditional teaching methods, and the effects each has on teaching skills and teaching behavior. The results indicate that implementing OMP moderately improves teaching skills, promotes positive teaching behaviors, and increases resident motivation to do outside self-learning.[16] In another quasi-experimental study, Lyons et al[17] found that preceptors that used the OMP more frequently asked students to commit to a therapeutic assessment and plan, probed for their supporting reasoning, and reinforced what was done well compared to preceptors that were not introduced to the OMP model. Finally, Machado et al[18] looked at how the use of the tool affected residents in the emergency department of a maternity school; this study found that there was increased learning among residents, increased formative feedback to residents from preceptors, and increased student/resident engagement in the decision-making process when preceptors used the OMP compared to traditional teaching approaches. Overall, the research varies on the effects seen in student learning when the OMP is implemented in the clinical setting; however, most research suggests that the OMP moderately improves preceptor teaching skills, increases student learning, and increases formative feedback students receive from preceptors.

After examining each teaching tool independently through research, the 2 tools were compared to each other to identify which tool would benefit both CRNA preceptors and RRNA preceptees the most upon implementation. A literature review revealed 2 randomized control trials that compare the OMP and SNAPPS effectiveness when used in the clinical setting. Seki et al compared an OMP resident group to a SNAPPS resident group during case presentations to ascertain the differences between the content presented and learner evaluation. The first finding was that members of the SNAPPS group were able to address questions and uncertainties

significantly more than the members of the OMP group.[19] The second finding was that residents of the SNAPPS group had increase positive responses about the implementation and outcomes of the teaching tool than those of the OMP group.[19] Overall, this study revealed that the SNAPPS model promoted active learning, increased resident satisfaction with their clinical learning experience, and promoted a learning environment where questions and uncertainties could be addressed.[19] A similar study was conducted by Fagundes et al[20] a few years later that evaluated the effect on clinical reasoning and case presentation content when using the OMP and the SNAPPS model in healthcare educational environments. The first discovered finding was that there was no difference in the expression of clinical reasoning between the OMP and SNAPPS groups.[20] However, the students in the SNAPPS group expressed significantly more questions and uncertainties.[20] Furthermore, the SNAPPS group took more initiative to present and justify the most likely diagnosis, differential diagnosis, and an appropriate management plan compared to the OMP group.[20] Finally, there was no significant difference in the length of each teaching session between the OMP and SNAPPS groups.[20] From the findings, research indicates that both OMP and SNAPPS equally promote medical students' expression of clinical reasoning. However, the SNAPPS technique is more effective at helping students take on an active role when delivering case presentations and patient care.[20]

After assessing all the research findings listed above, it is clear that the SNAPPS model aids both CRNA preceptors and RRNA preceptees more than the OMP in the clinical care setting. The SNAPPS model allows preceptees to improve their clinical thinking skills, address questions and uncertainties with a preceptor, and enhance self-direct learning. The SNAPPS model aids preceptors by fostering uncertainty-guided teaching while also encouraging a time for constructive preceptor feedback. Overall, research suggests that implementing the SNAPPS

model in the clinical setting will promote the optimization of a learner-centered teaching environment.

Table 1. Literature Review

Citations	Design/Method	Sample/Setting	Major Variables Studied	Measurement and Data Analysis	Findings/Results	Conclusion	Level of Evidence
Fagundes et al,[20] 2020	Randomized Control Trial	*N* (total participated) = 71 clinical residents	IV: SNAPPS & the One-Minute Preceptor tool DV: Resident satisfaction with clinical case presentations	Recorded discussions were transcribed, and the numbers of meaning units [9] used by the resident that were judged to correspond to "differential diagnoses" (DD), "questions and uncertainties" (QU), "management plans" (MP), and "learning issues" (LI) were counted. Mann-Whitney U test was used to test the differences between the 2 groups in the	Members of the SNAPPS group used significantly more meaning units related to questions and uncertainties compared with those of the OMP group ($p < 0.001$). Self-evaluation sheets revealed that members of the SNAPPS group had significantly higher positive responses than those of the OMP group in terms of the following evaluations: "It was easy to bring up questions and uncertainties" ($p = 0.046$), "It was easy to present the case efficiently" ($p = 0.002$), "It was easy to present the case in the sequence given" ($p = 0.029$), and "I was able to give an in-depth case presentation" ($p = 0.005$).	SNAPPS may induce more meaning units related to questions and uncertainties and give more satisfaction to residents than the OMP. For both SNAPPS and the OMP, preceptors require a deep understanding of the teaching method and an ability to teach that considers the characteristics of the learner.	Level II

				numbers of words used by the learners related to DD, QU, MP, and LI. Shapiro-Wilk test was used to confirm that none of the data conformed to a normal distribution. The scores for each of the questions on the self-evaluation sheet were counted and compared using the Mann-Whitney U test. The Chi-square test was used to test for differences in the characteristics of participants.			

				The level of significance was $p = 0.05$ for all tests, and IBM SPSS Statistics version 21 was used for statistical analysis.			
Furney et al,[16] 2001	Randomized Control Trial	*N* (total participated) = 57 medical residents	IV: Implementation of the One-Minute Preceptor model in the clinical setting DV: Effect on residents' teaching skills	The OMP model was taught in a 15-minute lecture, followed by 20 minutes of role-play and debriefing, in which a resident practiced the model with a colleague playing the role of the student. The facilitator then led a 15-minute discussion of the use of the OMP model in the residents' teaching setting. Pocket	Residents assigned to the intervention group reported statistically significant changes in all behaviors ($p < .05$). Eighty-seven percent of residents rated the intervention as "useful or very useful"' on a 1±5 point scale with a mean of 4.28. Student ratings of teacher performance showed improvements in all skills except "teaching general rules."' Learners of the residents in the intervention group reported increased motivation to do outside reading when compared to learners of the control residents. Ratings of overall teaching effectiveness were not	OMP model is a brief and easy-to-administer intervention that provides modest improvements in residents' teaching skills.	Level II

				reminder cards were then given to residents, and each resident was asked to state his/her goals for teaching using the model. A 14-item questionnaire to assess the 5 microskill domains in the OMP model. Residents and students were asked to rate resident behavior using a standard 5-point rating scale (1 = strongly disagree and 5 = strongly agree for use of behavior, and 1 = very poor' and 5 = excellent for measures of overall effectiveness). A paired *t*-test was used to	significantly different between the 2 groups.		

				compare the magnitude of change in teaching ratings between the intervention and control groups for each item For resident self-report of their use of the teaching behaviors, a paired *t*-test was used to compare pre- and post-intervention ratings. Significance level was set at $p = .05$. All data was analyzed using STATA statistical software			
Jain et al,[11] 2011	Randomized Control Trial	*N* total 22 (including residents and faculty). *N* = 18 members post-	IV: SNAPPS technique group. Routine admission that required	Measurement: Diagnostic thinking inventory (DTI) is a	The SNAPPS group student took on average 1.6 minutes longer to make their	SNAPP technique enhanced students' clinical reasoning.	Level II

		graduate surgical residents and *N* = 4 faculty and 4 preceptors from faculty familiar with teaching strategies. Inpatient or ward setting of the Medicine department at Mahatma Gandhi Institute of medical sciences (MGIMS).	extensive deliberation with expert faculty. DV: Traditional case presentation group. Usual case presentation by residents during routine teaching in an inpatient setting	validated self-reporting system, 5-point Likert scale. Data were analyzed using Stata software (v 11) and medians with Mann Whitney U-test and proportions with the chi-square test. $p < 0.05$ is significant	entire case presentations.		
Seki el al,[19] 2016	Comparative Randomized Control Trial	*N* (total participated) = 71 clinical residents	IV: Implementation of the SNAPPS learning tool compared to the implementation of the One-Minute Preceptor learning tool DV: Improved case presentation content and learner self-evaluations.	Recorded discussions were transcribed, and the numbers of meaning units [9] used by the resident that were judged to correspond to "differential diagnoses" (DD), "questions and uncertainties"	Members of the SNAPPS group used significantly more meaning units related to questions and uncertainties compared with those of the OMP group ($p < 0.001$). Self-evaluation sheets revealed that members of the SNAPPS group had significantly higher positive responses than those of the OMP group in terms of the following	SNAPPS may induce more meaning units related to questions and uncertainties and give more satisfaction to residents than the OMP.	Level II

				(QU), "management plans" (MP), and "learning issues" (LI) were counted. Mann-Whitney U test was used to test the differences between the two groups in the numbers of words used by the learners related to DD, QU, MP, and LI. Shapiro-Wilk test was used to confirm that none of the data conformed to a normal distribution. Self-evaluations used the 4-point Likert scale. The scores for each of the questions on	evaluations: "It was easy to bring up questions and uncertainties" (p = 0.046), "It was easy to present the case efficiently" (p = 0.002), "It was easy to present the case in the sequence given" (p = 0.029), and "I was able to give an in-depth case presentation" (p = 0.005).		

				the self-evaluation sheet were counted and compared using the Mann-Whitney U test. The Chi-square test was used to test for differences in the characteristics of participants. The level of significance was $p = 0.05$ for all tests, and IBM SPSS Statistics version 21 was used for statistical analysis.			
Irby et al,[14] 2014	Randomized Control Trial	*N* (total participated) = 116 preceptors	IV: One-minute preceptor tool DV: Optimization of learner-centered teaching	The teaching points were coded by the physician-investigator (EA) to ensure consistency. Another author (DI)	Of the 843 total teaching points identified by preceptors, 63 were discrete teaching points that were	The One-Minute Preceptor model shifted teaching points away from generic clinical skills toward disease-specific teaching.	Level II

			environment by increasing preceptor teaching points (TP).	verified selected segments of the coding. To assess the differences in frequencies of teaching points between the OMP and TP, a repeated-measures analysis of variance was used. To control for any potential differences in the case order or model order observed, videotape was used as a covariate. A repeated-measures design was selected because the same preceptors were exposed to different types of	aggregated into 15 categories. Most preceptors (82%) listed 3 to 5 separate teaching points, which varied significantly by case and model. Those observing the traditional precepting model were more likely to teach generic skills such as history-taking skills, presentation skills, and risk factors. Those observing the One-Minute Preceptor were more likely to teach about the illness focusing on a broader differential diagnosis, further diagnostic tests, and the natural presentation of disease.		

				treatment and served as their own control. The $p = 0.05$ level of significance was selected given the preliminary nature of the study.			
Chan et al,[15] 2014	Randomized Control Trial	*N* (total participated) = 152 medical students	IV: One-minute preceptor tool DV: Increased perceived student learning	The post-intervention questionnaire used a Likert scale and offered 5 response choices: 1 indicating strongly disagree; 2, disagree; 3, neutral; 4, agree; and 5, strongly agree. The responses of the 2 groups were compared using the t-test. Statistical significance	The return rates of the questionnaire were 89% (68/76) and 97% (74/76) from the first and the second sessions, respectively. The results of the questionnaire survey indicated that students actually rated the non-OMP session higher than the OMP session concerning the first two statements: "The teaching interaction stimulated me to think more" and "The teachers were able to understand my level of anatomy knowledge and teach me accordingly." Results for other statements	This project, based on studying 2 experienced anatomy teachers, suggested that training experienced anatomy teachers in the use of the OMP in the gross anatomy laboratory may not result in improvement of student perception on their learning. There are theoretical advantages for novice teachers to adopt the OMP technique. But effects of OMP training on novice teachers still need to be supported by further studies.	Level II

				was set at $p < 0.05$. The interview was structured around a set of predetermined questions, but the authors were free to explore issues that came up during the interview. The interviews were recorded with the consent of the teachers, transcribed, and then subjected to theme analysis.	were not statistically different. Two major themes emerged from the analysis of the 2 teachers' interviews: they have already developed teaching approaches that are similar to the OMP, and their approaches to interact with students are flexible and adaptive.		
Wolpaw et al,[13] 2012	Randomized Control Trial	*N* (total participated) = 60 medical student case presentations, 19 using SNAPPS, and 41 comparison presentations	IV: SNAPPS teaching tool DV: Decrease medical student uncertainties about using the learning tool during case presentations and preceptors'	A 2 × 3 chi-square analysis comparing SNAPPS and the comparison group across the 3 uncertainty types showed statistically significantly	The analysis included 19 SNAPPS and 41 comparison presentations. SNAPPS students expressed uncertainties in all case presentations, nearly twice as many as the comparison group ($x^2_{1df} = 12.89$, $P = .0001$).	Students can drive the content of the teaching they receive based on uncertainties they express to preceptors during case presentations. Preceptors are ready to teach at "the drop of a question" and align their teaching with the	Level II

			response to the case presentations	differences overall (x^2 = 8.28, *P* = .02). A 2 × 3 chi-square analysis comparing preceptor responses to uncertainties expressed by SNAPPS and comparison students across the three uncertainty types showed statistically significantly differences overall (!^{2} = 9.48, *P* = .009)	Most SNAPPS users' uncertainties (24/44 [55%]) focused on diagnostic reasoning compared with 9/38 (24%) for comparison students' (x^2_{1df} = 8.08, *p* = .004). Uncertainties about clinical findings and medications/ management did not differ significantly between groups. Preceptors responded with teaching aligned with the uncertainties and expanded 24/66 (36%) of their comments.	content of students' questions; these learning moments—in context and just- in-time—can be created by students.	
Lyons et al,[17] 2019	Quasi-experimental study	*N* (total participated) = 7 preceptors. 4 preceptors attended an OMP training session. 3 preceptors did	IV: One-Minute Preceptor DV: Increased expression of therapeutic reasoning processes during	All preceptors collected audio recordings of their students presenting patient cases. The audio	42 audio recordings from 27 students presenting a patient case to 1 of 7 preceptors.	Implementing OMP workshops for preceptors to elicit students' therapeutic reasoning processes requires further consideration. Future research is needed on	Level III

		not receive OMP training.	students' case presentations.	recordings were coded for preceptors' use of OMP methods and students' expression of therapeutic reasoning processes.	Preceptors trained in OMP more frequently asked students to commit to a therapeutic assessment and plan, probed for their supporting reasoning, and reinforced what was done well. Non-OMP preceptors' students more frequently articulated assessments and treatment plans in their case presentations. The non-OMP students also more frequently initiated discussion about the reasoning behind their assessments and plans without prompting from their preceptor.	pragmatic and effective precepting methods.	
Machado et al,[18] 2021	Cross-Sectional Study	*N* (total participated) = 15 preceptors and 24 residents.	IV: One-Minute Preceptor DV: Increase in learning among residents. Increased formative feedback to residents from preceptors.	Three stages were performed: 1) A pre-intervention survey with the residents 2) Planning and execution	The preintervention assessment with the residents showed that 91.7% agreed that there were discrepancies regarding the teaching model among the preceptors.	The training course of preceptors in the One-Minute Preceptor model proved to be efficient in providing formative feedback to residents in the emergency department of a maternity school.	Level III

			Increased student/resident engagement in the decision-making process.	of a pedagogical training course for the preceptors, which involved a lecture and a dramatization about the One-Minute Preceptor model 3) Thirty days after the intervention, the residents answered another survey about the model and its repercussions and advantages.	After the training, all preceptors agreed that the model engages the student in the decision-making process, and that they would apply it to their routine. The postintervention results showed that 95.8% agreed that the model is more inviting than traditional teaching approaches. There was a perception of improvement in learning among 70.9% of the residents. The study found a significant change in feedback before and after implementing the model, from 20.8% to 66.7%.		
Wolpaw et al,[12] 2009	Randomized Control Trial	*N* (total participated) = 82 resident case presentations. 66 using SNAPPS and 67 comparison presentations.	IV: SNAPPS teaching tool DV: Increased student/residents clinical reasoning	A 2 × 3 chi-square analysis comparing SNAPPS and the comparison group.	SNAPPS were more concise when providing patient summaries and spent more time discussing clinical reasoning that related to patient	SNAPPS greatly facilitates and enhances expression of diagnostic reasoning and uncertainties during case presentations to ambulatory care preceptors. Students	Level II

					management than their counterparts. Students in the SNAPPS group provided twice as many differential diagnoses, justified their decisions 5 times more often, brought up questions and uncertainties 8 times more often than students in the traditional presentation group.	can conduct case presentations using a technique that makes each step explicit and gives learners, rather than preceptors, the responsibility for expressing their clinical reasoning and uncertainties.	
Teherani et al, [21] 2007	Randomized Control Trial	*N* (total participated) = 164 third- and fourth-year medical students	IV: One-Minute Preceptor DV: Increased student satisfaction on preceptor teaching	Students from 2 medical schools completed a questionnaire and prompts on teaching points in response to viewing 2 videotaped precepting encounters. Differences between OMP and traditional precepting scores were computed using a factorial repeated	Students preferred the OMP precepting model to the traditional teaching model ($p = 0.001$). While the desired teaching points changed as the case presentation/discussion progressed, students were most interested in learning about the clinical presentation or natural progression of the disease regardless of teaching model used.	Students rated the OMP as a more effective model of teaching than the traditional model. The teaching points desired by students change as the case presentation/discussion unfolds.	Level II

				measures analysis of co-variance (ANCOVA). Teaching points were coded and counted.			

METHODOLOGY

Primary DNP Project Goal

The primary goal of this DNP project was to create, implement, and evaluate a quality improvement (QI) project to promote a learner-centered teaching environment for RRNAs by implementing a formal preceptor teaching tool. The site where this intervention was implemented in a largest private, independent, not-for-profit teaching hospital in Miami Beach Florida. This facility mission was to provide high-quality health care to our diverse community, enhanced through teaching, research, charity care, and financial responsibility. There are currently 36 CRNA preceptors and 102 RRNAs practicing at this facility. The other types of providers included anesthesiologists, surgeons, nurses, surgical technicians, surgical residents, and anesthesia residents. Currently, there are no policies or modalities being used to improve the learning environment in the operating room. Furthermore, there is no formal training provided to preceptors on adult learning or different teaching strategies. The facility has no formal plans to implement a preceptor training program or preceptor teaching tool. After this facility assessment, it was evident that providing an education forum on the positive effects a preceptor teaching tool has on both the CRNA and RRNA. Overall, the purpose of this intervention was to promote a positive learning environment that ultimately enhances RRNA's clinical learning.

Objectives and Goals

The objectives of this quality improvement project were: (1) to measure the current knowledge of CRNA preceptors on adult learning, (2) to measure the current knowledge of CRNA preceptors on teaching strategies, (3) to measure the current knowledge of CRNA preceptors on SNAPPS and the OMP teaching models, (4) to measure the likelihood of CRNA

preceptors implementing a teaching tool in the clinical setting, and (5) to measure which teaching tool CRNA preceptors prefer to use in the clinical setting.

The additional goals of this quality improvement project included: (1) to evaluate the efficacy of the virtual classroom style educational intervention to meet the mentioned objectives, (2) to increase the use of a formal teaching tool, SNAPPS, in the clinical learning environment, (3) to enhance the clinical learning environment for RRNAs, and (4) to obtain support from department leaders in establishing further strategies that increase RRNA learning and critical thinking skills.

The objectives and goals listed above were measured through the administration of a survey both before and after the educational intervention. The goals were achievable by December 2023, the designated timeframe by the academic program. The project was implemented throughout the course of 1 semester, and the results were evaluated and disseminated the following semester. The goals were realistic with the collaboration of the implementation facility in its willingness to all the student resources, including time to complete the intervention and administration of the pretest and posttest.

SWOT Analysis of Implementation Site

Strengths

The immense extent of preceptorship is one of the greatest strengths regarding implementation of a clinical teaching tool at the immersion site. Implementing this quality improvement (QI) project at a 600-bed teaching hospital was possible because it was one of the largest RRNA teaching hospitals in South Florida. At any given time, that facility has an average of 20 to 30 RRNAs a day partaking in clinical education. Hence, preceptor-to-preceptee training is consistently seen. Therefore, implementing a formal preceptor teaching tool to promote a learner-centered environment was significantly applicable to this hospital.

Weaknesses

There were two weaknesses that can be identified regarding preceptorship and the clinical learning environment at the immersion site. The first weakness is that CRNA preceptors lack proper knowledge of adult learning and proper clinical knowledge practices. Based on direct questioning, most CRNA preceptors at the implementation facility do not have any type of formal education on teaching proficiencies useful for adult learners. Another weakness is that the immersion site does not offer a continuing education module on CRNA preceptorship. Consequently, CRNAs are never formally taught techniques that can be used to enhance RRNA learning while also creating a positive learning environment.

Opportunities

Based on the strengths and weaknesses of the immersion site, many opportunities can be identified when it comes to CRNA to RRNA preceptorship. First, there is an opportunity to implement a preceptor training session that would allow CRNA to gain vital knowledge related to preceptorship while also accumulating continuing education hours to put towards their license

renewal. Second, there is an opportunity to educate and implement a formal preceptor teaching tool to be used by all CRNA preceptors. By implementing this change, it will provide a consistent teaching structure, while also enhancing clinical thinking skills of RRNAs. Finally, there is an opportunity to get feedback from both CRNAs and RRNAs on the impact of the formal teaching tool in the clinical environment. Overall, these opportunities allow for there to be a change made to the preceptor-preceptee model to promote learning and critical thinking in the clinical setting.

Threats

After analyzing the facility, there are 3 main threats to fully adopting and implementing a formal teaching tool. One of the most significant threats to a clinical teaching tool at the immersion site was the willingness of CRNA preceptors to adopt the tool into their everyday practice. Preceptors already complain about preceptorship being extra work; hence, they could easily suggest that it could be challenging to apply the principles taught during the training session into their busy workday. For example, they may find it hard to debrief and provide feedback to students between each surgical case. Another threat to the use of a teaching tool in the clinical setting was the lack of support by leadership for the change. At the immersion site, there are many CRNA and anesthesiologist leaders that do not believe formal preceptor training is necessary; this is the belief since preceptors are able to figure out how they like to teach on their own. However, research shows that when preceptors receive training and a teaching tool is implemented, a positive learning environment is augmented.

Definition of Terms

Preceptorship refers to a structed supportive period of transition from learning to applying complex skills that requires a long and rigorous period of education. Preceptorship is

similar to apprenticeship and serves as a bridge during the transition from student/resident to practitioner.[22]

Preceptor refers to an instructor or experienced professional who teaches, counsels, and serves as a role model and supports the growth and development of an initiate in a particular discipline for a limited time, with the specific purpose of socializing the novice in a new role. Preceptors fill the same role as mentors but for a more limited time frame.[23]

Preceptee refers to a fully qualified, accountable practitioner (nurse, midwife, or health visitor) entering practice for the first time or a different field of practice for the first time, who because he or she is inexperienced, is trained by a preceptor.[24]

Certified Registered Nurse Anesthetist is a registered professional nurse with additional education in the administration of anesthetics. Certification achieved through a program of study recognized by the American Association of Nurse Anesthetists.[25]

Critical thinking refers to the ability to interpret argument, evidence, or raw information in a logical and unbiased fashion in order to solve complex problems effectively.[26]

Conceptual Underpinning and Theoretical Framework of the Project

The theoretical framework referenced for this intervention was the Plan-Do-Study-Act (PDSA) cycle; this framework is useful for quality improvement projects, especially ones that implement small-scale changes.[27] The PDSA cycle is separated into four different stages. During the "Plan" stage, the primary goal is to observe current processes and identify a problem where improvements can be made.[27] Once the improvement initiative has been selected, one must gather team members and formulate an action plan. The plan needs to include SMART goals, a timeline, the process that will take place to implement the change, who will enact the change, how patients will be affected, how impact of change will be measured, and the expected results.[27]

The "Do" stage consists of implementing change in the facility through effective education and application modalities.[27] Furthermore, one must have an opportunity to receive feedback on the change process that was implemented. During the "Study" phase, one must analyze the results; this consist of making charts to visualize change over time, calculating statics, and considering factors that might have contributed to the findings.[27] The last stage of the framework is "Act." In this phase one must decide to adopt, adapt, or abandon the new process.[27] If adapt is the choice, the current process can be adjusted based on the results and feedback that was received. Overall, this cycle is meant to be continuous; this challenges organizations to constantly strive to promote best practice/processes grounded on evidence-based research.

Setting and Participants

The site where this intervention was implemented was at large teaching hospital in Miami Beach that serves a diverse patient population. The facility is equipped with 20 operating rooms, 7 GI suites, and 4 interventional neurology and cardiology suites. There are currently 38 CRNA preceptors and 102 RRNAs practicing at this facility. The other types of providers included anesthesiologist, surgeons, nurses, surgical technicians, surgical residents, and anesthesia residents. There were 12 participants in this quality improvement project. The participants of the study were all CRNA employees at the facility that choose to complete all 3 implementation phases of the project. All participants were recruited voluntarily and were given the option to provide feedback regarding the project's quality improvement module.

Description of Approach and Project Procedures

The primary methodology of this quality improvement project was to present an educational module that highlights the benefits of implementing a formal teaching/learning tool

in the clinical setting and provide recommendations on ways to promote a learner-centered environment. The implementation stage of this project was conducted in 3 different phases.

The first phase consisted of conducting an online preassessment survey to test participants' knowledge of adult learning, clinical teaching/learning tools, and how preceptors can promote a learner-centered environment for RRNAs. The pre-assessment survey helped identify participants' baseline knowledge of the topic, recognition of the problem being addressed, and willingness to implement a change.

The second phase of the implementation process was to provide an educational preceptor training session. During the training session, a video recorded PowerPoint presentation was used to provide participants with important information regarding the utilization of a clinical teaching tool to improve the clinical learning environment for RRNAs. The educational intervention took approximately 12 minutes.

The third phase of the implementation process was to conduct a post-assessment survey to identify the knowledge participants gained from the training session, likelihood of implementing a teaching tool presented, choice of which teaching tool to implement, and how they perceived the material that was presented to them. The information retrieved from the pre- and post-assessments provided a great amount of feedback regarding the educational intervention, the educational knowledge gained by preceptors about adult learning, SNAPPS, and OMP, and the likelihood of CRNAs to implement a teaching tool in the clinical setting.

Protection of Human Subjects

Institutional Review Board (IRB) approval prior to the intervention was obtained following the institution guidelines and procedures (see Appendix A). All CRNA providers from the facility were invited to participate via email. Participants consented to take part in the study

via Qualtrics, a HIPAA compliant online survey platform. Participants had the right to withdraw their consent at any time. In the event that a participant choose to withdraw from the study, no penalties were incurred. There were no costs to participate in this quality improvement project. No compensation was offered or guaranteed for participation. No identifiable data was collected during this study; however, due to the small study sample size, participants may be identified through indirect identifiers. Data was stored in a password-protected online database and was only accessible to the primary investigator. There was minimal risk involved with this project. The risk includes emotional stress, mild physical discomfort form sitting on a chair for an extended period of time, and negative emotional, psychological, or cultural reactions triggered by the material discussed in the educational module. Benefits of participation includes possible provider knowledge enhancement on adult learning, preceptorship, and clinical teaching tools.

Data Collection

Pre- and posttest surveys were utilized as instruments for data collection. The survey consisted of 12 multiple choice questions. The online preassessment and post-assessment surveys used the same questions to assess participants' knowledge of adult learning, clinical teaching/learning tools, and how preceptors can promote a learner-centered environment for RRNAs. Demographic data was collected from each participants including gender, race, ethnicity, and education. Additionally, participants were asked to provide an approximation of the number of years they have been practicing. The pretest survey was used to gauge the knowledge of each participant prior to receiving formal education on the study's topic. The purpose of the posttest survey was to evaluate knowledge gained, knowledge retention, and self-practice changes post-intervention. Each survey item was scored by selecting the correct answer(s) or on a 5-point Likert type scale ranging from 1 (strongly disagree) to 5 (strongly

agree). The surveys were designed using the secured Qualtrics software and delivered via email link. Each participant received the same link and their responses remained anonymous (see Appendix B).

Data Management and Analysis

Study data was stored in an electronic database. Only the co-investigator had the password to this database. The co-investigator delivered the educational module including both the pre- and post-surveys to participants' emails. Th co-investigator was responsible for all data collection and data analysis within Qualtrics software. Each participant was assigned a personal identification number that corresponded to their responses and helped to maintain anonymity for the sake of confidentiality throughout the study. Pretest data was scored individually with a percentage and then a group average was calculated. The same analysis was then applied to the post-survey data. Pre- and posttest group scores were compared to assess for improvement after completing formal education on the study's topic. Descriptive statistics were utilized to analyze the limited demographic data collected related to years in practice. All data was stored in a protected and encrypted software system, Qualtrics.

RESULTS

The pre and posttest surveys focused on 3 main categories. The first category assessed participants' knowledge of adult learning. The second category assessed participants' knowledge of clinical teaching/learning tools. The third category assessed the likelihood of participants implementing a teaching tool in the clinical setting.

Pre- and Posttest Demographics

The pre and posttest demographics characteristics are identical due to the fact that the participants included in the study completed the entire educational module. The 6 different

participant demographic characteristics are illustrated in Table 2. There were a total of 38 anesthesia providers invited to participate in this quality improvement project. A total of 12 anesthesia providers completed the pre-survey questionnaire: this amounts to a 33.33% participation rate. The 12 participants included 0 anesthesiologists, 0 residents, and 12 CRNAs. Separated by sex, there were 8 females (66.7%) and 4 males (33.33%); this is shown in Figure 2. The majority of participants (58.33%) identified themselves as Caucasian, while 33.33% identified as Hispanic and 8.33% identified as other ethnicity. In regard to participants' age, 83.33% were in the age range of 26-40 years old, and 16.67% were in the age range of 41-55 years old, as shown in Figure 3. When assessing the level of education of each participant, there was 8.3% (n = 1) with a master's degree and 91.67% (n = 11) with a doctoral degree. In reference to years of experience in anesthesia, 66.67% of participants had 1-2 years of experience, 16.67% had 3-5 years of experience, and 16.67% had over 10 years of experience; these findings are illustrated in Figure 4.

Table 2. Pre and Posttest Participant Demographics

Total Number of Participants	12 (33.3%)
Medical Profession	
Anesthesiologist	0 (0%)
Residents	0 (0%)
CRNAs	12 (100%)
Gender	
Male	4 (33.33%)
Female	8 (66.67%)
Ethnicity	
Caucasian	7 (58.33%)
Hispanic	4 (33.33%)
African American	0 (0%)
Asian	0 (0%)
Other	1 (8.33%)
Age	
18-25	0 (0%)

26-40	10 (83.33%)
41-55	2 (16.67%)
56-70	0 (0%)
>70	0 (0%)
Type of Degree	
Certificate	0 (0%)
Bachelors	0 (0%)
Masters	1 (8.33%)
DNP/Doctoral	11 (91.67%)
PhD	0 (0%)
Years of Anesthesia Experience	
1-2 years	8 (66.67%)
3-5 years	2 (16.67%)
6-10 years	0 (0%)
>10 years	2 (16.67%)

Figure 2. Gender of Participants

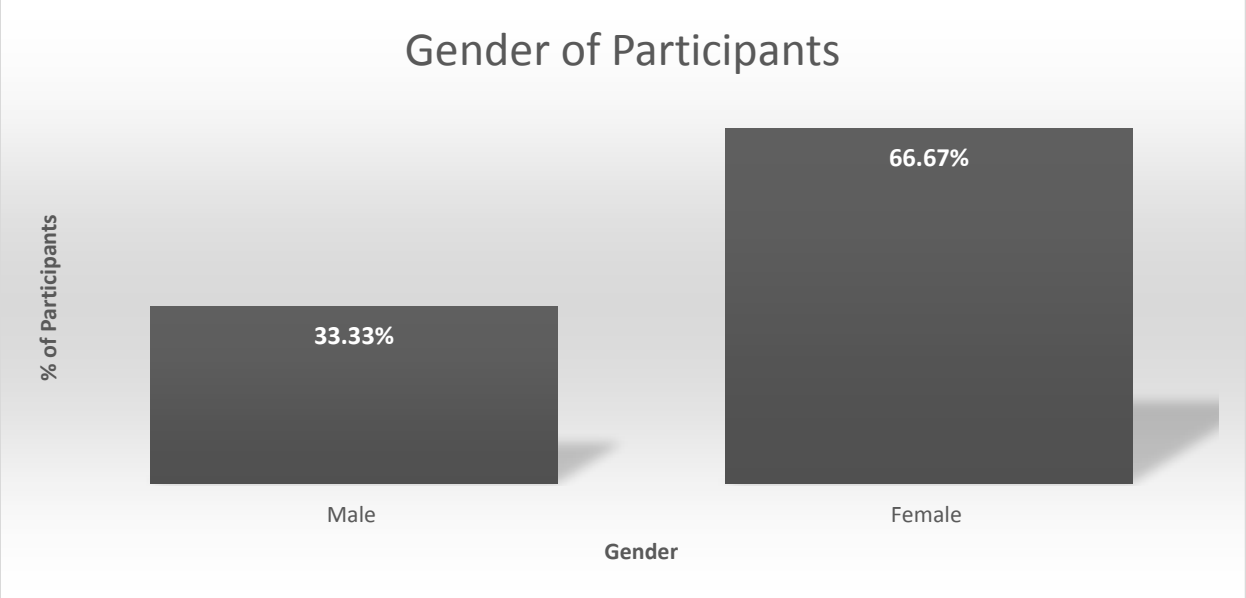


Figure 3. Age of Participants

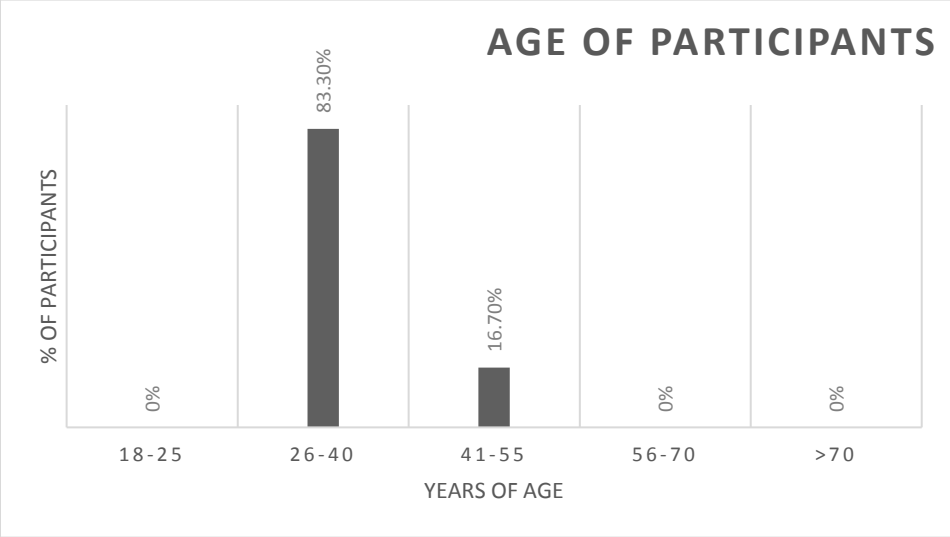
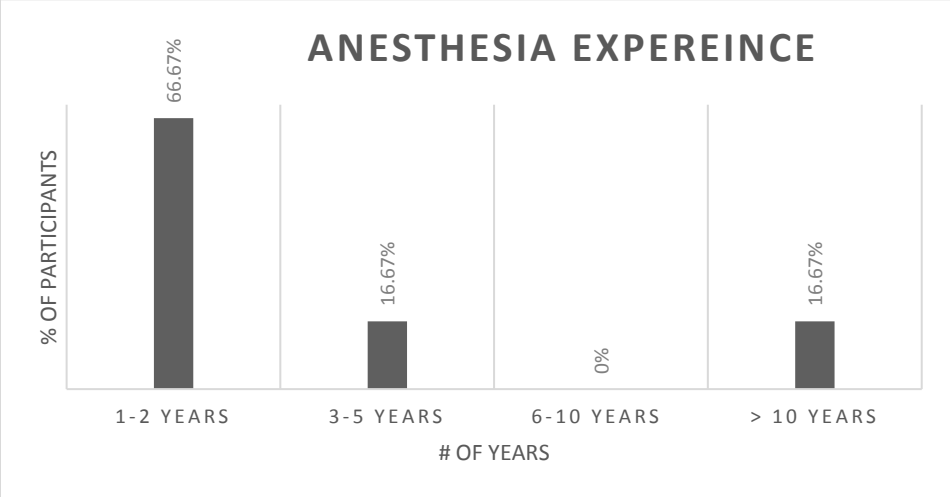


Figure 4. Anesthesia Experience of Participants



Pretest Knowledge of Adult Learning

Out of the 12-question pretest questionnaire, there were 3 questions related to adult learning and preceptorship. These questions focused on when preceptorship was first incorporated into the healthcare system, the determinants of learning, and active learning. For the first question about preceptorship, 58.33% (7/12) of participants answered the question correctly, and 41.67% (5/12) answered the question incorrectly. When analyzing the second question

testing knowledge of learning determinants, 66.67% (8/12) answered the question correctly, and 33.33% (4/12) answered the question incorrectly. The third question assessing participants knowledge of active learning, only 16.67% (2/12) answered the question correctly, while 83.33% (10/12) answered the question incorrectly.

Pretest Knowledge of Clinical Teaching/Learning Tools

Out of the 12-question pretest questionnaire, there were 7 questions related to clinical teaching/learning tools. The two teaching tools addressed in these questions were SNAPPS and the OMP. The first question on teaching tools addressed the topic of which tools have been shown to increase student learning when used in the clinical setting; the results indicated that only 33.33% (4/12) of the participants knew the correct answer, whereas 66.67% (8/12) chose the incorrect answer. The second question was a true or false question stating the definition of the SNAPPS teaching model. Unexpectedly, 100% of the participants answered this questioned correctly. The third question related to learning tools was another true or false stating the definition of the OMP. The pretest results revealed that 91.67% (11/12) of the participants choose the correct answer and 8.33% (1/12) choose the wrong answer. The fourth question addressing this category assessed participants' knowledge of the steps used in the SNAPPS model; only 25% (3/12) choose the correct 3 answers. The fifth question was a select 3 question addressing the steps of the OMP; 41.67% (5/12) answered this question correct and 58.33% (7/12) answered incorrectly. The next question assessed the participants' knowledge of the main differences between the two teaching tools. The results revealed that 58.33% (7/12) answered incorrectly, while 41.67% (5/12) answered correctly. The last question assessed participants knowledge of SNAPPS and the OMP increasing active learning. Remarkably, 75% (9/12) of the participants answered correctly, whereas 25% (3/12) answered incorrectly.

Pretest Teaching Tool Implementation in the Clinical Setting

Out of the 12-question pretest questionnaire, there were 2 questions related to teaching tool implementation in the clinical setting. The first question asked participates to rate the likelihood of them using either the OMP or SNAPPS in their practice using a 5-point Likert scale. The results are as followed: 0% (0/12) of participants choose extremely unlikely, 33.33% (4/12) of participants choose somewhat unlikely, 8.34% (1/12) of participants choose neither likely nor unlikely, 33.33% (4/12) of participants choose somewhat likely, and 25.0% (3/12) of participants choose extremely likely. The second question asked participants to choose which tool they would prefer to implement into practice. The results revealed that 58.33% (7/12) of participants would rather implement SNAPPS into clinical practice, while 41.67% (5/12) would like to implement the OMP.

Posttest Knowledge of Adult Learning

Out of the 12-question posttest questionnaire, participants were presented the same 3 questions related to adult learning and preceptorship. For the first question about preceptorship, 83.33% (10/12) of participants answered the question correctly and 16.67% (2/12) answered the question incorrectly. When analyzing the second question testing knowledge of learning determinants, 83.33% (10/12) answered the question correctly and 16.67% (2/12) answered the question incorrectly. The third question assessing participants knowledge of active learning, 75.0% (9/12) answered the question correctly, while 25.0% (3/12) answered the question incorrectly.

Posttest Knowledge of Clinical Teaching/Learning Tools

Out of the 12-question posttest questionnaire, participants were presented the same 7 questions related to clinical teaching/learning tools. The first question on teaching tools

addressed the topic of which tools have been shown to increase student learning when used in the clinical setting; the results indicated that 83.33% (10/12) of the participants knew the correct answer, whereas 16.67% (2/12) choose the incorrect answer. The second question was a true or false question stating the definition of the SNAPPS teaching model. Unpredictably, 91.67% (11/12) of the participants choose the correct answer and 8.33% (1/12) choose the wrong answer. The third question related to learning tools was a true or false question stating the definition of the OMP. The posttest results revealed that 91.67% (11/12) of the participants choose the correct answer, and 8.33% (1/12) choose the wrong answer. The fourth question addressing this category assessed participants' knowledge of the steps used in the SNAPPS model; 41.67% (5/12) chose the correct 3 answers. The fifth question was a select 3 question addressing the steps of the OMP; 41.67% (5/12) answered this question correctly, and 58.33% (7/12) answered incorrectly. The next question assessed the participants' knowledge of the main differences between the two teaching tools. The results unveiled that only 16.67% (2/12) answered incorrectly while 83.33% (10/12) answered correctly. The last question assessed participants' knowledge of SNAPPS and the OMP increasing active learning. Remarkably, 91.67 % (11/12) of the participants answered correctly, whereas 8.33% (1/12) answered incorrectly.

Posttest Teaching Tool Implementation in the Clinical Setting

Out of the 12-question posttest questionnaire, participants were presented the same 2 questions related to teaching tool implementation in the clinical setting. The first question asked participates to rate the likelihood of them using either the OMP or SNAPPS in their practice using a 5-point Likert scale. The results are as followed: 16.67% (2/12) of participants chose extremely unlikely, 8.33% (1/12) of participants chose somewhat unlikely, 8.34% (1/12) of participants chose neither likely nor unlikely, 33.33% (4/12) of participants chose somewhat

likely, and 33.33% (4/12) of participants chose extremely likely. The second question asked participants to choose which tool they would prefer to implement into practice. The results revealed that 25.0% (3/12) of participants would rather implement SNAPPS into clinical practice, while 75.0% (9/12) would like to implement the OMP.

DISCUSSION

Results

Overall, the data shows that there was an increase in knowledge by the participants after completing the educational module and PowerPoint presentation on the Implementation of a Formal Preceptor Teaching Tool in the Clinical Setting to Promote a Learner-Centered Teaching Environment. Each question was designed with the purpose of assessing the participants' knowledge of adult learning, knowledge of clinical teaching tools, and attitudes towards implementing a teaching tool in the clinical setting. Research suggests that implementing a teaching tool in the clinical setting provides numerous benefits. Some of the benefits that accompany SNAPPS and the OMP are improvement in preceptor teaching skills, increases student learning, increases in critical thinking, and increases formative feedback students receive from preceptors. After assessing the results of this study, most participants increased their knowledge of preceptorship, adult learning, the OMP, and SNAPPS. Table 3 and Figure 5 illustrate the percentage of correct and incorrect answers chosen by participants for each question for both the pretest and the posttest, as well as the precent change from pretest to posttest. Figure 6 displays the results of question 11, which signifies how likely participants are to implement a teaching tool in the clinical setting. Meanwhile, Figure 7 exhibits the results of question 12, which suggests which teaching tool preceptors would prefer to use in the clinical setting. The study showed that over 66% of participants are likely to use one of the teaching tools in their

practice. Furthermore, 75% of participants would rather implement the OMP over SNAPPS in the clinical setting. Overall, the results indicate an increase in knowledge and a positive attitude towards implementing the OMP into their preceptorship teaching model.

Table 3. Pre- and Posttest Results

Questions	Pretest Results	Posttest Results	% Change
1. When was preceptorship first incorporated into the healthcare setting?	Correct: 58.33% Incorrect: 41.67%	Correct: 83.33% Incorrect: 16.67%	↑ 25%
2. What are the three determinants to learning? (Select 3)	Correct: 66.67% Incorrect: 33.33%	Correct: 83.33% Incorrect: 16.67%	↑ 16.66%
3. What are the learning outcomes of active learning?	Correct: 16.67% Incorrect: 83.33%	Correct: 75% Incorrect: 25%	↑ 58.33%
4. Which teaching tools are effective at increasing student learning in the clinical setting?	Correct: 33.33% Incorrect: 66.67%	Correct: 83.33% Incorrect: 16.67%	↑ 50%
5. TRUE or FALSE SNAPPS is a six-step pneumonic based on a learner-centered model that provides a systematic approach to transition from directed learning in the classroom to self-regulated learning in the clinical environment.	Correct: 100% Incorrect: 0%	Correct: 91.67% Incorrect: 8.33%	↓ 8.33%
6. TRUE or FALSE The One-Minute Preceptor (OMP) teaching tool consists of five microskills that provide preceptors with	Correct: 91.67% Incorrect: 8.33%	Correct: 91.67% Incorrect: 8.33%	No change

a basic teaching framework that is efficient, precise, and cultivates a teaching-to-learn environment in the clinical setting.			
7. Which of the following are steps in the SNAPPS model? (Select 3)	Correct: 25% Incorrect: 75%	Correct: 41.67% Incorrect: 58.33%	↑ 16.67%
8. Which of the following are steps in the One-Minute Preceptor (OMP) model? (Select 3)	Correct: 41.67% Incorrect: 58.33%	Correct: 41.67% Incorrect: 58.33%	No change
9. What is the main difference between SNAPPS and the One-Minute Preceptor (OMP)?	Correct: 41.67% Incorrect: 58.33%	Correct: 83.33% Incorrect: 16.67%	↑ 41.66%
10. TRUE or FALSE Both teaching tools have shown to provide students/residents with an active learning environment, which enhances critical thinking skills, clinical learning, and at home self-directed learning.	Correct: 75% Incorrect: 25%	Correct: 91.67% Incorrect: 8.33%	↑ 16.67%
11. How likely are you to use one of these tools in your practice?	1 0% 2 33.33% 3 8.34% 4 33.33% 5 25%	1 16.67% 2 8.34% 3 8.34% 4 33.33% 5 33.33%	↑ 16.67% ↓ 24.99% No change No change ↑ 8.33%
12. Which teaching tool would you prefer to implement in your practice?	SNAPPS 58.33% OMP 42.67%	SNAPPS 25% OMP 75%	↓ 33.33% ↑ 32.33%

Figure 5. Pre- and Posttest Results

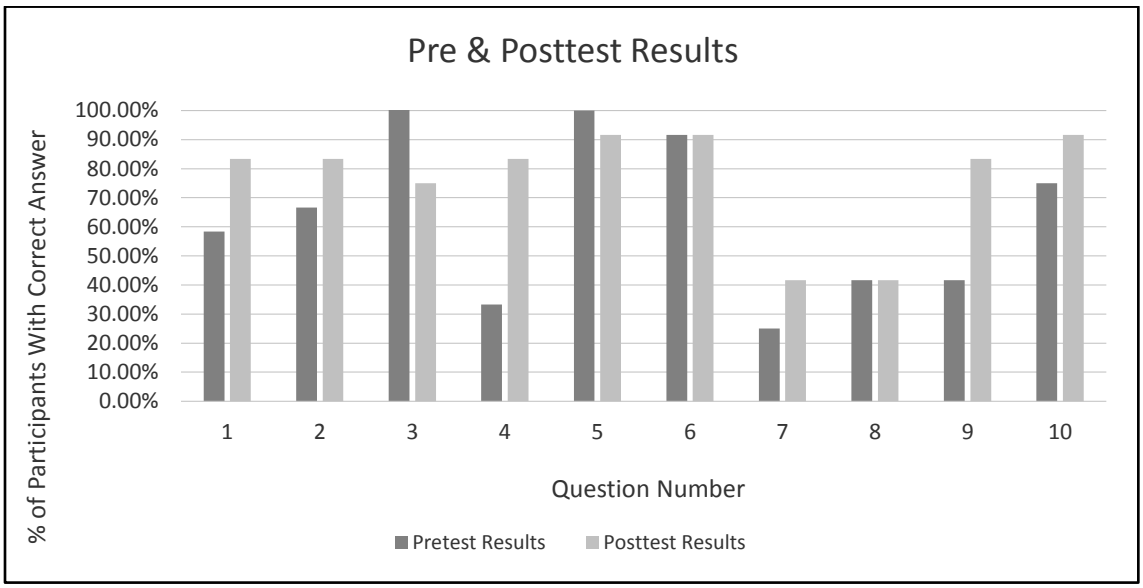


Figure 6. Question 11 Results

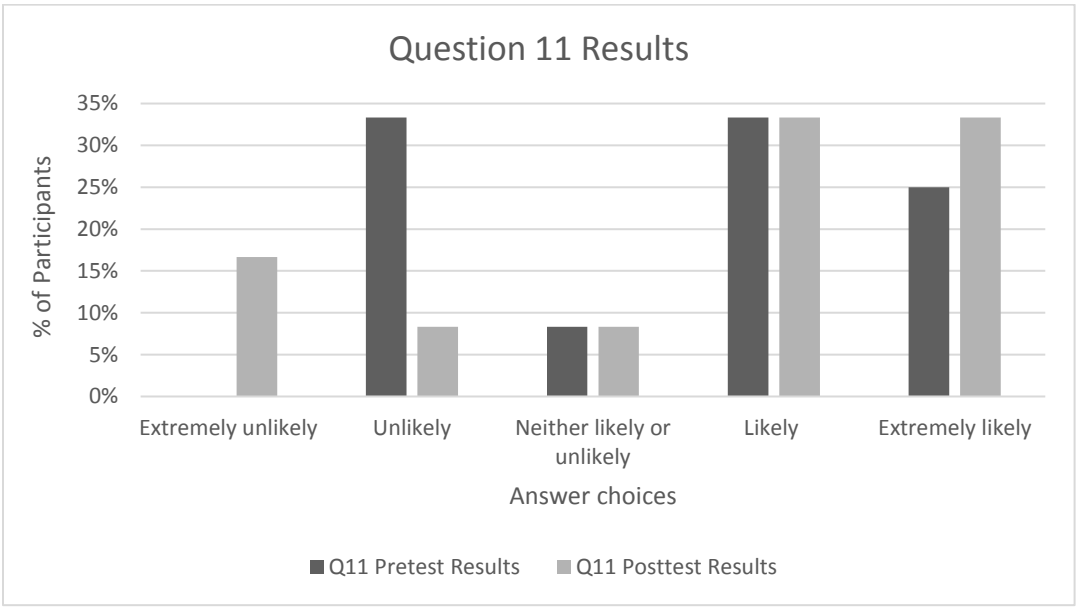
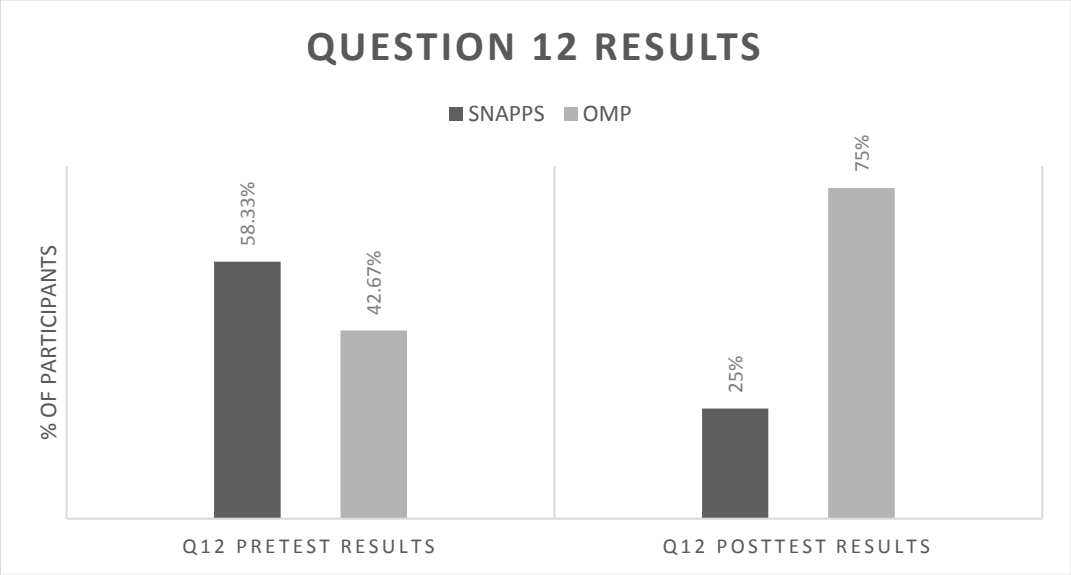


Figure 7. Question 12 Results



Limitations

There were two main limitations of this study. The first limitation was the small sample size. There was limited participation in this quality improvement project, given that only 33.33% of invited anesthesia providers choose to take part in the study. A higher number of participants would have been ideal to increase the power of the study. The second limitation of this project was the absence of a comparison group. Researchers were unable to conduct the study at 2 different hospitals; this led to a limited opportunity to compare outcomes. Despite these limitations, the positive findings of this study support the importance of preceptorship and the implementation of teaching tools to improve clinical learning and critical thinking.

Implications to Advanced Nursing Practice

The results of this quality improvement project can affect the advancement of nursing practice. The effectiveness of the preceptor training demonstrated that a short intervention can have positive effects on preceptor practice and the quality of training RRNAs receive. Both providers and residents can look at the findings positively because it only requires a small time

commitment to get positive long-lasting results. The findings of this project have good implications for teaching hospitals because it proves that they can provide valuable training to CRNAs without having to use large amounts of resources or money. Finally, this project's findings enhance existing literature, which is lacking new findings on the topic of using a teaching model for graduate nursing students in the clinical care setting. Furthermore, the results of this study are unique in the fact that they conclude which teaching model is best suited to improve learning in the clinical setting.

Conclusion

The implementation of teaching tools such as OMP or SNAPPS in the clinical setting can significantly contribute to the development of a learner-centered teaching environment. These tools offer structured frameworks that enhance the educational process, facilitating active learning, critical thinking, and effective decision-making among learners. By incorporating OMP or SNAPPS, educators can shift from a traditional teacher-centered approach to a learner-centered approach. These tools encourage learners to actively engage in the learning process, take ownership of their education, and develop important skills such as clinical reasoning, problem-solving, and effective communication. Moreover, the learner-centered environment fosters a sense of autonomy and promotes self-directed learning, allowing learners to become independent, lifelong learners.

These tools facilitate the establishment of strong mentor-mentee relationships, promoting effective teaching and mentoring practices. However, it is essential to acknowledge that the successful implementation of OMP or SNAPPS requires adequate training, support, and a commitment from both educators and learners. Educators must receive training on effectively utilizing these tools, adapting them to the specific clinical context, and providing constructive

feedback. Learners, on the other hand, need to embrace the learner-centered approach, actively participate in the teaching encounters, and be open to feedback and self-reflection. In conclusion, the implementation of teaching tools such as OMP or SNAPPS in the clinical setting has the potential to transform the educational experience, fostering a learner-centered teaching environment. By empowering learners, enhancing critical thinking skills, and promoting active engagement, these tools contribute to the development of competent and confident healthcare professionals who are capable of delivering high-quality patient care.

TIMELINE

Activity	Timeframe
Complete CITI Training	October 2022
Develop at PICO Question based on a current problem in Anesthesia	December 2022
Obtain clinical mentor to be a part of the DNP project team	December 2022
Complete a Systematic Review of Literature to support PICO question and the DNP project.	December 2022
Create Literature Review Chart	December 2022
Write DNP project proposal using AMA guidelines	December 2022
Obtain approval for DNP project	December 2022
Prepare IRB application and review with DNP advisor	January 2023
Submit IRB application	February 2023
Obtain IRB approval	March 2023
Implement Scholarly Project at the implementation site according to proposal and IRB approval	April 2023
Notify IRB of any changes in protocol	April 2023
Conduct initial data analysis and validate findings with statistician	June 2023

Prepare draft and complete project report	August 2023
Have a professional editor edit the final draft	September 2023
Defend DNP Project	October 2023
Submit manuscript of DNP scholarly project according to author's guidelines of chosen journal	October 2023
Submit final written copy of DNP project	November 2023
Upload final written project to the IRB	November 2023
Close out IRB	November 2023

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APPENDIX A: IRB APPROVAL

FIU | Research & Economic Development
FLORIDA INTERNATIONAL UNIVERSITY

MEMORANDUM

To: Dr. Yasmine Campbell

CC: Lyndi Bailey

From: Carrie Bassols, BA, IRB Coordinator CeB

Date: March 3, 2023

Proposal Title: "Implementation of a Formal Preceptor Teaching Tool in the Clinical Setting to Promote a Learner-Centered Teaching Environment"

The Florida International University Office of Research Integrity has reviewed your research study for the use of human subjects and deemed it Exempt via the **Exempt Review** process.

IRB Protocol Exemption #:	IRB-23-0085	**IRB Exemption Date:**	03/03/23
TOPAZ Reference #:	112736		

As a requirement of IRB Exemption you are required to:

1) Submit an IRB Exempt Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved prior to implementation.
2) Promptly submit an IRB Exempt Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
1) Submit an IRB Exempt Project Completion Report Form when the study is finished or discontinued.

Special Conditions: N/A

For further information, you may visit the IRB website at http://research.fiu.edu/irb.

APPENDIX B: IRB CONSENT FORM

FLORIDA INTERNATIONAL UNIVERSITY

CONSENT TO PARTICIPATE IN A QUALITY IMPROVEMENT PROJECT

"Implementation of a Formal Preceptor Teaching Tool in the Clincial Settng to Promote a Learner-Centered Environment"

SUMMARY INFORMATION

Things you should know about this study:

- **Purpose:** Educational module to increase providers awareness of different preceptor teaching tools that can be implemented in the clinical setting to enhance student/resident learning.
- **Procedures**: If the participant chooses to participate, they will be asked to complete a pretest, watch a voice PowerPoint, and then a post test
- **Duration:** This will take about a total of 20 minutes total (5 minutes for the pretest, 10 minutes for the educational model, and 5 minutes for the posttest).
- **Risks**: There will be minimal risks involved with this project, as would be expected in any type of educational intervention, which may include mild emotional stress or mild physical discomfort from sitting on a chair for an extended period.
- **Benefits:** The main benefit to you from this research is increase the participants knowledge on preceptor teaching tools, adult learning, and how to promote a learner-centered teaching environment.
- **Alternatives:** There are no known alternatives available to the participant other than not taking part in this quality improvement project.
- **Participation:** Taking part in this quality improvement project is voluntary.

Please carefully read the entire document before agreeing to participate.

NUMBER OF STUDY PARTICIPANTS:

If the participant decides to be in this study, they will be one of twenty people in this research study.

PURPOSE OF THE PROJECT

The participant is being asked to be in a quality improvement project. The goal of this project is to increase providers' knowledge on preceptor teaching tools, adult learning, and how to promote a learner-centered teaching environment. If you decide to participate, you will be 1 of approximately 10 participants.

DURATION OF THE PROJECT

The participation will require about 20 minutes (5 minutes for the pretest, 10 minutes for the educational model, and 5 minutes for the posttest).

PROCEDURES

If the participant agrees to be in the project, PI will ask you to do the following things:

1. Complete an online 12 question pre-test survey via Qualtrics, an Online survey product for which the URL link is provided
2. Review the educational PowerPoint Module lasting 10 minutes via Qualtrics, an Online survey product for which the URL link is provided.
3. Complete the online 12 question post-test survey via Qualtrics, an Online survey product for which the URL link is provided.

RISKS AND/OR DISCOMFORTS
The main risk or discomfort from this research is minimal. There will be minimal risks involved with this project, as would be expected in any type of educational intervention, which may include mild emotional stress or mild physical discomfort from sitting on a chair for an extended period.

BENEFITS
The following benefits may be associated with participation in this project: An increase in provider knowledge on preceptor teaching tools, adult learning, and how to promote a learner-centered teaching environment. The overall objective of the program is to increase the providers' knowledge based on the current literature.

ALTERNATIVES
There are no known alternatives available to the participant other than not taking part in this project. However, if the participant would like to receive the educational material, it will be provided to them at no cost.

CONFIDENTIALITY
The records of this project will be kept private and will be protected to the fullest extent provided by law. If, in any sort of report, PI might publish, it will not include any information that will make it possible to identify the participant. Records will be stored securely, and only the project team will have access to the records.

PARTICIPATION: Taking part in this quality improvement project is voluntary.

COMPENSATION & COSTS
There is no cost or payment to the participant for receiving the health education and/or for participating in this project.

RIGHT TO DECLINE OR WITHDRAW
The participation in this project is voluntary. The participant is free to participate in the project or withdraw the consent at any time during the project. The participant's withdrawal or lack of participation will not affect any benefits to which you are otherwise entitled. The investigator reserves the right to remove the participant without their consent at such time that they feel it is in their best interest.

RESEARCHER CONTACT INFORMATION
If you have any questions about the purpose, procedures, or any other issues relating to this research project, you may contact: Lyndi Bailey, 678-381-9652, Lbail032@fiu.edu or Yasmine Campbell, 305-348-9894, ycampbel@fiu.edu

IRB CONTACT INFORMATION
If the participant would like to talk with someone about their rights pertaining to being a subject in this project or about ethical issues with this project, the participant may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu.

PARTICIPANT AGREEMENT
I have read the information in this consent form and agree to participate in this study. I have had a chance to ask any questions I have about this study, and they have been answered for me. By clicking on the "consent to participate" button below I am providing my informed consent.

APPENDIX C: PRE-AND POSTTEST QUESTIONANNAIRE

Pretest and Posttest Questionnaire:

Implementation of a Formal Preceptor Teaching Tool in the Clinical Setting to Promote a Learner-Centered Teaching Environment

INTRODUCTION

The primary aim of this QI project is to increase providers awareness of different preceptor teaching tools that can be implemented in the clinical setting to enhance student/resident learning.

Please answer the question below to the best of your ability. The questions are either in multiple choice or true/false format and are meant to measure knowledge on preceptor teaching tools, adult learning, and how to promote a learner-centered teaching environment.

PERSONAL INFORMATION:

1. **Gender:**
   Male
   Female
   Other _____

2. **Age:**
   18-25
   26-40
   41-55
   56-70
   >70

3. **Ethnicity:**
   Hispanic
   Caucasian
   African American
   Asian

Other_____

4. **Position/Title:**
   CRNA
   Anesthesiologist
   Resident
   Anesthesiologist Assistant

5. **Level of Education:**
   Certificate
   Bachelors
   Masters
   DNP
   PhD

6. How many years have you been a perioperative provider?

   Over 10 5-10 years 2-5 years 1-2 years

QUESTIONNAIRE:

1. **When was preceptorship first incorporated into the healthcare setting?**
   a. 1860's
   b. 1940's
   c. 1980's
   d. 2000's

2. **What are the three determinants to learning? (Select 3)**
   a. Needs of the learner
   b. Type of environment
   c. Readiness to learn
   d. Preferred learning style

e. Tone of the teacher

3. **What are the learning outcomes of active learning?**
    a. Analyze, Create, & Evaluate
    b. Define, Describe, & Explain
    c. Demonstrate, Apply, & Practice
4. **Which teaching tools are effective at increasing student learning in the clinical setting?**
    a. Aunt Minnie Model
    b. SNAPPS
    c. Activated Demo
    d. One Minute Preceptor
5. **SNAPPS is a six-step pneumonic based on a learner-centered model that provides a systematic approach to transition from directed learning in the classroom to self-regulated learning in the clinical environment.**
    a. True
    b. False
6. **The One Minute Preceptor (OMP) teaching tool consists of five microskills that provide preceptors with a basic teaching framework that is efficient, precise, and cultivates a teaching-to-learn environment in the clinical setting.**
    a. True
    b. False
7. **Which of the following are steps in the SNAPPS model? (Select 3)**
    a. Probe the preceptor by asking questions about any uncertainties.
    b. Summarize the patient's history and physical findings

c. Probe for supporting evidence

d. Plan management for the patient's problem

e. Apply general rules

f. Reinforce what was done right

8. Which of the following are steps in the One Minute Preceptor (OMP) model? (Select 3)

a. Get a commitment

b. Select a case-related issue for self-directed learning

c. Probe for supporting evidence

d. Narrow differential diagnosis

e. Summarize the patient's history and physical findings

f. Correct mistakes

9. What is the main difference between SNAPPS and the One Minute Preceptor (OMP)?

a. SNAPPS is shorter than the OMP

b. Research suggests that the OMP increases self-directed learning more than SNAPPS

c. SNAPPS is more student led, whereas OMP is more preceptor led

d. Students/residents are more likely to ask questions pertaining to uncertainties when the OMP is used, whereas in the SNAPPS model preceptors provide more feedback.

10. Both teaching tools have shown to provide students/residents with an active learning environment, which enhances critical thinking skills, clinical learning, and at home self-directed learning.

a. True

b. False

11. How likely are you to use this in your practice?

a. I will use this in my practice

b. I might use this in my practice

c. I will not use this in my practice

12. Which teaching tool would you prefer to implement in your practice?

a. SNAPPS

b. One Minute Preceptor (OMP)

APPENDIX D: UNIVERSITY LETTER OF SUPPORT

Miami Beach Anesthesiology Associates, Inc.

Mount Sinai Medical Center • Division of Anesthesia

S. Howard Wittels MD
Chairman

Hector Davila MSS, MD
Executive Director

Guillermo Garcia MD
Vice Chairman

Sebastian Baquero MD

Christopher Bauer MD
Obstetrics Chief

Vicente Behrens MD

Mario Consuegra MD

Jayanand D'Mello MD
Research Coordinator

Laura Foster MD

Pablo Fumero MD

Pedro Garcia MD
Residency Program
Assist. Director

Howard Goldman MD

Alejandro Guzman MD

Rick Hasty MD

Flor Marin MD

Mark Nakajima MD

Gerald Rosen MD
Residency Program
Director

Jason Wigley MD

Alexander Volsky MD

J.P. Mato DNP, CRNA
CRNA Director & SRNA
Coordinator

Paula Schultz DNP, CRNA
OB-Chief CRNA

February 7, 2023

Yasmine Campbell, DNP, CRNA, APRN
Clinical Assistant Professor
Department of Nurse Anesthesiology
Florida International University

Dr. Yasmine Campbell,

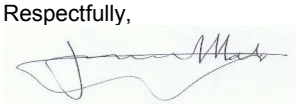
Thank you for inviting Miami Beach Anesthesiology Associates to participate in the Doctor of Nursing Practice (DNP) project conducted by Lyndi Bailey entitled "Implementation of a Formal Preceptor Teaching Tool in the Clincial Setting to Promote a Learner-Centered Environment" in the Nicole Wertheim College of Nursing and Health Sciences, Department of Nurse Anesthesiology at Florida International University. I have granted the student permission to conduct the project using our providers.

Evidence-based practice's primary aim is to yield the best outcomes for patients by selecting interventions supported by the evidence. This proposed quality improvement project seeks to utilize the latest literature to increase providers awareness on different formal preceptor tools that can be used to increase learning in the clinical setting.

We understand that participation in the study is voluntary and carries no overt risk. All Anesthesiology providers are free to participate or withdraw from the study at any time. The educational intervention will be conveyed by a 15-minute virtual PowerPoint presentation, with a pretest and posttest questionnaire delivered by a URL link electronically via Qualtrics, an online survey product. Responses to pretest and posttest surveys are not linked to any participant. The collected information is reported as an aggregate, and there is no monetary compensation for participation. All collected material will be kept confidential, stored in a password encrypted digital cloud, and only be accessible to the investigators of this study: Lyndi Bailey and Yasmine Campbell.

Once the Institutional Review Board's approval is achieved, this scholarly project's execution will occur over two weeks. Lyndi Bailey will behave professionally, follow standards of care, and not impede hospital performance. We support the participation of our Anesthesiology providers in this project and look forward to working with you.

Respectfully,



Jampierre (J.P.) Mato, DNP, CRNA, APRN
Executive CRNA Director
SRNA Coordinator/Supervisor
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Miami Beach Anesthesiology Associates, Inc.

Mount Sinai Medical Center • Division of Anesthesia

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Chairman

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Executive Director

Guillermo Garcia MD
Vice Chairman

Rick Hasty MD

Sebastian Baquero MD

Christopher Bauer MD

Vicente Behrens MD

Jayanand D'Mello MD
Research Coordinator

Laura Foster MD

Pablo Fumero MD

Pedro Garcia MD

Howard Goldman MD
Obstetrics Chief

Jason Hoyos DO
Residency Program
Co-Assistant Director

Flor Marin MD

Gerald Rosen MD
Residency Program
Director

Jason Wigley MD
Residency Program
Co-Assistant Director

Alexander Volsky MD

Jennifer Wright MD

J.P. Mato DNP, CRNA
CRNA Director & SRNA
Coordinator

Paula Schultz DNP, CRNA
OB-Chief CRNA

March 7, 2023

Dr. Jorge Valdes, DNP, CRNA, APRN, FAANA
Chair, Associate Professor Department of Nurse
Anesthesiology Florida International University

Re: IRB Waivers for Quality Improvement Projects with Miami Beach Anesthesiology Associates

The following students have proposed some interdepartmental education modules. These quality improvement projects are internal projects belonging to Miami Beach Anesthesiology Associates. Internal review board approval is not necessary for our departmental improvement projects per Mount Sinai Medical Center's advocate, Yvonne Ortiz.

The projects will involve surveying anesthesia providers from Miami Beach Anesthesiology Associates at Mount Sinai Medical Center of Florida.

Then **educational modules** performed by the students will be included a pre-test, ZOOM recorded educational module with a post-test lasting less than 20 minutes.

The following projects have been proposed and approved by our educational department and deem these projects IRB exempt.

Disposable Laryngeal Electrodes for Intraoperative Neuromonitoring: An Educational Module- **Mercado-Hernandez, David**

Implementation of a Formal Preceptor Teaching Tool in the Clinical Setting to Promote a Learner-Centered Teaching Environment**- Lyndi Bailey**

Improving the incidence of Postoperative Delirium in the Elderly: A Quality Improvement Project- **Acevedo, Yalysher**

Assessment & Anesthetic Management of Patients with Vaping History: An Evidence-Based Educational Module-**Perez Mirabal, David**

Immunomodulation Effects of Propofol versus Sevoflurane based Anesthesia on Deadly Cancers: A quality improvement educational project- **Tatiana Amaya Rivera**

Advantages of intravenous administration of remimazolam over midazolam in inflammatory bowel disease patients undergoing endoscopic procedures: an educational module**- Alexis Perez**

Dexmedetomidine as an Adjuvant for Spinal Anesthesia in Adult Parturients Undergoing Cesarean Section: An Evidence-Based Educational Module-**Kueser, Kathleen**

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APPENDIX E: RECRUITMENT LETTER

FIU Department of Nurse Anesthesiology

Nicole Wertheim College of Nursing & Health Sciences

"Implementation of a Formal Preceptor Teaching Tool in the Clincial Settng to Promote a Learner-Centered Environment"

Dear Miami Beach Anesthesiology Associates:

My name is Lyndi Bailey, and I am a student from the Anesthesiology Nursing Program Department of Nurse Anesthesiology at Florida International University. I am writing to invite you to participate in my quality improvement project. The goal of this project is to increase health care providers' awareness on different formal preceptor tools that can be used to increase learning in the clinical setting. You are eligible to take part in this project because you are a part of the Miami Beach Anesthesiology Associates Providers.

If you decide to participate in this project, you will be asked to complete and sign a consent form for participation. Next, you will complete a pre-test questionnaire, which is expected to take approximately 5 minutes. You will then be asked to view an approximately 10 minutes long educational presentation online. After going through the educational module, you will be asked to complete the post-test questionnaire, which is expected to take approximately 5 minutes. No compensation will be provided.

Remember, this is completely voluntary. You can choose to be in the study or not. If you'd like to participate or have any questions about the study, please email or contact me at: Lyndi Bailey, 678-381-9652, or Lbail032@fiu.edu.

Thank you very much.

Sincerely,

Lyndi Bailey

678-381-9652

Lbail032@fiu.edu

APPENDIX F: EDUCATIONAL MODULE

Implementation of a Preceptor Teaching Tool to Enhance Learning in the Clinical Environment

LYNDI BAILEY BSN, RN

YASMINE CAMPBELL DNP, CRNA, APRN, CNE

Learning Goals

From this quality improvement project, you will:

- Discuss adult learning principles, the One Minute Preceptor, and the SNAPPS teaching tool.
- Understand the difference between the One Minute Preceptor and the SNAPPS teaching tool.
- Identify the best teaching tool to enhance RRNA learning in the clinical setting
- Describe how each teaching tool can be used to promote learning and critical thinking skills.

Background

- Preceptorship in the healthcare setting dates back to the 1940's.
- Purpose of preceptorship:
  - augment student learning
  - provide opportunities for hands-on experience
  - allow students to demonstrate competence of job specific skills
  - advance critical thinking
  - build the confidence of the preceptee
- Research has shown a linear relationship between superior preceptorship and enhanced preceptee independence and clinical judgment.

Problem Identification

- CRNAs have minimal exposure to adult learning principles or practical experience in educational theory.
- CRNAs do not receive formal training to precept RRNAs.
- A formal preceptor/preceptee teaching tool is not being used in the clinical setting.
- RRNAs encounter negative clinical experiences that prevent them from learning and growing as clinicians.

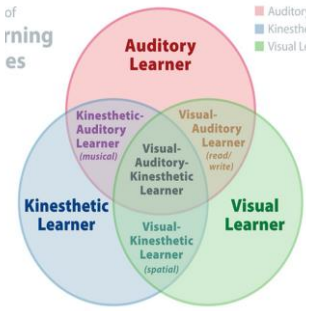
Proposed Intervention

- The implementation of a Preceptor Teaching Tool can be used to enhance RRNA learning in the clinical setting.
- The use of a formal teaching tool by all preceptors can :
  - Decreased teaching discrepancies
  - Stimulate critical thinking skills
  - Foster increased preceptor-to-preceptee communication
  - Endorse active learning
  - Boost student/resident engagement in the decision-making process
  - Encourage preceptor-preceptee feedback

Adult Learning

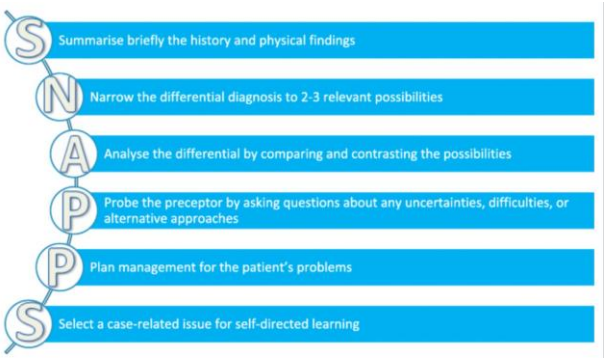
- Three Determinants to Learning:

1) Needs of the learner
   - Knowledge gap between desired performance level and actual performance level
2) State of readiness to learn
   - Preceptee demonstrates interest in learning information to increase clinical knowledge and skills
3) Preferred learning styles for processing information
   - Most adult learners need a combination of learning techniques



SNAPPS

A six-step pneumonic based on a learner-centered model that provides a systematic approach to transition from directed learning in the classroom to self-regulated learning in the clinical environment.



SNAPPS

- The SNAPPS teaching tool is a six-step model that provides residents with a systematic approach to transition from directed learning in the classroom to self-regulated learning in the clinical environment.
- Students were more concise when providing patient summaries and spent more time discussing clinical reasoning related to patient management than their counterparts
- Students were more likely to bring up uncertainties about treating or managing a patient's care
- Students were more likely to ask questions about their uncertainties
- SNAPPS increases:
  - Practical clinical reasoning skills
  - Self-directed learning
  - Clinical learning

One Minute Preceptor

A five microskills model that provides preceptors with a basic teaching framework for the clinical setting.

One Minute Preceptor

- OMP model is a framework that provides efficient and precise preceptorship, which enables learning in limited time due to patient-care demands.
- OMP model shifts teaching points away from generic skills towards disease-specific and patient-specific teaching.
- The use of the OMP by novice educators may increase student learning.
- OMP moderately improves teaching skills, promotes positive teaching behaviors.
- OMP increases:
  - formative feedback to residents from preceptors
  - student/resident engagement in the decision-making process
  - student/resident clinical learning
  - student/resident motivation to do outside self-learning
  - student/resident satisfaction with their preceptors teaching

Teaching Tools Overview

One minute preceptor	SNAPPS
Summarise the case	Summarise the case
Get a commitment 'What do you think is going on?'	Narrow the differential 'What are the diagnostic possibilities here?'
Probe underlying understanding 'What led you to this conclusion?'	Analyse the differential 'Why is this diagnosis likely/unlikely?'
Reinforce what was done well	Probe the teacher 'What question would you like to ask me?'
Teach general rules	Plan management
Correct errors	Select issue for self directed learning

Comparing Teaching Tools

SNAPPS

Student led

Longer

Best used during case presentations

Increases clinical learning

Increases self-directed learning

Students more likely to ask questions

OMP

Preceptor led

Shorter

Best used in limited-time learning environments

Increases clinical learning

Increases self-directed learning

Increase formative feedback by preceptors

Take Home Points

The SNAPPS teaching tool is a six-step model that provides residents with a systematic approach to transition from directed learning in the classroom to self-regulated learning in the clinical environment.

The One Minute Preceptor (OMP) teaching tool consists of five microskills that provide preceptors with a basic teaching framework that is efficient, precise, and cultivates a teaching-to-learn environment in the clinical setting.

Both teaching tools have shown to provide students/residents with an active learning environment, which enhances critical thinking skills, clinical learning, and at home self-directed learning.

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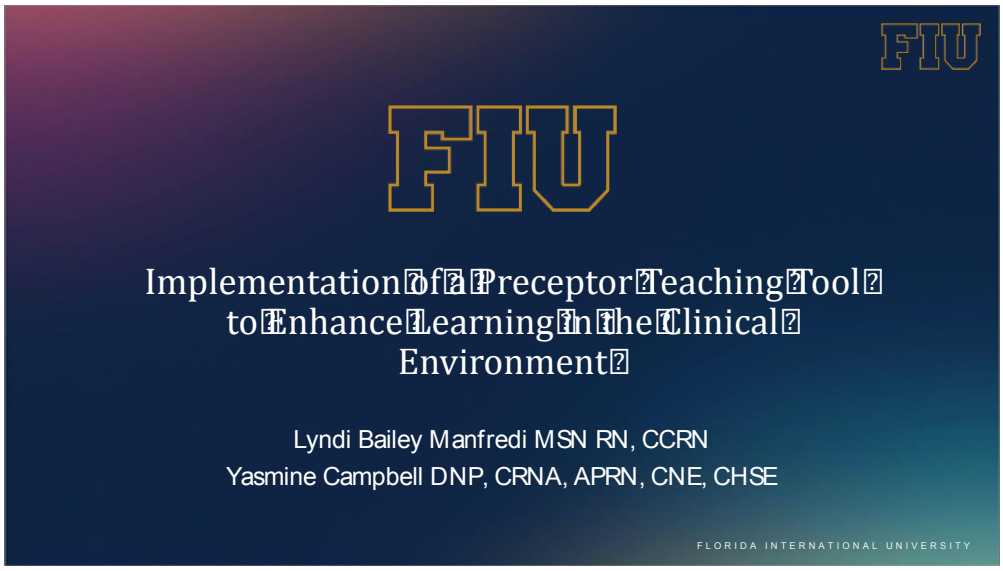
APPENDIX H: DNP SYMPOSIUM POWERPOINT



Background

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  - augment student learning
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  - advance critical thinking
  - build the confidence of the preceptee
- Research has shown a linear relationship between superior preceptorship and enhanced precepteeindependence and clinical judgment.

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- The use of a formal teaching tool by all preceptors can:
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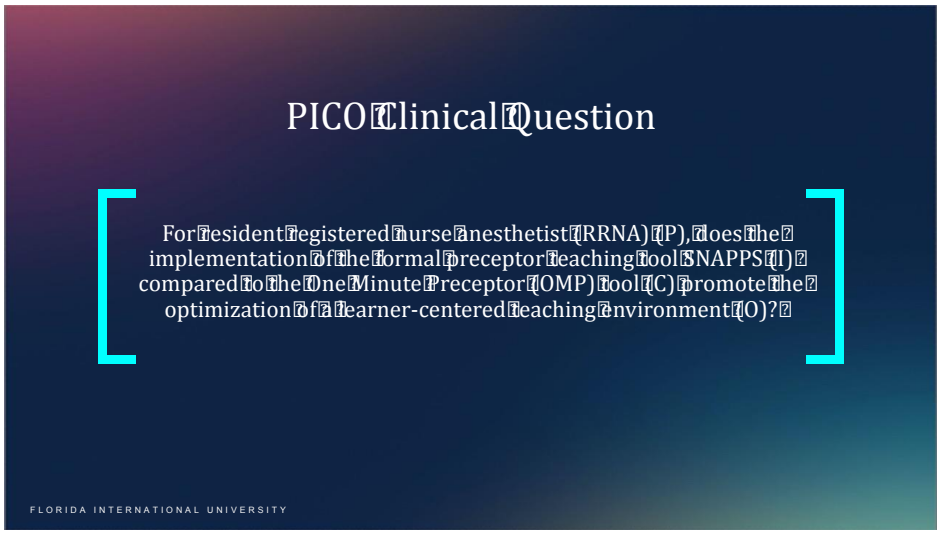
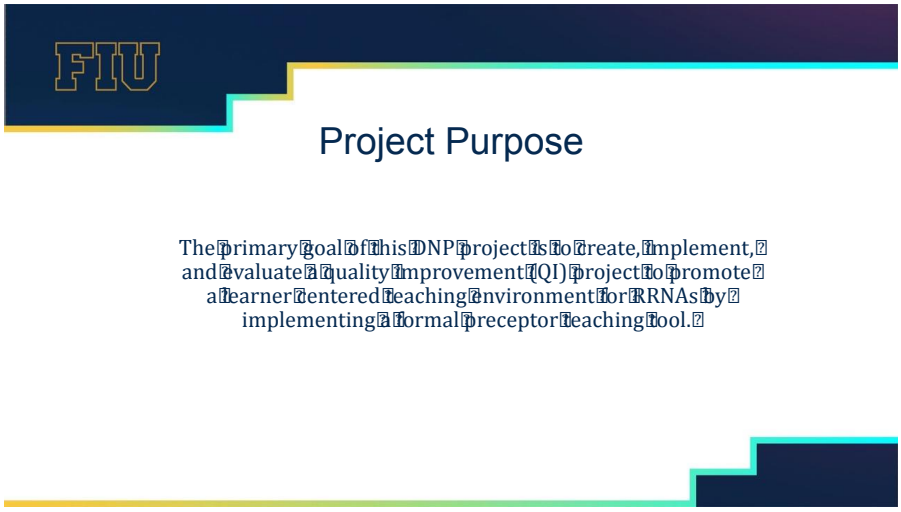

PICOT Clinical Question
For resident registered nurse anesthetist (RRNA) (P), does the implementation of the formal preceptor teaching tool SNAPPS (I) compared to the One Minute Preceptor (OMP) tool (C) promote the optimization of a learner-centered teaching environment (O)?
FLORIDA INTERNATIONAL UNIVERSITY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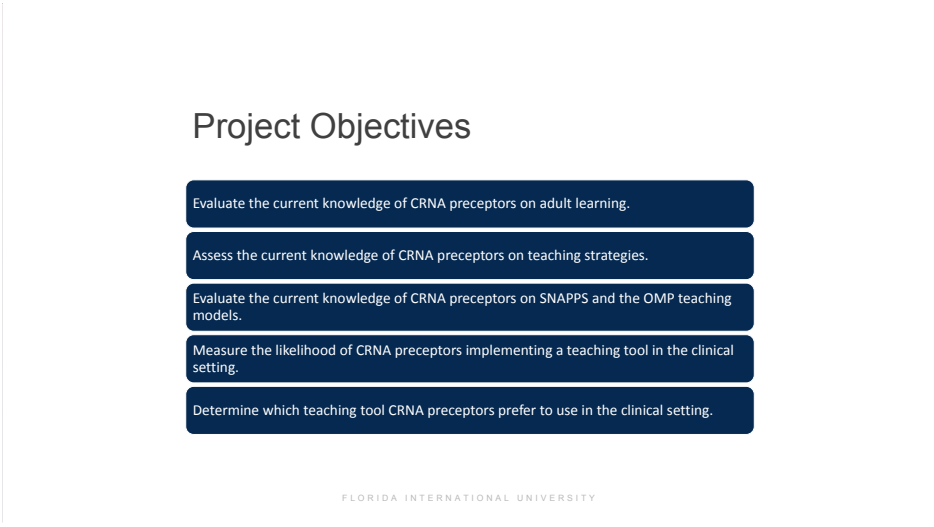
Project Purpose
The primary goal of this DNP project is to create, implement, and evaluate a quality improvement (QI) project to promote a learner centered teaching environment for RRNAs by implementing a formal preceptor teaching tool.


Project Objectives
Evaluate the current knowledge of CRNA preceptors on adult learning.
Assess the current knowledge of CRNA preceptors on teaching strategies.
Evaluate the current knowledge of CRNA preceptors on SNAPPS and the OMP teaching models.
Measure the likelihood of CRNA preceptors implementing a teaching tool in the clinical setting.
Determine which teaching tool CRNA preceptors prefer to use in the clinical setting.
FLORIDA INTERNATIONAL UNIVERSITY

Primary Method

The primary methodology of this quality improvement project was to present an educational module that highlights the benefits of implementing a formal teaching/learning tool in the clinical setting and provide recommendations on ways to promote a learner centered environment.

QI Methods

PHASE ONE:

- Conduct an anonymous online preassessment survey to test participants' knowledge on adult learning, clinical teaching/learning tools, and how preceptors can promote a learner centered environment for RRNAs.

PHASE TWO:

- Provide a virtual educational preceptor training session. During the training session, a video recorded PowerPoint presentation was used to provide participants with important information regarding the utilization of a clinical teaching tool to improve the clinical learning environment for RRNAs.

PHASE THREE:

- Anonymous post-assessment survey to identify the knowledge participants gained from the training session, likelihood of implementing a teaching tool presented, choice of which teaching tool to implement, and how they perceived the material that was presented to them.

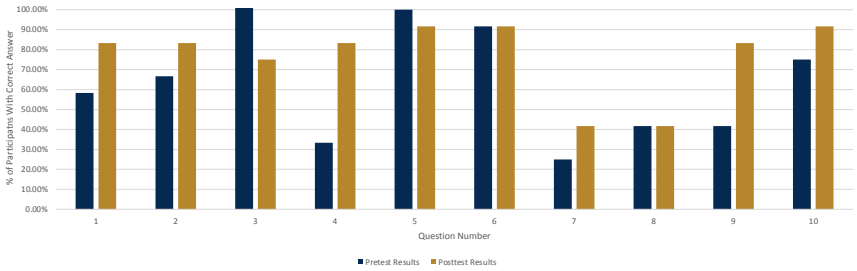
Demographic Results

Table 1

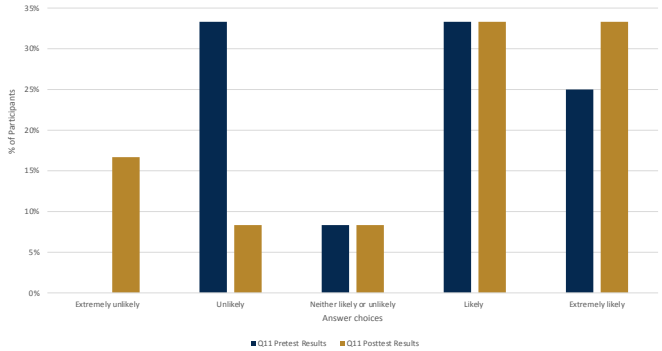
Pre & Posttest Participants' Demographics

Total Number of Participants	12 (33.3%)
Medical Profession	
Anesthesiologist	0 (0%)
Residents	0 (0%)
CRNAs	12 (100%)
Gender	
Male	4 (33.33%)
Female	8 (66.67%)
Ethnicity	
Caucasian	7 (58.33%)
Hispanic	4 (33.33%)
African American	0 (0%)
Asian	0 (0%)
Other	1 (8.33%)
Age	
18-25	0 (0%)
26-40	10 (83.33%)
41-55	2 (16.67%)
56-70	0 (0%)
>70	0 (0%)
Type of Degree	
Certificate	0 (0%)
Bachelors	0 (0%)
Masters	1 (8.33%)
DNP/Doctoral	11 (91.67%)
PhD	0 (0%)
Years of Anesthesia Experience	
1-2 years	8 (66.67%)
3-5 years	2 (16.67%)
6-10 years	0 (0%)
>10 years	2 (16.67%)

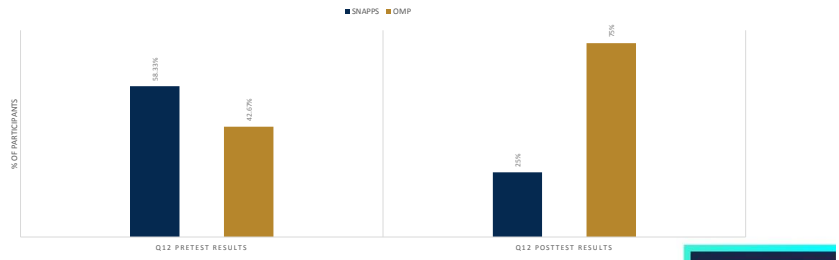
Results on Knowledge Gained



How likely are preceptors to use a teaching tool in the clinical setting?



Which tool would preceptors prefer to use in the clinical setting?



Knowledge Gained Discussion

Out of 10 knowledge-based questions:

7 questions had an increase in correct answers on the post-test compared to the pre-test	2 questions had no change in correct answers on the post-test compared to the pre-test	1 question had a decrease in correct answers on the post-test compared to the pre-test

Hence, the data shows that there was an increase in knowledge by the participants after completing the educational module and PowerPoint presentation.

Discussion

Prior to receiving education on preceptor teaching tools, a majority of participants expressed moderate levels of certainty when asked about their inclination to use such tools, with responses ranging from unlikely to likely.

Following the educational session on preceptor teaching tools, participants exhibited a stronger stance, expressing their level of certainty with greater clarity. A significant number of them reported being either extremely unlikely or extremely likely to utilize a preceptor teaching tool.

Overall, the post-test revealed that 66% of participants are likely to use one of the teaching tools in their practice.

Discussion

- Before being educated about preceptor teaching tools, the prevailing sentiment among participants was in favor of using SNAPPS over the OMP in the clinical setting.
- After attending the educational session on preceptor teaching tools, a substantial 75% of participants expressed a preference for implementing the OMP over SNAPPS in the clinical setting.

Conclusion

The implementation of teaching tools such as OMP or SNAPPS in the clinical setting has the potential to transform the educational experience by fostering a learner-centered teaching environment.

By empowering learners, enhancing critical thinking skills, and promoting active engagement, these tools contribute to the development of competent and confident healthcare professionals who are capable of delivering high-quality patient care.

Thank You!

FIU
Department of Nurse Anesthesiology

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