Spring 5-4-2021

DNP Final Report: TeamSTEPPS for Nursing Students

Jennifer Matranga
University of Texas at Tyler

DNP FINAL REPORT:

TEAMSTEPSS® FOR NURSING STUDENTS

by

JENNIFER MATRANGA

A DNP Final Report submitted in partial fulfillment
of the requirements for the degree of
Doctor of Nursing Practice
School of Nursing

Kathleen Helgesen, RN, DNP, CPNP-PC

University of Texas at Tyler
April 2021

The University of Texas at Tyler
Tyler, Texas

This is to certify that the DNP Project Report of

JENNIFER MATRANGA

has been approved for the final project requirement on

March 26, 2021

for the Doctor of Nursing Practice degree

Approvals:

DocuSigned by:
Kathleen Helgesen
8C8B061E87264A4...
Faculty Mentor: Kathleen Helgesen

DocuSigned by:
9BBB28899E414E4...
Industry Mentor: Dr. Elizabeth Jarvis DNP

DocuSigned by:
Cheryl D. Parker, PhD, RN-BC, CNE
8B0E6EECC4FE4E4...
Committee Member: Cheryl D. Parker, PhD, RN-BC, CNE

DocuSigned by:
DNP
276240E83BDB4E7...
DNP Program Director: Sandra Petersen, DNP, APRN

DocuSigned by:
Jeni Chilton
Executive Director of the School of Nursing: Jennifer Chilton, Ph.D., R.N.

DocuSigned by:
Barbara Haas
5B66005C28BE43A...
Dean, College of Nursing and Health Sciences: Barbara Haas, Ph.D., R.N.

Acknowledgements

To Dr. Kathleen Helgesen, my Faculty Mentor

To Dr. Elizabeth Jarvis, my Industry Mentor

To Dr. Jane Leach and Dr. Mark Smith, my Dean and Provost, and strongest supporters and stakeholders in the project

Dedication

Dedicated to my Mother, Audrey Mulholland, who taught me that with a positive attitude and hard work all things are possible.

Table of Contents

List of Figures

Abstract

DNP FINAL REPORT:
TEAMSTEPSS© FOR NURSING STUDENTS

JENNIFER MATRANGA

DNP Project Team Chair: Kathleen Helgesen, RN, DNP, CPNP-PC

The University of Texas at Tyler
April 2021

The purpose of this paper is to discuss the DNP project, which focused on improving communication skills for associate degree nursing ADNstudents. The background and significance of this problem was identified, a systematic review of the literature was completed, and TeamSTEPPS, based on the body of evidence, was implemented in a clinical immersion setting. The project objectives were to implement communication techniques, using TeamSTEPPS, as recommended from the body of evidence. The anticipated outcomes were that nursing students would have increased confidence in asking questions in the clinical setting, reduced fear of communicating, and improved patient safety. A review of the literature supported the use of TeamSTEPPS for nursing students to improve communication skills (AHRQ, 2018). Failures of communication, including miscommunication during hand-offs, contribute to two of every three of the most serious events reported to The Joint Commission (TJC) sentinel events (Starmer et al., 2014). These findings led to the focus of this author's clinical question: Do

nursing students lack the ability to confidently communicate and ask questions for safe patient care? The project design was a clinical immersion of TeamSTEPPS for fourth-semester nursing students for one clinical semester with pre- and post-survey. Results included student reports of feeling decreased fear in asking questions in the clinical setting after the TeamSTEPPS communication clinical immersion project. Sustainability, limitations, and conclusions were reviewed, and a recommendation was offered to include TeamSTEPPS in the pre-licensure nursing curriculums. DNP impact and encapsulation of experience summary were offered.

Chapter 1 Development of the Clinical Question and Problem Identification

Background and Significance

A regional associate degree nursing ADN program in North Texas asked students every clinical semester if they "feel free from fear to ask questions." The majority of students have historically reported that they did not agree or strongly agree that they felt free from fear to ask questions. This project looked at the background and significance of this problem. It sought to identify if this is a problem nationally, as well as locally. The internal and external evidence was reviewed, along with the formation of a PICOT question to help identify possible solutions. The purpose was to identify what best practice is for improving nursing student communication with clinical faculty and hospital staff to improve patient safety. The Institute of Medicine's 1999 report, *To Err Is Human*, reviewed the number of preventable deaths in hospitals. It concluded that medical errors cause up to 98,000 deaths annually (as cited in Hynes & Stickler, 2014). According to the Agency for Healthcare Research and Quality (AHRQ), healthcare professionals lacked the required teamwork skills necessary for successful, safe patient outcomes (AHRQ, 2018). James (2013) clarified that of the 400,000 patient deaths reported in the United States per year, the majority occur related to preventable team communication errors. This increase has a fiscal impact on facilities but tragic for the patients and families. Because medical errors can be traced to faulty communication or teamwork problems, researchers have examined potential interventions for improvement. AHRQ found that existing team training programs did not include opportunities to practice teamwork strategies, including communication, so they created TeamSTEPPS, an interactive program (Guimond, Sole, & Salas, 2009).

External Evidence

Gropelli and Shanty (2018) found that one-third of nursing students reported thinking that mistakes were held against them. Another third reported fear of asking questions or reporting errors. The majority confirmed they would not report an error. The findings in this study show an opportunity to improve communication skills beginning with the student nurse population.

Baraz et al. (2015) conducted individual interviews of nursing students to identify learning challenges in the clinical setting. Baraz et al. identified unsupportive learning environments related to communication and stressful psychosocial environments. One student was quoted to say, "Due to fear, we prefer not to ask any questions." This clearly demonstrates that students are fearful of communicating concerns or asking questions in the clinical setting (Bara et al., 2015).

Internal Evidence

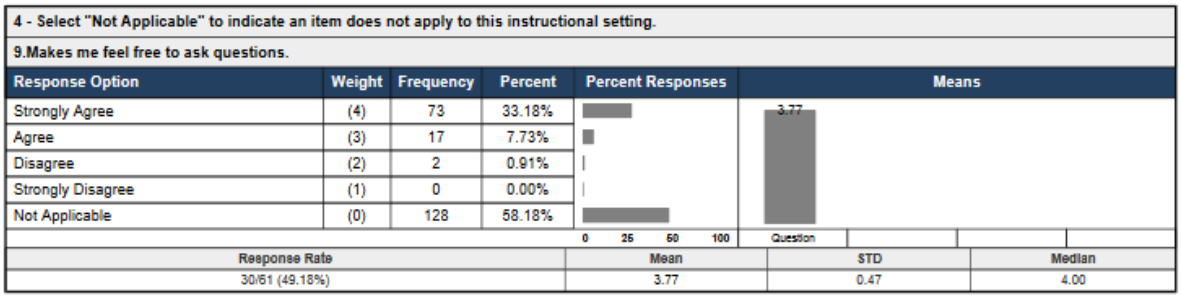
Internal evidence for this project's implementation included student evaluations of clinical experience, facility sites, and clinical professors. Students in their final semester of an ADNprogram in North Texas were surveyed in the fall of 2017. Several questions were asked, (see Figure 1). Almost 60% of the students rated the statement “My clinical instructor makes me feel free to ask questions” as “not applicable”. Only 40.91 % of the students selected “agree” or “strongly agree” that they felt free from fear of asking questions in clinical. If the student fears asking questions in the clinical setting, are they also afraid to answer this survey question honestly? The data collection after 2018 at this school was modified; however, the same question was asked pre- and post-intervention to the nursing students (see Figure A1).

Adding TeamSTEPPS to health profession curricula is a newer development (Goliat et al., 2013). Students entering health professions can be taught the same communication skills

language of the hospital multidisciplinary teams: TeamSTEPPS. When hospital teams fail to work together, errors and adverse events rise. Integration of TeamSTEPPS with team building modules in undergraduate nursing programs should be explored (Goliat et al., 2013).

Figure 1

Sample Response Chart



4 - Select "Not Applicable" to indicate an item does not apply to this instructional setting.

9.Makes me feel free to ask questions.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly Agree	(4)	73	33.18%		3.77
Agree	(3)	17	7.73%		
Disagree	(2)	2	0.91%		
Strongly Disagree	(1)	0	0.00%		
Not Applicable	(0)	128	58.18%		

0 25 50 100 Question

Response Rate	Mean	STD	Median
30/61 (49.18%)	3.77	0.47	4.00

The concept behind TeamSTEPPS came from the airline industry. It was then adapted for healthcare by the Department of Defense's Patient Safety Program in collaboration with the AHRQ (2018). The aviation world and the hospital world are similar: lives are at stake when the team leader and the team have dysfunctional work patterns, and fear of communication occurs (AHRQ, 2018). AHRQ's TeamSTEPPS has a core of tools and strategies, including briefs, huddles, and debriefs. A powerful evidenced-based solution with ready to use materials, TeamSTEPPS improves communication skills and minimizes dollars at risk. Implementing TeamSTEPPS in academia pre-hospital creates healthy communication skills before the students join the hospital team. The students learn the importance of teamwork, team training, and patient safety (Baker, Battles, & King, 2017).

Kirwin, Greenwood, Curry, Nalliah, and DiVall (2017) found that the addition of an interprofessional communication simulation with standardized health care professionals provided pharmacy students the opportunity to develop skills related to team communications. Students felt the activity was valuable and realistic; however, analysis of outcome achievement from the

exercise revealed a need for more exposure to team communication skills. TeamSTEPPS focuses on overcoming the problems that result from not functioning as part of a team and acting only as individuals.

PICOT Question

The logical argument from the background and significance leads to the following question: In the student nurse population, how does training in communication skills in TeamSTEPPS compared to no training in communication skills in TeamSTEPPS affect knowledge for communication skills in the clinical setting in one clinical semester?

Chapter 2 Evidence Synthesis and Models

Systematic Search for Evidence

After an exhaustive search of the literature, several articles were found that endorse the effectiveness of TeamSTEPPS with nursing students. While the systematic reviews in the literature dealt with nurses, not nursing students, there was clear level II and III evidence with students to support implementation with nursing students. The highest level of evidence (LOE) to support this project intervention was Level II and Level III evidence. An exhaustive systematic search was also conducted across three electronic databases: Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, and Cochrane. The systematic search strategy used the same search terms across all three databases, incorporating controlled vocabulary and limited to English and humans. The inclusion criteria used to control results were that the studies had to be published in English, between 2014 and 2019, peer-reviewed and full text available. Studies were included based on students and any healthcare student education where safe communication were reviewed. Exclusion criteria included educational interventions with hospital staff, not students.

The first database search occurred in CINAHL. The outcomes were searched first, with suggested subject terms. Explode box and Major concepts were checked (Appendix B). Student confidence, the first outcome (O1) was first searched. Next, a search of the second (O2), communication was conducted in the same way. Then the interventions search communication, and TeamSTEPPS concluded the search. communication other than TeamSTEPPS interventions were reviewed. The Boolean connector "AND" was utilized (Appendix B).

A rapid abstract review was conducted. Articles were reviewed using inclusion and exclusion criteria using the identified search strategies. This method did yield a manageable search of > 150 articles. Those that did not meet these were discarded (N=144). Furthermore, a hand search was conducted to ensure no other key research was overlooked. Three additional studies were identified using this process. The final yield was nine from all three databases with the three additional studies, with these studies' the rapid critical appraisal began.

Rapid Critical Appraisal

The rapid critical appraisal identified valid, reliable, and applicable evidence to answer the PICOT question. Nine studies were shown to be valid and reliable. The nine studies were placed into an evaluation table. (Appendix A) Comparisons and relationships were identified to make an appropriate recommendation for best practice.

Several articles were found that endorse the effectiveness of the implementation of TeamSTEPPS with nursing students and improved communication skills. The highest level of evidence (LOE) to support adding TeamSTEPPS to the nursing school curriculum is Level II and Level III evidence (see Appendix B). The systematic reviews in the literature dealt with nurses, not students. However, there was clear level II and III evidence with students to support implementation with nursing students.

Discussion/ Evaluation

The studies demonstrated improved teamwork, clinical judgment, leadership skills, situational monitoring, mutual support, and interprofessional collaboration. Three articles were level II randomized controlled studies, and six were level III-controlled trials without randomization. In reviewing the interventions on outcomes (Appendix C), improved communication for safety was evident in eight of the nine studies. Clinical confidence was only

measured in one level III study (Bambini, Washburn, & Perkins, 2009), with improved clinical confidence being demonstrated with TeamSTEPPS. Three studies (Bambini, Washburn, & Perkins, 2009; Maguire et al., 2015; Nash et al., 2018) reported improved self-efficacy. Bambini, et al. (2009) revealed improved communication, confidence and clinical judgment. Goliat et al. (2013) implemented communication intervention with pre- and post-data that revealed improved communication. Jernigan et al. (2016) supports the large-scale implementation of TeamSTEPPS for nursing students secondary to the improved communication measurements. Maguire et al. (2015) revealed that TeamSTEPPS training resulted in improved attitudes toward teamwork. Nash et al. (2018) shows that overall self-efficacy was significantly higher in the cohort that was offered the intervention. Sweigart et al. (2016) revealed that scenarios developed from TeamSTEPPS promote communication skills.

Synthesis

The statistical significance of improved communication is offered in Appendix D, as well as the control and interventions in each study. The study design, sample size, year, and author are included (see Appendix D). The major findings that support adding TeamSTEPPS to the curriculum for nursing students are Jernigan et al. (2016) and Maguire et al. (2015). This supported the large-scale implementation of TeamSTEPPS for nursing students secondary to the improved communication measurements and revealed that TeamSTEPPS training resulted in improved attitudes toward teamwork (see Appendix E). (Bambini, Washburn, & Perkins, 2009; Maguire et al., 2015; Nash et al., 2018) reported improved communication with TeamSTEPPS implementation (see Appendix E).

Sweigart et al. (2016) demonstrated a virtual approach to teaching TeamSTEPPS. Significant attitude changes were evident in leadership, situation monitoring, and communication

($p<.05$). Using a pre- and post-test design, 109 health care professional students from two schools were measured with the Teamwork attitudes questionnaire (Sweigart, 2016).

Students in six of the nine studies took pre- and post-project surveys, measuring safe team communication before and after the implementation of TeamSTEPPS. Goliat et al. (2013), Jerrigan et al. (2016), Maguire et al. (2015), and Sweigart et al. (2016) all utilized the T-TAQ survey from TeamSTEPPS for their pre- and post-survey data measurements. The T-TAQ is used in facilities to assess current teamwork cooperation with health care teams that have worked together for some time. The 30-item T-TAQ is utilized to measure participants' attitudes toward the core components of teamwork in healthcare. Bambini et al. (2009) created a pre- and post-test for students.

None of the articles discussed any challenges with using the Teamwork Attitudes questionnaire, which was created for already functioning healthcare teams. Questions such as "My unit makes efficient use of resources" and "Skills of staff overlap so that work can be shared" could be considered challenging for a group of students that were meeting for the first time and had no experience working on a healthcare team. Adding "I am prepared to be part of a unit that makes efficient use of resources" and "I am prepared to be part of a team where skills of staff overlap so that work can be shared," is a possible solution for using the Teamwork attitudes questionnaire with students. "I am part of a team where the staff is held accountable for their actions" is another question on the Teamwork attitudes questionnaire. Students could be questioned, "I am prepared to be part of a team where staff are held accountable for their actions." Further consideration for the use of the tool with students is warranted.

Recommendations

TeamSTEPPS implementation assists with empowering nursing students to overcome fears to ask questions in the clinical setting. Failures of communication, including miscommunication during hand-offs, contributed to two-thirds of sentinel events reported to TJC (Starmer et al., 2014). Some progress has been made but overall rates of errors remain high. In reviewing the interventions on outcomes (see Appendix C). The nine studies also revealed evidence of improvement in teamwork, clinical judgment, leadership skills, situational monitoring, mutual support, and interprofessional collaboration. Bambini et al. (2009) revealed improved communication, confidence, and clinical judgment. Goliat et al. (2013) implemented communication intervention with pre- and post-data that revealed improved communication. Jernigan et al. (2016) supported the large-scale implementation of TeamSTEPPS for Nursing Student secondary to the improved communication measurements. Maguire et al. (2015) revealed TeamSTEPPS training resulted in improved attitudes toward teamwork. Nash et al. (2018) showed overall self-efficacy was significantly higher in Cohort 1 that was offered the intervention. Sweigart et al. (2016) revealed scenarios developed from TeamSTEPPS promoted communication skills.

These findings led to the focus of this author's clinical question: Does the intervention of offering TeamSTEPPS training in communication improve the confidence and communication skills in nursing students? This author reviewed the anecdotal improvement of the areas of teamwork, clinical judgment, leadership skills, situational monitoring, mutual support, and interprofessional collaboration, as well. The nine studies offered statistical significance or a $p < 0.05$ in all instances, the statistical significance of improved communication is shown in

Appendix D. The study design, sample size, year and author are also shown in Appendix D. The major findings that support the PICOT are listed in the eighth and final column of Appendix E.

TeamSTEPPS was recommended to promote high-quality and safe care for patients. To examine the effectiveness of a team building and communication skills on the attitudes of semester 4 nursing students enrolled in a clinical immersion the recommendation was to use TeamSTEPPS for nursing students. Based on the evaluation, synthesis tables, and LOE, THE Clinical immersion of TeamSTEPPS was recommended to be implemented. The TeamSTEPPS questionnaire was administered, pre-and post-intervention, to evaluate the effectiveness of the instructional program and measured student attitudes toward (a) team structure, (b) leadership, (c) situation monitoring, (d) mutual support, and (e) communication. There is clear evidence that integration of TeamSTEPPS team building modules in undergraduate nursing programs should be implemented via clinical immersion.

Chapter 3 Project Design and Methodology

Fully Operationalized Plan

The plan for this evidence-based project was the implementation of TeamSTEPPS into pre-hospital nursing student clinical education to improve communication for safe patient care. The goal for this project was to implement TeamSTEPPS. The expectation was to improve communication between students and nursing staff and faculty. This project, *TeamSTEPPS for Nursing Students* to promote safe patient care, was scheduled for a face-to-face implementation in Spring 2020 at an associate degree nursing program in the Dallas-Fort Worth metroplex. The project was moved to a virtual implementation in Summer 2020, after the COVID-19 pandemic disrupted the Spring 2020 classes.

The logistics of the project implementation included a discussion of the setting, process, population, culture, and stakeholders. Discussion included barriers, facilitators, and student inclusion data management. A budget was planned for this project including budget justification, return on investment, and progress markers.

This was implemented at an ADN program in North Texas located north and northeast of Dallas. In 2019, more than 55,000 credit and continuing education students sought educational opportunities at this college. The associate degree program is accredited by Accreditation Commission for Education in Nursing (ACEN), formerly known as National League for Nursing Accrediting.

The ADN nursing students in their first semester were to have training in TeamSTEPPS offered by the clinical coordinator/ director of the nursing program. This was modified post

Covid-19 to the fourth-semester nursing students for summer 2020. The ten clinical faculty also reviewed the TeamSTEPPS training for sustainability. Pre-conference and post-conference weekly activities were planned for implementation. The students took pre- and post-project surveys measuring safe team communication before and after the implementation of TeamSTEPPS. Goliat et al. (2013), Jerrigan et al. (2016), Maguire et al. (2015), and Sweigart et al. (2016) all utilized T-TAQ survey from TeamSTEPPS for their pre- and post-survey data measurements. The 30-item T-TAQ was utilized to measure participants' attitudes toward the core components of teamwork in healthcare. Bambini et al. (2009) created a pre- and post-survey for students.

Discussion of Current Process

The current process for all levels in the clinical setting offers academic freedom for pre- and post-conference topics determined by each clinical instructor. The regional ADN program in North Texas has full-time faculty and adjunct faculty as instructors in the clinical setting. Often instructors seek new ideas for pre- and post-conference review; therefore, it was anticipated that this project would be received positively. Every semester there is a mandatory morning orientation for clinical faculty at each facility. After the orientation 40 instructors attend a lunch meeting. Save the dates are sent, agenda created, and Robert's Rules of Order are followed. This is the college's opportunity to update these instructors on any new requirements. The instructors can bring forward any questions or concerns.

Evidenced-Based Practice Model

The evidenced-based model Advancing Research and Clinical Practice Through Close Collaboration (ARCC) is focused on a system-wide implementation and sustainability of EBP. This model aligns with this project as the purpose of ARCC is to provide an organizational

framework to implement EBP. Without an organizational framework that recognizes the importance of EBP, reviewing the evidence with staff would be less effective (Melnyk & Fineout-Overholt, 2019). The original ARRC model conceptualized in 1999 by Melnyk offered an approach to unify research and clinical practice to advance EBP. The goal of the ARCC model is to improve healthcare quality and patient outcomes (Melnyk & Fineout-Overholt, 2019). Dr. Fineout-Overholt surveyed healthcare personnel regarding the barriers and facilitators of EBP. The results of that survey along with the control and behavioral theory offered an update to the ARCC model. For the last two decades, Melnyk and Fineout-Overholt have further developed the ARCC model (Figure 1) through empirical testing, key relationships, and extensive work (Melnyk & Fineout-Overholt, 2019).

In this project, the EBP mentors, the clinical instructors guided by the clinical coordinator/ director, were the trainers in communication skills TeamSTEPPS. All players must adopt the EBP paradigm for system-wide implementation to be achieved and successful. The TeamSTEPPS communication training is built upon the student's Professional Nursing course where they learn Situation, Background, Assessment, Recommendation (SBAR) communication.

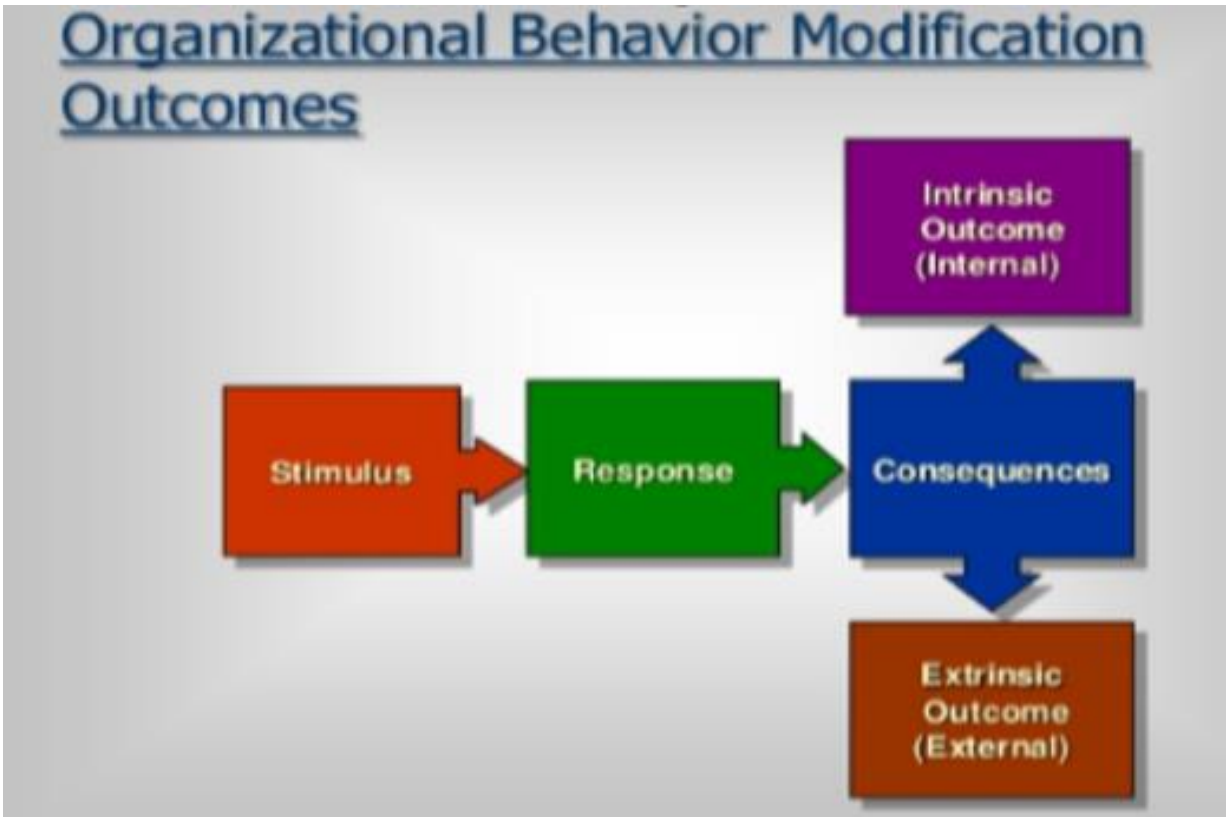
According to the AHRQ (2018), healthcare professionals lack the required teamwork skills necessary for successful safe patient outcomes. Implementing the EBP of TeamSTEPPS communication for safety was preceded by a survey to assess current knowledge and followed by a post-survey to assess outcomes of the intervention. Understanding the importance of the evidence that shows failures of communication, contribute to two of every three of the most serious sentinel events reported to TJC was a powerful motivation for the project's implementation (Starmer et al., 2014). This evidence should startle healthcare personnel into action for improvement (see Appendix G).

Leadership Model

Implementing the Organizational Behavior Modification Model (OBM) (Figure C1) reviews the need to identify performance behaviors, determine the base rate of performance, identify contingencies, select intervention strategies and evaluate them. Behaviors that receive positive reinforcement are repeated. Those that are negative are less likely to be repeated (Luthans, 2008). In this project, the positive reinforcement for promoting change was through identifying and utilizing communication skills. This was reinforced via post-conference reviews and student journaling.

Figure 2

Leadership Model: Organizational Behavior Modification Outcomes

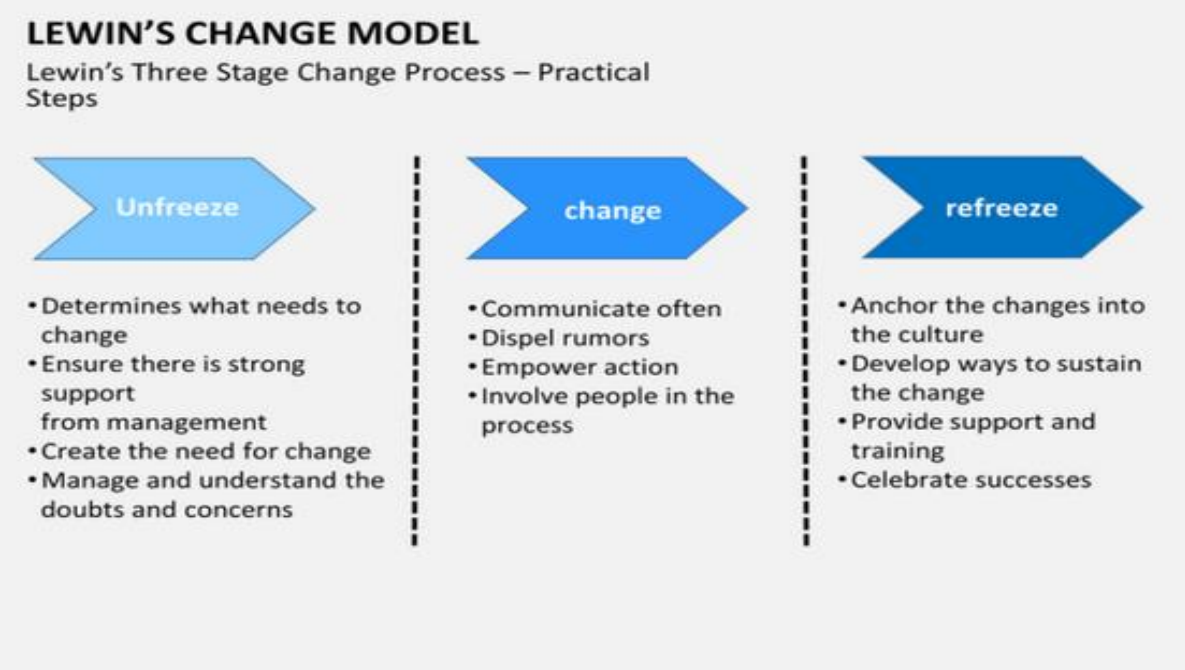


Change Theory Model

Although Lewin's theory has been criticized for being too simplistic, quaintly linear, and framed from a static perspective (Shirey, 2013), it effectively mobilizes the people side of change. Lewin acknowledges that people may freeze and not want to change no matter what the EBP offers. The initial theory dates to the early 20th century. Lewin's has been utilized with great success, especially for planned projects. As humans, we do not like change and need to be purposefully open to changing what we have done in the past. Lewin guides the learner to unfreeze to implement the new EBP. Then we can refreeze with the new knowledge (Shirey, 2013). More recent interpretations of Lewin's review consider that we cannot refreeze, as today's health care change is rapid, complex, and unpredictable (Figure 3).

Figure 3

Lewin's Change Theory



This model offered the best plan for the implementation and evaluation of the outcomes for TeamSTEPPS for Nursing Students to have sustainability. The Logic model organized the

project into systems and actualizes the planning. Distinctions are identified by the comparisons made (see Appendix H). Relationships between the processes and people factor in Lewin's theory prompts understanding the urge to keep the status quo. EBP promotes breaking the status quo. Positive reinforcement of the OBM leadership promotes the change. These all combined to implement the new process effectively.

Stakeholders and roles were identified in the Logic model and integrated with the models to consider each perspective. Students were trained in communication skills using TeamSTEPPS. Students learned the 'repeat back' method of TeamSTEPPS, observed this in action, and then practiced it themselves. They followed this with a post-conference discussion on using this method and a journal entry. In the post-conference, the student's observation or use of communication skills was discussed. The professor's guidance and peer review took place in the discussion. This allowed change as the student may have needed to unfreeze from comfortable communication to communication skills and refreeze when the Leadership Model encourages positive reinforcement. The ARCC EBP, as a systems approach, moves the organization toward EBP culture, enhances the healthcare team's beliefs, and is a powerful change agent. The OBM and Lewin's Change theory worked well with the Logic Model for the project TeamSTEPPS.

A quality improvement educational project to empower the student nurse in communication skills from TeamSTEPPS was implemented in Summer 2020. The clinical coordinator/ project leader attended, co-presented, and assisted in running the post-conference with adjunct clinical faculty. During hospital visits in post-conference, 10 adjunct clinical faculty reviewed the journal and discussion related to observations of safe and unsafe communications. This one-hour post-conference review is typical at the end of the clinical day. One-page handouts, case study, and communication skills TeamSTEPPS reminders for 67 students were

added to the canvas shell to be printed at the ADNprogram in North Texas. The clinical coordinator/director/ project leader conducted a one-hour long TeamSTEPPS training virtual option for a flipped classroom and clinical faculty post-conference. The hospital educator assisted the instructors to secure a conference room for post-conference offerings. Where ‘real estate’ or conference rooms in hospitals are rare, the instructor may allow the group to go home at 5 PM and join a 6 PM Zoom session for a post-conference. Objectives included increased knowledge of communication skills in TeamSTEPPS training. Reviewing journals and post-conference discussions examples of positive, negative, and communication skills for safe patient care in one semester for the fourth semester, ADN students proved successful. Increased knowledge in TeamSTEPPS by offering a training voice-over for the clinical faculty in collaboration with the student training was accomplished. That training reviewed how to implement pre- and post-conferences in one clinical semester. Improved internal surveys related to questions post-project: Are you in fear of asking questions in the clinical setting?

Distinctions System Thinking Relationships Perspectives

The EBP model enhanced the implementation of EBP to move the project forward as ARCC is a systems approach. Implementation of the ARCC Model of enhancing the healthcare team's beliefs was beneficial with this Logic model for the TeamSTEPPS project. Improved patient outcomes for safety is a perspective to be encouraged. When the evidence alone does not move the change, understanding people, using Lewin's Change theory, and a positive leadership model can encourage evidence-based practices. OBM Leadership model identified performance behaviors, determined the base rate of performance, identified contingencies for select intervention strategies and evaluation. Organizing the thinking into systems the models helped

actualize this project's planning. OBM provided positive feedback for the recognition of communication skills (see Appendix J).

Logic Model

The Logic model considers specific assumptions and external factors inputs and outcomes with Specific, Measurable, Achievable, Relevant, and Time-Bound (SMART) goals and how the project was organized into systems. Relationships were highlighted in the Logic model with stakeholders and project roles. There was an ethical consideration to this model, ensuring relationships with positive and negative reinforcement were maintained. The perspective is that we all respond best to positive reinforcement (see Appendix D).

Discussion of the Culture

Relationship building is critical for communication skills. The collaboration that addresses the challenges in population health must be sustainable (Benjamin, 2016). Adding a cultural perspective to learning and training was planned for this project training in TeamSTEPPS for nursing students.

In searching for diversity and cultural considerations in scholarly works and TeamSTEPPS, minimal information is available. Changing the hospital culture for safety is critical in TeamSTEPPS Training (Clapper, 2014). The TeamSTEPPS trainer must have knowledge of the culture and understanding of the community as well as their own culture as it is essential to building trust (Clapper, 2014). Reviewing the evidence for this project implementing TeamSTEPPS for nursing students shows that cultural diversity was not reviewed. The question will explore the student's perceptions of cultural differences creating unsafe situations. Future research could seek to question, "Have they ever been in fear of asking a question for safety related to a cultural question or concern?"

Health care professionals caring for patients considering cultural communication barriers and issues work to prevent mistakes related to language barriers. Patients with poor language skills or no English language skills in an English-speaking hospital are at risk for safety concerns. Taylor and Maguire (2013) identified five main themes about barriers in accessing health care: language, low literacy, lack of understanding, attitudes, gender attitudes, health beliefs, and retention of information. Communication that ensures safe care, accurate diagnosis, and health promotion needs effective communication (Johnson, 2004). Video interpretation services are now available in most facilities. Asking the patient to repeat back what was translated is essential as the interpreter may need to use a different dialect or find another translator if the patient cannot repeat back the education offered. The patient must know they have the right to ask for professional interpreters (Taylor & Maguire, 2013).

For example, eye contact suggests a positive perception of approachability in Western culture. In Asian countries, Japanese individuals offer less eye contact than Western European or North American cultures. When eye contact is made, it is interpreted as angry or unapproachable, emphasizing the importance of communication skills for safe patient outcomes. In TeamSTEPPS, training for communication skills included cultural considerations.

When considering the implementation of this project, a difference in cultural communications and cultural aspects were considered. Teamwork and patient safety are critical in situations. Barriers for male/female communication and interactions could create a significant barrier to the successful TEAMSTEPPS implementation on the satisfaction in helping the job mitigation from fatigue and save lives (see Figure 4).

Figure 4

TeamSTEPPS Tools/Strategies

Chapter 4 Project Implementation, Outcomes, Impact, and Results

Process Indicators/ Milestones

All nursing students in the 4th semester in Summer 2020 fit the inclusion criteria. This project indirectly affected patient outcomes with improved student nurse empowerment, soon to be a novice nurse gaining confidence to speak up for patient safety. Student inclusion was set as this was offered within the realm of professional practice and their nursing program's clinical syllabus. DNP projects affect patients and patient outcomes, directly or indirectly.

Barriers and Facilitators

Considering barriers and facilitators was essential to the project. Multi-faceted considerations included the benefit of having one project leader, the author of this project, to maintain consistencies, passion, and push for the project's sustainability. Having only one project training could lead to offering all training, and passion for sustainability was also a potential barrier. This was a strength but could be a potential barrier in replicated projects to have only one trainer, remains a potential sustainability issue. The stakeholder's support was available to address barriers. A second consideration related to barriers and facilitators was the large group of clinical instructors that may have embraced or rejected the goals of the project for implementation and outcomes. Academic freedom is a benefit in this project as it can be implemented to improve and offer additional pre- and post-conference clinical discussion brief and debrief topics. However, academic freedom in this case and this project could have potentially impeded the implementation if faculty choose not to offer the pre- and post-conference discussions after the initial training. The implementation by the clinical faculty in

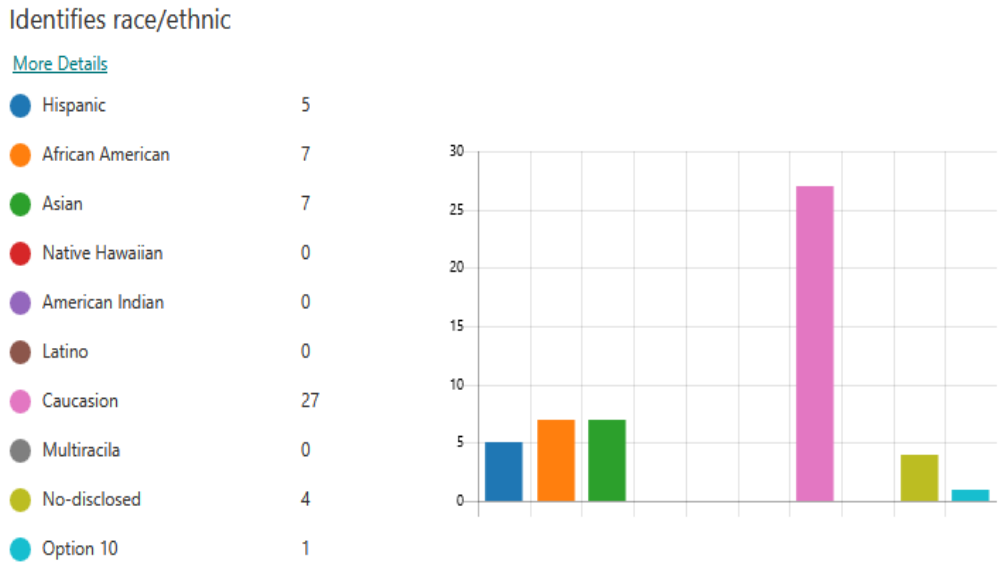
varying degrees was assessed by the Likert questions in the post-survey. Asking if the student experienced pre- and post-conference discussions related to the TeamSTEPPS training helped identify and assess post-survey results and data.

Population

The population applicable to this project was all 4th-semester nursing students at the ADN program in North Texas in the Summer 2020 semester. A detailed discussion of the population has been offered from the project's survey. See Figure 5 for student identification with race, ethnicity, or not disclosed.

Figure 5

Population Race/Ethnicity

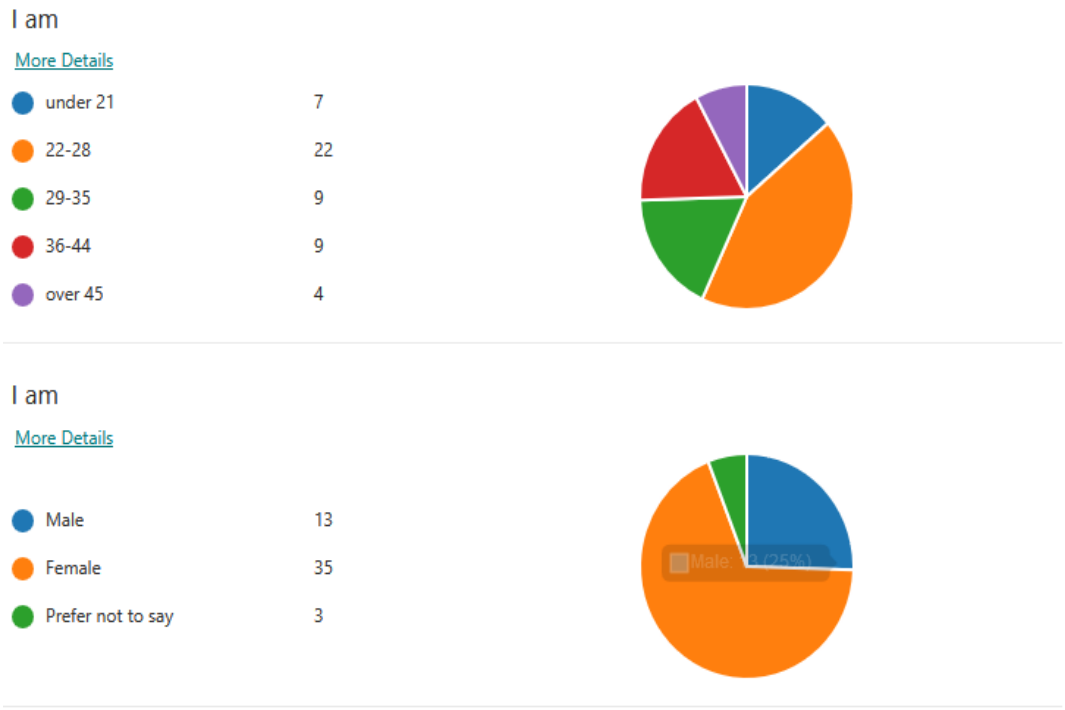


The pre- and post-survey Likert scale was utilized in this project to assess if goals and outcomes were met for student's confidence in offering safety for patients were implemented. In addition to assessing data on TeamSTEPPS and safe clinical practices, the pre-survey asked culturally based questions to obtain data for future implementation. This information is offered

and assessed. Of the 51 respondents to the post-evaluation data collection survey, 29 (57%) reported they were under 29, and 22 or over were 29 (43%) years old. Seven of the students were under 21, and four were over 45. Of the 51 students responding to this post section of the surveys, 35 (67%) were female, 13 (25%) were male, and others preferred not to say (Figure 6).

Figure 6

Population Age/Gender



Financial Impact

Change costs money. This project was implemented under a clinical coordinator. The Director's current role, the budget is null for the current implementation. For sustainability and future success, reassessment of the budget is recommended (see Figure 7). Annual costs were itemized including training, data collection, and delivery of the education to the instructors and students. $26,400 was estimated for the project to be replicated.

Figure 7

Budget Report

Annual Costs

Item	Projected Cost/Unit	Number of units needed	Cost/Year	Cost center	Approval Needed
TeamSTEPPS training prep	Project leader $100 /hour	60 hours training	$6000 x Two semesters $12,000	Clinical Coordinator	Dean of Nursing
Data Collection	Project leader $100 /hour	20 hours per month	$2000 x Two semesters $4000	Clinical Coordinator	Dean of Nursing
Data Analysis	Project leader $100 /hour	20 hours per month	$2000 x Two semesters $4000	Clinical Coordinator	Dean of Nursing
First-year startup costs				Clinical Coordinator	Dean of Nursing
TeamSTEPPS training	Project lead $100 /hour	20 Hours prep	$2000 x Two semesters $4000	Clinical Coordinator	Dean of Nursing
Education delivery to Clinical faculty	Project lead $100 /hour 10 Adjunct faculty $50/hour	1 hour per semester	$500 $600 x Two semesters $1200	Clinical Coordinator	Dean of Nursing
Educational delivery to Student nurses	Project lead $100 /hour	6 hours training	$600 per semester $600 Two semesters $1200	Clinical Coordinator	Dean of Nursing
					----------
					Total $26,400

For this project, the leader was the clinical coordinator/director and incorporated this into the role. It was itemized for sustainability and accurate considerations for duplicating the project. The Gantt Chart (Appendix I) was a way to illustrate the project schedule and proved very valuable when the pandemic caused the need to delay Spring to Summer project start dates.

When considering this project's implementation, a difference in cultural communications and cultural aspects was considered. Teamwork and patient safety in any culture that has barriers for male-female communication and interaction could create a significant barrier to the success of the TeamSTEPPS implementation. Data is offered on the ADN program in North Texas College's general enrollment. The project pre- and post-survey will offer more detailed and

specific trends. Understanding one's community is essential for developing and sustaining partnerships. Global health, population health, and public/community health are differentiated and compared to assess how the environmental conditions, e.g., poverty, housing, access to care) affect the health status of individuals and groups (Curley, 2016).

Stakeholders

Stakeholders and administrators at the ADN program in North Texas were approached, meetings set up and process completed in order to implement this EBP project. Stakeholders at the ADN program in North Texas have been very supportive of this project. However, the Dean, Provost, and Directors positions changed in the last two years. Through Summer 2018, waiting for a new Dean and Provost to be named, the question of having supportive stakeholders did arise. Then Fall 2018 as a new Dean was hired. The TeamSTEPPS for Nursing Students project was reviewed and the new Dean and Provost have been very supportive. Engaging stakeholders and having the opportunity to review the project's goals required practice with using an elevator speech approach. The leader of the project could potentially offer a lengthy explanation being very passionate about a project but an elevator speech highlighted the main points. With the Dean and Provosts support, the project's implementation was not in question. If that were not the case, this project leader would have needed to work further to build trust and examine the key stakeholders' interests and goals by soliciting input and connecting in a meaningful way with the stakeholders.

Barriers and Facilitators

Considering barriers and facilitators was essential to the project. Multi-faceted considerations included the benefit of having one project leader, the author of this project. The project leader-maintained consistency, passion and pushed for the project's sustainability. Only

one project leader offering all training and having the passion for sustainability was a benefit. Having one responsible for all without the passion for the project could be a barrier for future projects. The stakeholder's support is invaluable to address and minimize barriers. A second consideration related to barriers and facilitators was the large group of clinical instructors that could have potentially embraced or rejected the project's goals for implementation and outcomes. Academic freedom was a benefit in this project as it can be implemented to improve and offer additional pre- and post-conference clinical discussion brief and debrief topics. However, academic freedom is always a consideration when implementing a project as faculty members may choose to or not to offer in this case, pre- and post-conference discussions after the initial training. The Likert questions in a post-survey helped assess implementation by the clinical faculty in varying degrees. Asking if the student experienced pre- and post-conference discussions related to the TeamSTEPPS training helped identify and assess post-survey results and data.

Data Management/ Analysis

A 5-point Likert scale pre- and post-survey offered data for pre- and post-confidence in communication skills. The surveys students completed on their clinical professor and hospital experience were reviewed and considered in the pre- and post-implementation of the intervention. In addition to the Likert scale questions, other narrative ability comments were options and reviewed in the data collection. Data management was monitored for these outcomes. Measurements were tied to outcomes. The doctoral-prepared nurse provides care at an advanced level incorporating knowledge, tools, resources, and the know-how to integrate them into practice. By identifying clinical problems, recognizing patient safety issues composing

clinical questions, and providing clear directions, the DNP conducted an appraisal and synthesis of evidence to successfully bring new knowledge into practice (Curley, 2016).

Evaluation

This author assessed the (T-TAQ) from AHRQ's TeamSTEPPS for health care professionals and assessed clear limitations. The questions centered on the working relationship of an already cohesive group. For nursing students that are just paired together for a clinical semester, the questions did not work unless the additional words, "I am prepared to..." were added. The first example question, "I am part of a team where skills of staff overlap sufficiently so that work can be shared when necessary," was modified to, "I am prepared to be part of a team where skills of staff overlap sufficiently so that work can be shared when necessary." The second example, "I am part of a team where staff within my unit share information that enables timely decision making by the direct patient care team," was modified to, "I am prepared to be part of a team where staff within my unit share information that enables timely decision making by the direct patient care team." A search of the evidence for peer-reviewed articles that used the pre- and post-survey did not mention this limitation.

With this minor modification, the (T-TAQ) pre-and post-intervention were administered to evaluate the effectiveness of the instructional program and measured student attitudes toward a) team structure, b) leadership, c) situation monitoring, d) mutual support, and e) communication. Communication interventions were offered. Pre- and post-data revealed a paired samples *t*-test that demonstrated statistically significant results in all constructs. Further research is recommended, and integration of TeamSTEPPS team-building modules in undergraduate nursing programs should be explored via clinical immersion.

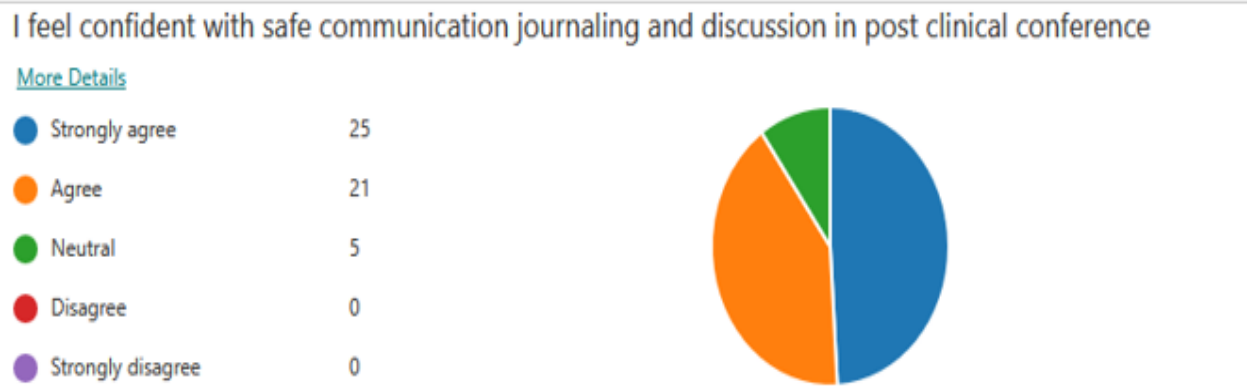
Limitations

The project TeamSTEPPS for nursing students was set to implement during the first semester ADN cohort for a clinical immersion in March 2020. The Covid-19 pandemic placed a temporary hold on the implementation. For the first time, even with strong community partner hospital relationships, this ADN program in North Texas did not have all the historic sites for clinical available as hospitals were shutting down to not only family visitors but also students. A review with faculty and industry mentors and stakeholders for the TeamSTEPPS for Nursing Students Project occurred. A decision was made to put the project on hold. In Summer 2020, a strong clinical partner did allow nursing students back for clinical practice. Many nurses held signs on that first summer day to welcome back nursing students. With Governor Abbott's declaration and the Texas Board of Nursing approval, the AND program had 1/3 face-to-face clinical, 1/3 SIM, and 1/3 virtual learning with the clinical's ATI modules. The journaling survey was modified to question if the student was face-to-face, SIM, or virtual to improve meaning from the journal tool.

A limitation could have existed if one of the 10 clinical instructors did not add TeamSTEPPS discussions to their pre- and post-conference times. The students were asked if they felt confident with safe journaling and discussion in post-conferences. One hundred percent agreed, strongly agreed, or felt neutral. Zero percent responded that they disagreed in any way (See Figure 8).

Figure 8

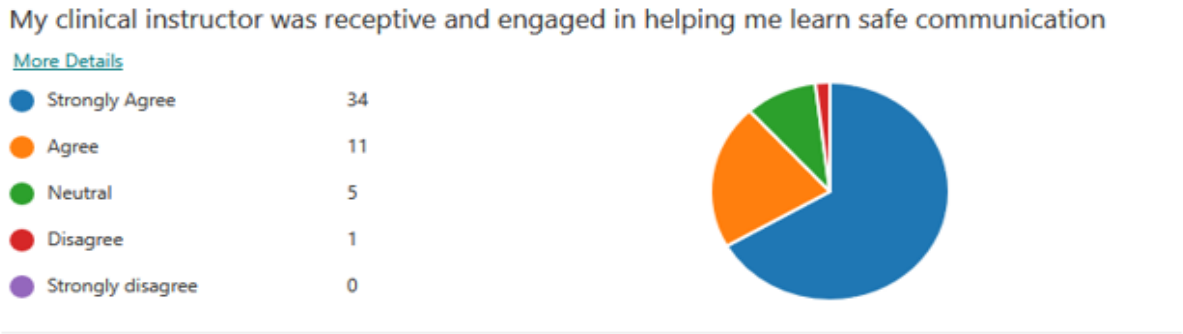
Results of Survey Question on Safe Communication Journal and Discussion



The exit survey also asked, "My clinical instructor was receptive and engaged in helping me learn safe communication." Only one of the 51 respondents disagreed, four were neutral, with 45 students responding in a positive agree or strongly agree on answers (See Figure 9).

Figure 9

Results of Survey Question on Learning Safe Communication



Evaluating the TeamSTEPPS for Nursing Students Project

A presurvey was administered using Microsoft Office Forms. The clinical instructors and students were introduced to TeamSTEPPS for nursing students. In Canvas, announcements and clinical modules were used in the clinical immersion project. A voice-over presentation was created by the Project leader and could easily be reviewed at any time. The project leader also

made appearances during the post-conference review to listen to how TeamSTEPPS was noticed and implemented to improve patient safety.

Ongoing periodic measurements and reviews were scheduled to ensure that the new action of communication skills using TeamSTEPPS was adopted and performed consistently for improved patient safety. Goliat et al. (2013) recommended the use of TeamSTEPPS for nursing students be delivered via clinical emersion course.

Return on Investment (ROI)

In healthcare, improving patient outcomes is an ROI financial or workforce timesaving investment. TOI and patient safety improvement also translate to ROI with diminished legal actions. The Institute of Medicine's 1999 report, To Err, Is Human, reviewed the number of preventable deaths in hospitals. It concluded that medical errors caused up to 98,000 deaths annually (as cited in Hynes & Stickler, 2014). According to the Agency for Healthcare Research and Quality (AHRQ, 2018), healthcare professionals lack the required teamwork skills necessary for successful, safe patient outcomes. James (2013) clarified that of the 400,000 patient deaths reported in the United States per year, the majority that occurred were related to preventable team communication errors. This increase has a fiscal impact on facilities but tragic consequences for the patients and families. Because medical errors can be traced to faulty communication or teamwork problems, researchers have examined potential interventions to improve ROI. AHRQ found that existing team training programs did not include opportunities to practice teamwork strategies, so they created TeamSTEPPS an interactive program (as cited in Guimond, Sole, & Salas, 2009).

Progress Markers

A weekly progress marker helped manage the success of the project. These were different from monitoring outcomes. Instead, these were built-in checks to review the implementation of the project. Failures of communication, including miscommunication during hand-offs, contributed to two of every three of the most severe events were reported to TJC, ‘sentinel events’ (Starmer et al., 2014). Some progress has been made, but overall rates of errors remain high. Research shows that nursing and healthcare students' education in TeamSTEPPS communication can improve students' confidence and communication skills practices for safe patient outcomes.

Implementation Timeline

The initial timeline for the project included a start date of Spring 2020. The training for the student population and the debriefing to engage the faculty were prepared. This educational format was constructed by reviewing the evidence tallied from the systematic search. Implementing the current and most productive TeamSTEPPS education offered to nursing students with data revealed the success of the implementation. The project was reviewed at a Zoom meeting after the first day of orientation. Each of the clinical faculty met their students. Tours and orientation to the student to the facility provided clinical experience. This was an opportunity to update 40 clinical faculty members on new information. During the pandemic, the project had to be delayed as the March start was not possible. The 4th summer semester cohort was back in the hospitals with excellent community partners. The meeting was included in the explanation of the TeamSTEPPS information offered and the pre- and post-conference recommendations. According to the Agency for Healthcare Research and Quality (AHRQ, 2018), healthcare professionals lack the required teamwork skills necessary for successful, safe

patient outcomes. Findings from the research indicated that when nursing students heard this evidence and understood the value of EBP, their ability to implement a new process was strong. Implementing the EBP of TeamSTEPPS communication for safety was preceded by a survey to assess current knowledge and followed by a post-survey to assess the intervention outcomes.

Journaling Narratives

Much rich information was obtained in the journaling exercises during the project clinical immersion in the summer semester. The answers to this question; "I can understand how TeamSTEPPS can help me as a student feel empowered and not feel fear to ask questions for patient safety. Describe any examples here…, " included, "By giving me the tools I need to communicate in unfamiliar situations." “It helps to know that there are individuals I can make contact with that will have a different area of expertise and therefore can contribute to positive patient outcomes.” “I feel nervous about providing complete information. Having a guide for providing concise information is useful in structuring my communication.” “I can feel empowered knowing I'm speaking out for patient safety.” “TeamSTEPPS helps provide information about the patient in a way that highlights important information and allows for me to ask questions expanding on this information without fear.” “My asking clarifying questions during ISBAR hand-offs could be illuminating for veteran nurses if something is missed.” “If there is a question regarding medications for patient safety, I will not be afraid to ask.” “Using the I am safe for my first day back at clinical. I used this to ensure my safety with the COVID pandemic. Making sure that I was safe, taking my breaks, drinking water, and going to the bathroom. It also made sure that I was not getting fatigued which may have caused a lack in patient care or making a mistake.” “Using CUS words (concerned, uncomfortable, safety issue) if I find myself in a situation that is beyond my current skill level.” “By using SBAR and proper

communication techniques, you can affirm and pass along knowledge you already know to another team member, as well as reaffirm successful communication has occurred by using repeat back methods." "Having a guide such as TeamSTEPPS helps provide ways to properly communicate patient concerns and helps me feel more empowered when asking questions. If I did not have a 'road map' to follow, I believe I would feel more lost in how to properly communicate patient concerns with other members of the healthcare team."

Another valuable journaling question was, "I was able to offer safe communication today by; "Discussing the events of the case study patient with my professor and getting clarification on topics I lacked understanding on." "Using SBAR and repeat back communication." "I witnessed ISBAR communication with bedside hand-off reports at shift change and practiced ISBAR in the clinical post-conference when describing my patient." "Using check back with my nurse to verify tasks assigned to me (vital signs, gathering supplies and equipment, etc.)" "Asking clarifying questions." "One thing that stuck out to me was a safe communication technique by my nurse. Once she noted that two additional orders for the same medication the patient was taking were added to the MAR, the nurse took the time to call the HCP and use the check-back technique to ensure she was giving the correct amount of potassium."

The journaling question, "I observed a situation where TeamSTEPPS communication would have been beneficial," offered interesting critical thinking responses from the nursing students." TeamSTEPPS would have been beneficial during the ED nurse's hand-off report to the floor nurse. The ED nurse did not adhere to the TeamSTEPPS model for hand-off, or even the SBAR model. The hand-off was missing pertinent information such as most recent V/S, baseline affect/mood, recent medication administration, medications due after transfer." "I PASS THE BATON could've been used more effectively during report hand-off from the night shift nurse to

day shift." "A nurse went to lunch and didn't communicate to the other nurses on the hall that she was leaving or what the status of her patients were." "The professor relayed a scenario from 30 years ago before there was a culture change in hospitals. In his scenario, no one would acknowledge when providers would make a mistake. That complete lack of accountability for providers was dangerous for patients. The culture now, of anyone being able to stop a procedure that makes them uncomfortable is the best practice for safety." For additional rich narrative see Figure 10.

Figure 10

Journaling Examples

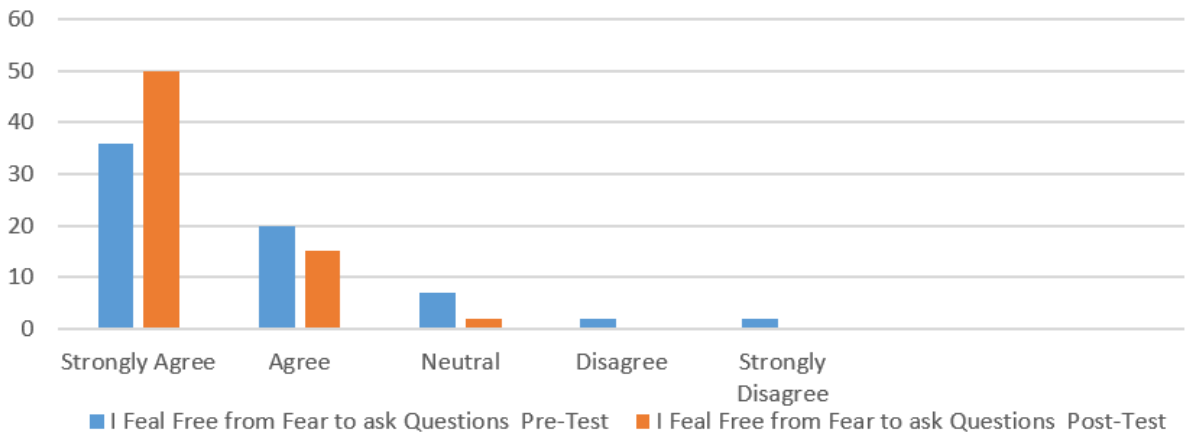
10. I can understand how TeamSTEPPS can help me as a student feel empowered and not feel fear to ask questions for patient safety. Describe any examples here. . .

ID ↑	Name	Responses
1	anonymous	It helps to know that there are individuals I can make contact with that will have a different area of expertise and therefore can contribute to positive patient outcomes.
2	anonymous	N/A
3	anonymous	I feel nervous about providing complete information. Having a guide for providing concise information is useful in structuring my communication.
4	anonymous	I can be able to relay information to other team members and interdiscplinary teams to ensure good patient care and continuation of care
5	anonymous	Ask how to operate hospital machinery that are unfamiliar to me.
6	anonymous	I can feel empowered knowing I'm speaking out for patient safety
7	anonymous	We weren't in clinical so we didn't have to ask questions that would make us feel not-empowered, but I see how it helps go into a conversation with enough information to look smart.

The pre-survey from 2017 that provided internal evidence revealed only 41% of the students could reply that they agreed or strongly agreed that they felt free to ask questions in the clinical setting (see Figure A1). Statistically significant differences were found with the participants' answer to," I feel free from fear of asking questions in clinical," (P-value of 0.002). The pre-questionnaire given to the Summer 4th semester students revealed of 67 respondents 56 (83.58%) answered they agreed or strongly agreed that they feel free from fear to ask questions in the clinical setting (see Figure 11). In the post-questionnaire of 26 respondents, 25 or 96% answered they agreed or strongly agreed that they felt free from fear to ask questions in the clinical setting. In the post-survey, one student answered neutral and zero responses for disagree or strongly disagree. This calculates to a *p*-value of 0.002. The significance level is 99.82%. The move from 83% in the pre-question to 96% responding agree or strongly agree in the post questions is statistically significant.

Figure 11

Free from Fear



Outcome

TeamSTEPPS provides safe patient care. When the training is successfully implemented, highly effective teams use communication, information, people, and resources for positive patient outcomes. Sustainability is considered in the Team STEPPS approach (AHRQ, 2018). Maguire, Bremner, Bennett, and VanBrackle (2015) evaluated the effectiveness of TeamSTEPPS in undergraduate nursing students in improving teamwork. They found that TeamSTEPPS woven into the undergraduate-nursing curriculum improves teamwork over time. Their recommendation was for TeamSTEPPS to be intentionally integrated into all undergraduate nursing curricula (Maguire et al., 2015).

Chapter 5 Project Sustainability, Conclusions, and Recommendations

Sustainability

Adding TeamSTEPPS to the curriculum is recommended for sustainability. Topics for continuing education are offered to engage the group and keep them current in their focus and practice. Several outside agencies offer professional development for faculty. Offering CEUs for the TeamSTEPPS training would be beneficial for the faculty and enhance attendance and participation. There was no plan to offer CEUs for this pilot project, but it would be a recommended advantage and improvement for sustainability and recommended for projects seeking to implement this project elsewhere. In this method, each clinical instructor would take responsibility for the clinical coordinator/director's overall role for future sustainability. An additional consideration for expanding the projects to other healthcare cohorts was planned after the pilot.

Conclusions

In the student nurse population, training in communication skills in TeamSTEPPS compared to no training in communication skills in TeamSTEPPS did affect knowledge for communication skills in one clinical semester. The students responded positively to feeling empowered to ask questions for patient safety in the clinical setting. The narrative review in the journaling exercise was a very positive indicator of TeamSTEPPS implementation's success in empowering each student to speak up for safety. Further research is recommended, and integration of TeamSTEPPS team building modules in under-graduate nursing programs should be explored via clinical immersion.

Until recently, adding TeamSTEPPS to health profession curricula had not been implemented (Goliat, Sharpnack, Madigan, Baker, & Trosclair, 2013). Adding TeamSTEPPS to

the curriculum as a prerequisite to the registered nurse (RN) training is recommended. The students entering the health professions should be taught the same communication skills language of the hospital multidisciplinary teams. When the hospital team fails to work together, it has been associated with errors and adverse events. Integration of TeamSTEPPS with team building modules in undergraduate nursing programs should be explored (Goliat et al., 2013).

Kirwin, Greenwood, Curry, Nalliah, and DiVall (2017) found that the addition of an interprofessional communication simulation with standardized health care professionals provided the opportunity for pharmacy students to develop skills related to team communication. Students felt the activity was valuable and realistic; however, analysis of outcome achievement from the exercise revealed a need for more exposure to team communication skills. TeamSTEPPS focuses on overcoming the problems that result from not functioning as part of a team and acting only as individuals (Kirwin et al., 2017).

The intervention of offering TeamSTEPPS training in nursing school does improve patient safety by improving communication and improving the confidence and communication skills in nursing students. The improvement in teamwork, clinical judgment, leadership skills, situational monitoring, mutual support, and interprofessional collaboration has been identified as well. The assessment related to TeamSTEPPS was found to be empowering for nursing students to speak up for safety and this approach needs further implementation. As more nursing curricula incorporates TeamSTEPPS, data will be available. Students in TeamSTEPPS training in communication skills and will learn the ‘repeat back’ method of TeamSTEPPS, observe this in action, and then practice it themselves. Adding a cultural perspective to learning and training in TeamSTEPPS for nursing students is also a consideration. In searching for diversity and cultural factors in scholarly works and TeamSTEPPS, minimal information is available. Future projects

implementing TeamSTEPPS for nursing students should add cultural diversity components to the data collection pre- and post-surveys.

Recommendations

ARHQ's (2018) TeamSTEPPS has a core of tools and strategies, including briefs, huddles, and debriefs. A powerful evidenced-based solution with ready-to-use materials, TeamSTEPPS improves communication skills and minimizes dollars at risk. Implementing TeamSTEPPS in academia pre-hospital will create healthy, communication skills before joining the hospital team. The students will learn the importance of teamwork, team training, and patient safety (Baker, Battles, & King, 2017). TeamSTEPPS should be included in the undergraduate nursing program curriculum to empower the students to speak up for safety and not be afraid to ask questions to improve patient safety.

Chapter 6 DNP Practice-Scholar Role Actualization

Summary

The Institute of Medicine's (IOM) 2010 report, *The Future of Nursing: Leading Change, Advancing Health*, recommended increasing the percentage of nurses who attain a bachelor's degree to 80% and doubling the number of those who pursue doctorates in nursing in the United States by 2020. In 2004, the American Association of Colleges of Nursing (AACN) introduced a doctorate in nursing practice, a nursing practice degree that would position nurses with other health professions (Dreher & Glasgow, 2017). As the number of DNP graduates surpass that of PhDs (Redman et al., 2015), role interdependence and synergy through collaboration are essential to meet the IOM's recommendations and improve health care outcomes.

The DNP is a relatively new degree, and as such, there is confusion regarding the role delineation between the DNP- and PhD-prepared nurses (Dreher & Glascow, 2017; Zaccagnini & White, 2017). Nurses seeking a terminal degree must decide if their passion and purpose are to focus on original research or translate evidence into practice. Regardless of their choice, doctorally-prepared nurses work together to advance the practice of nursing and health care outcomes.

Delineating the role of doctorally prepared nurses begins with clarifying the curriculum for the DNP and how that curriculum differs from nursing Ph.D. education. A contributing factor to the confusion about the DNP curriculum is that many professors, who are designing and teaching the DNP programs, have Ph.D. degrees, are expert researchers who have obtained a limited understanding of evidence-based practice (Melnyk, 2013).

The role of the DNP in advancing nursing practice and influencing patient outcomes can be met through differing objectives. One objective of the DNP degree is to produce nurse leaders capable of shaping health care. With the growing complexity of healthcare, there is a need for nurses to have a voice in the decision-making process (Falk et al., 2015). The DNP-prepared nurse is positioned to use systems thinking and strategic planning to face the current environmental challenges facing the health care industry (Dreher & Glasgow, 2017; Falk et al., 2015). Zaccagnini and White (2017) contended that the DNP is the preferred doctoral degree in many health care systems to lead in the delivery and planning of patient care.

According to Melnyk (2016), there is confusion about the difference between evidence-based practice and translational research. Translational research is rigorous research that looks at the factors impacting the ability to translate evidence into practice. Evidence-based practice is a problem-solving approach that best integrates the evidence into practice to improve outcomes. The nurses prepared at the DNP level are the experts at translating research concepts through evidence-based scholarly projects to improve healthcare outcomes. The DNP-prepared nurses represent the highest level of evidence-based clinical practice (Trautman et al., 2018).

The DNP-prepared nurse has career opportunities in leadership roles in nursing practice, management positions, healthcare policy, administration, government positions, and academia in practice-based nursing programs. One focus of the DNP degree is teaching non-research clinical experts how to strategically plan (Falk, Garrison, Brown, Pintz, & Bocchino, 2015).

According to AACN (2015), the collaboration of the DNP and Ph.D. prepared faculty will allow the Ph.D. faculty to develop new research. The DNP faculty can translate the evidence and implement it into practice. The DNP-prepared faculty can also serve as expert clinicians to students and faculty.

The United States is facing a health crisis in which the overall health is declining (Melnyk, 2013). Tobacco use and obesity, both preventable causes, are the two leading causes of death and disease. The cost of treatment for chronic illnesses takes up more than half of the US total health care spending. Consequently, there is a need for highly skilled Ph.D. and DNP-prepared nurses to improve the general population's health and refine the current healthcare system. Collaboration is needed to enhance evidence-based practice systems that will translate into improved patient outcomes.

Role and Impact

A leader with no vision will have no followers. A leader strives to clear obstacles and protect their team from unreasonable demands. They work be a good role model of honesty, integrity a positive attitude and hope to inspire and motivate the team so that all will desire excellence. Understanding my strengths from Strength Finder has been eye-opening. My 5 strengths are strategic, achiever, positivity, input, and arranger. By channeling my strategic theme, I have created alternative ways to proceed in given stations. I have worked to spot relevant patterns and issues. As an achiever, I do take immense satisfaction in being busy and productive Positivity is the strength I am most proud to have, and I identify with positively! I appreciate my contagious enthusiasm and how I can motivate others and get them excited about goals. Having the strength in Input makes me inquisitive. I have worked to realize I have the need to collect things and information and work to assess the need to store or donate. As an arranger, I can manage all the variables and align them into a productive piece of success.

Ph.D. and DNP nursing roles in both academic and service settings are important in improving the complex health care problems that currently exist and preparing the next generation of direct care and advanced practice nurses (Melnyk, 2013). DNP graduates will work

as educators, leaders, and directors in future practice. Ph.D. graduates will seek roles in academia, healthcare, and areas that require research. Ph.D. graduates can reduce the research gaps by working with healthcare systems and clinicians to implement research findings. DNPs need to consistently implement evidence-based practice to improve health care and patient outcomes. There also needs to be an education of the DNP and Ph.D. roles within the healthcare system, so these roles' value is understood. Nursing faculty needs better education on the roles of the DNP and Ph.D. They should also attend workshops on evidence-based practices and learn what makes a good capstone project. Positions posted for DNPs need to require higher levels of function. Also, facilities need to offer clinical ladders with higher functions for the DNP role. Salaries should reflect the level of education, and legislation needs to make the doctorate the minimal level of education for advanced practice nurses (Melnyk, 2013). As stated by Melnyk (2016), the future is bright for both doctorally-prepared nurses, but we must clarify the preparation and roles respectively in both scholarship, education, and practice.

References

Agency for Healthcare Research and Quality. (2018). TeamSTEPPS®. https://www.ahrq.gov/teamstepps/index.html

Akechi, H., Senju, A., Uibo, H., Kikuchi, Y., Hasegawa, T., & Hietanen, J. K. (2013). Attention to eye contact in the West and East: Autonomic responses and evaluative ratings. *Plos One, 8*(3), e59312. https://doi.org/10.1371/journal.pone.0059312

American Association of Colleges of Nursing. (2004). *The essentials of doctoral education for advanced nursing practice.* https://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf

American Association of Colleges of Nursing. (2015). *The doctor of nursing practice: Current issues and clarifying recommendations.* Retrieved from https://www.aacnnursing.org/Portals/42/DNP/DNP-Implementation.pdf

Baker, D. P., Battles, J. B., & King, H. B. (2017). New insights about team training from a decade of TeamSTEPPS. *Patient Safety Network*. https://psnet.ahrq.gov/perspective/new-insights-about-team-training-decade-teamstepps

Bambini, D., Washburn, J., & Perkins, R. (2009). Outcomes of clinical simulation for novice nursing students: Communication, confidence, clinical judgment. *Nursing Education Perspective, 30*(2), 79-82.

Baraz, S., Memarian, R., & Vanaki, Z. (2015). Learning challenges of nursing students in clinical environments: A qualitative study in Iran. *Journal of Education and Health Promotion, 4*(52). doi: 10.4103/2277-9531.162345

Benjamin, B. A. (2016). Building relationships and engaging communities through collaboration. In Curley, A. L. C., & Vitale, P. A. (2nd Ed), *Population-based nursing: Concepts and competencies for advanced practice* (pp. 51-77). New York, NY: Springer Publishing.

Clapper, T. (2014). Next Steps in TeamSTEPPS®: Creating a Just Culture with Observation and Simulation. *Simulation & Gaming, 45*(3), 306-317.

Curley, A. L. C., & Vitale, P. A. (2016). Epidemiological methods and measurements in population-based nursing practice: Part I. In Curley, A. L. C. & Vitale, P. A. (Eds), *Population-based nursing: Concepts and competencies for advanced practice* (2nd ed., pp 51-85). New York, NY: Springer Publishing.

Dreher, H. M., & Glasgow, M. E. S. (2016). *Role development for doctoral advanced nursing practice* (2nd ed.). New York: Springer Publishing Company.

Falk, N. L. (2015). Strategic planning and Doctor of Nursing practice education: Developing today's and tomorrow's leaders. *Nursing Economic$*, *33*(5), 246–254.

Fineout-Overholt, E., Melnyk, B. M., Stillwell, S. B., & Williamson, K.M. (2010). Evidence based practice step by step: critical appraisal of evidence: Part II. *American Journal of Nursing*, *110*(9), 41-48.

Goliat, L., Sharpnack, P., Madigan, E., Baker, J., & Trosclair, M. (2013). Using TeamSTEPPS® resources to enhance teamwork attitudes in baccalaureate nursing students. *Western Journal of Nursing Research*, *35*(9), 1239-1240.

Gropelli, T., & Shanty, J. (2018). Nursing students' perceptions of safety and communication issues in the clinical setting. *The Journal of Nursing Education, 57*(5), 287-290.

Guimond, M., Sole, M., & Salas, E. (2009). TeamSTEPPS: An educational program seeks to improve teamwork and, ultimately, patient safety. *American Journal of Nursing, 109*(11), 66.

Haynes, J., & Strickler, J. (2014). TeamSTEPPS makes strides for better communication. *Nursing, 44*(1), 62-63.

Donaldson, M. S., Corrigan, J. M., & Kohn, L. T. (Eds.). (2000). *To err is human: Building a safer health system*. https://www.nap.edu/catalog/9728/to-err-is-human-building-a-safer-health-system.

Institute of Medicine. (2010). *The future of nursing: Leading, changing, advancing health.* http://nationalacademies.org/hmd/Reports/2010/The-Future-of-Nursing-Leading-Change-Advancing-Health.apax

James, J. T. (2013). A new, evidence-based estimate of patient harms associated with hospital care. *Journal of Patient Safety, 9*, 122-128. doi:10.1097/PTS.0b013e3182948a69

Jernigan, S., Magee, C., Graham, E., Johnston, K., Zaudke, J., & Shrader, S. (2016). Student outcomes associated with an interprofessional program incorporating TeamSTEPPS®. *Journal of Allied Health, 45*(2), 101-108.

Johnson, M. R. D. (2004). Cross-cultural communication in health. *Clinical Cornerstone, 6*(1), 50-52. https://doi.org/10.1016/S1098-3597(04)90007-5

Kirwin, J., Greenwood, K., Curry, R., Nalliah, J., & DiVall, M. (2017). Interprofessional curbside consults to develop team communication and improve student achievement of learning outcomes. *American Journal of Pharmaceutical Education, 81*(1), 1-13.

Luthans, F. (2008). *Organizational behavior.* New York: McGraw-Hill.

Maguire, M. B. R., Bremner, M. N., Bennett, D. N., & VanBrackle, L. (2015). Evaluation of TeamSTEPPS integration across a curriculum regarding team attitudes: A longitudinal study. *Journal of Nursing Education and Practice, 5*(7), p131.

Melnyk, B. M. (2013). Distinguishing the preparation and roles of doctor of philosophy and doctor of nursing practice graduates: National implications for academic curricula and health care systems. *Journal of Nursing Education, 52*(8), 442-448. doi:10.3928/01484834-20130719-01

Melnyk, B. M. (2016). The doctor of nursing practice degree = Evidence-based practice expert. *Worldviews on Evidence-Based Nursing, 13*(3), 183-184. doi:10.1111/wvn.12164

Melnyk, B. M., & Fineout-Overholt, E. (2019). *Evidence-based practice in nursing & healthcare: A guide to best practice* (4th edition). Wolters Kluwer Health/Lippincott Williams & Wilkins.

Nash, W. A., Hall, L. A., Ridner, S. L., Hayden, D., Mayfield, T., Firriolo, J., ... & Crawford, T. N. (2018). Evaluation of an interprofessional education program for advanced practice nursing and dental students: The oral-systemic health connection. *Nurse Education Today, 66*, 25-32.

Plemmons, C., Clark, M., & Feng, D. (2018). Comparing student clinical self-efficacy and team process outcomes for a DEU, blended, and traditional clinical setting: A quasi-experimental research study. *Nurse Education Today, 62*, 107.

Redman, R. W., Pressler, S. J., Furspan, P., & Potempa, K. (2015). Nurses in the United States with a practice doctorate: Implications for leading the current context of health care. *Nursing Outlook, 63*(2), 124-129. http//dx.doi.org/10.1016/j, outlook.2014.08.003

Shirey, M. R. (2013). Lewin's theory of planned change as a strategic resource. *JONA: The Journal of Nursing Administration, 43*(2), 69-72.

Starmer, A. J., Spector, N. D., Srivastava, R., West, D. C., Rosenbluth, G., Allen, A. D., Noble, E. L., Tse, L. L., Dalal, A. K., Keohane, C. A., Lipsitz, S. R., Rothschild, J. M., Wien, M. F., Yoon, C. S., Zigmont, K. R., Wilson, K. M., O'Toole, J. K., Solan, L. G., Aylor, M., … I-PASS Study Group. (2014). Changes in medical errors after implementation of a handoff program. *The New England Journal of Medicine*, *371*(19), 1803–1812. https://doi.org/10.1056/NEJMsa1405556

Sweigart, L. I., Umoren, R. A., Scott, P. J., Carlton, K. H., Jones, J. A., Truman, B., & Gossett, E. J. (2016). Virtual TeamSTEPPS® simulations produce teamwork attitude changes among health professions students. *Journal of Nursing Education*, *55*(1), 31-35.

Taylor, S., Nicolle, C., & Maguire, M. (2013). Cross-cultural communication barriers in health care. *Nursing Standard, 27*(31), 35-43.

Trautman, D. E., Idzik, S., Hammersla, M., & Rosseter, R. (2018). Advancing scholarship through translational research: The role of PhD and DNP prepared nurses. *Online Journal of Issues in Nursing*, *23*(2), 1. doi:10.3912/OJIN.Vol23No02Man02

Appendix A: Critical Appraisal of the Evidence

(Used with permission, © 2007 Fineout-Overholt)

CLINICAL QUESTION: In the student nurse population (P), how does training in Communication from TeamSTEPPS (I) compared to no training in Communication in TeamSTEPPS (C) affect student confidence (O1) and knowledge for communication skills(O2) in one clinical semester (T)?

Citation : author(s), date of publication& title	Purpose of Study	Conceptual Framework	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Appraisal of Worth to Practice Strength of the Evidence (i.e., level of evidence + quality [study strengths and weaknesses] Recommendations	Role of Ethics
1. Bambini, D. et al. (2009). Nursing Education Perspective *30*(2), 79-82.	Assess SIM Outcomes for Communication student nurses	One	Integrated Quasi repeat measure design	N=112 Selection- Convenience sample Inclusion-nursing students preparing for the first clinical experience. BSN	IV1-SIM Experience First SIM Before First clinical IV2- No SIM DV? What is the outcome, Jennifer?	Previous no SIM Experience Self-developed questionnaire	T-test	Students experienced an overall self-efficacy ($p<.01$) pretest 0.817 Posttest 0.858 t-test	LOE=III Weaknesses: Limitation relies on self-reported data Strengths: Three themes emerged Qualitative results in communication confidence and clinical judgement. Conclusions: Evidence for using SIM Risk/Benefit: Benefits outweigh the risks Feasibility: Feasible for SIM however self-created survey is limitation- reasonable to implement. Notes: Self efficacy also search.	Survey optional With informed consent
2. Goliat, L., et al. (2013). *Journal of Nursing Research*, *35*(9), 1239-1240.	To promote high quality and safe care for patients examine the effectiveness of a team-building program on the teamwork attitudes of senior nursing students enrolled in a clinical immersion course	One	Quasi-experimental study with a pretest/posttest design.	N=21 Selection- convenience sample Inclusion undergraduate baccalaureate nursing students enrolled in a 7-week clinical immersion course.	DV= clinical immersion course with attitudes toward (a) team structure, (b) leadership, (c) situation monitoring, (d) mutual support, and (e) communication. IV No clinical immersion course	Post testing	T-TAQ Survey	A paired samples t-test demonstrated statistically significant results in all constructs ($p < 0.000$). ($p < 0.000$).	LOE=III Weaknesses: 21 small sample size Only one expert trainer is a limitation for sustainability Strengths: (T-TAQ) was administered, pre- and post-intervention, to evaluate effectiveness of the instructional program and measured student attitudes toward (a) team structure, (b) leadership, (c) situation monitoring, (d) mutual support, and (e) communication. Risk/Benefit: Benefits outweigh the risks Conclusions: Significance for my PICOT is present as Communication intervention was offered and pre and post data revealed Feasibility: Reasonable to implement Notes: Further research is recommended and integration of TeamSTEPPS® teambuilding modules in under-graduate nursing programs should be explored.	IRB
3. Jernigan, S. et al. (2016) (J ALLIED HEALTH), 45(2): 101-108. (8p)	Student Outcomes Associated with an IPP Incorporating TeamSTEPPS to develop and evaluate a novel, foundational, IPE pilot program that incorporates TeamSTEPPS for health professions	One	RCT Mixed-methods approach, using qualitative and quantitative data, was used for assessment.	N-241 Recruited Faculty inquiry Representing 13 different health professions programs participated in successive Level 1 and Level 2 FIC Introduction to TeamSTEPPS	DV=Level 1 IV= Level 2	Pre-active evaluation Likert TAQ evaluation	SA conducted with SPSS Statistics 20 software (IBM-SPSS, pre- and post-TAQ responses, analyzed using unpaired t-tests for both Level 1 and Level 2 data.	Level 1 and Level 2 $p < 0.05$ 4.47 and 4.31 for Level 1 and 2, respectively Students' satisfaction with the pilot program, changes in attitudes toward teamwork from before to after participation, TeamSTEPPS® knowledge acquisition, and anticipated future interprofessional collaboration-oriented behavior change were assessed	LOE=II Weaknesses: Pilots differed from one another Student completion of study online not tracked Strengths: support large-scale implementation of this TeamSTEPPS Risk/Benefit: Benefits outweigh the risks Concussions: developed positive communication tools for inter-professional model of collaborative practice and with students Feasibility: student support	Support from ALFG& HRSA of USDA under grant no. UD7HP25056

Appendix A: Continued

Citation : author(s), date of publication& title	Purpose of Study	Conceptual Framework	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Appraisal of Worth to Practice Strength of the Evidence (i.e., level of evidence + quality [study strengths and weaknesses] Recommendations	Role of Ethics
							Levine's Test for Equality of Variances p<0.05.			
4. Kirwin, J. et al. (2017). *American Journal of Pharmaceutical Education, 81*(1), 1-13.	Interprofessional curbside consults to develop team communication and improve student achievement of learning outcomes. design and implement a series of activities focused on developing interprofessional communication skills and to assess the impact of the activities on students' attitudes and achievement of educational goals.	One	Experiment in which subjects are nonrandomly assigned to a treatment group or control group.	N=108 students listened to a classroom lecture about team communication and viewed short videos describing the roles, 3 part 3 3	IV No Lecture DV lecture 3part rubric responsibilities, and usual work environments Students responded in verbal and written formats.	Assessed by conducting pre- and post-intervention surveys and analyzing students' performance on relevant (CAPE)	CAPE	SA 17 out of 30 items (p<.05, Wilcoxon signed rank test) after completing the interprofessional curbside consult assignment Additionally, improvement was seen on two items related to communication: "I prefer to work with team members who ask questions about information I provide" and "It is important to have a standardized method for sharing information when handing off patients	LOE=III Weaknesses: students perform differently when they do not recognize the actors in the rooms.? Table mentioned not available Strengths: Communication skills strengthened Conclusions: prepared them to communicate with another health care professional (90%) and helped them understand the roles and responsibilities of other members of the health care team (81%). Risk/Benefit: Benefits outweigh the risks Feasibility: Strong for future IPE	Survey optional informed consent
5.. Maguire, M. et al. (2015). Journal of Nursing Education and Practice, 5(7), p131.	Evaluation of TeamSTEPPS integration across a curriculum regarding team attitudes: A longitudinal study.	One	Quasi-experimental time series nonequivalent control group design was used	N= 115 convenience sample first semester students (108 completed) Control n=77 Participant n=108 Age 21-58 range years 21.58 mean 18-53 range years 27.5 mean Gender 11 males 66 females	DV=received the TeamSTEPPS training IV=Did not received the TeamSTEPPS training	30-item T-TAQ utilized to measure participants' attitudes toward the core components of team-work in healthcare	30-item T-TAQ	Structure sub scale [F(2,168) = 3.90,p= .022)] and Situation Monitoring subscale [F(2,168) = 3.94),p= .021)].SS differences across the three time periods for the Team For both the Team Structure and Situation Monitoring subscale, Tukey's HSD test found there to be significant	LOE=III Weaknesses: Voluntary student involvement Some student had had clinical some had not Strengths: instrument can be administered as a stand-alone assessment or to evaluate changes in team attitudes over time. Voluntary student involvement Conclusions: T-TAQ (available from: http://teamstepps/ahrq.gov/taq_index.htm) TeamSTEPPS training resulted in improved attitudes toward teamwork /Benefit: Benefits outweigh the risks Feasibility: The T-TAQ provides data to evaluate5 core team competencies: Team Structure, Leadership, Mutual Support, Situation	RB

Appendix A: Continued

Citation : author(s), date of publication& title	Purpose of Study	Conceptual Framework	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Appraisal of Worth to Practice Strength of the Evidence (i.e., level of evidence + quality [study strengths and weaknesses] Recommendations	Role of Ethics
									Monitoring, and Communication using a 5-point Likert scale	
6.. Nash, H. et al. (2018). *Nurse Education Today, 66*, 25-32.	Evaluation IPE program for advanced practice nursing and dental students	One	two-group comparative study using cross-sectional data and a quasi-experimental one-group	N=109 Cohort 1 N=75 NP students (n=34) Dental students (n=41) Cohort 2 N=116) NP students (n=22) Dental students (n=94)	IV=Cohort 1 Graduated DV=Cohort 2 pre-test/ post-test design were used to evaluate students' knowledge of IPE core competencies, attitudes toward inter-professional education and interdisciplinary teamwork, and self-efficacy in functioning as a member of an interdisciplinary team.	No tool existed Created by Collaborative panel KIECC RIPLS utilized to assess attitudes for inter-professional learning	Cronbach's alpha t-test to compare cohorts	Cohort 1 (M=3.38, SD=0.51) compared to Cohort 1 (M=3.20, SD=0.51),	LOE=II Weaknesses: Dental students and volume in cohort 1 and 2 varied greatly Strengths: student's reported higher self-efficacy in functioning as a member of an interdisciplinary team compared to graduating nurse practitioner and dental students who did not participate in the IPE program. Communication is evaluated separately Risk/Benefit: Benefits outweigh the risks Conclusions: IPE valuable Overall self-efficacy was significantly higher in Cohort 1 Feasibility: for nursing only or multi profession?	Followed IRB Informed consent
7.. Plemmons, C. et al. (2018). *Nurse Education Today, 62*, 107-111.	Comparing student clinical self-efficacy and team process outcomes for a DEU, blended, and traditional clinical setting:	One	A quasi-experimental research study. Control trial without randomization	N= 272 convenience sample of nursing students consisted of 122 students (45%) participating in the traditional model control group, 84 (31%) students participating in the DEU model treatment group, and 66(24%) students participating in the blended model treatment group. Demographic characteristics were compared for students in the	IV=Cohort 1Traditional DV1=Cohort 2 DEU Dv2 Blended	DEU, traditional, blended	Students participating in the dedicated education unit Survey	All three clinical teaching models resulted in significant increases in both clinical self-efficacy (p= 0.04) and attitude toward team process (p= 0.003). Students participating in the dedicated education unit model (p0.016) and students participating in the blended model (< 0.001) had significantly larger increases in clinical self-efficacy compared to students participating in the traditional model.	LOE=III Weaknesses: Sample convenience from 2 Universities demographics=confounding variables unaccounted for Strengths: All three models (DEU, traditional, blended) achieved the desired outcomes of increased self-efficacy and improved attitude toward team process. Risk/Benefit: Benefits outweigh the risks Conclusions: These findings support the use of dedicated education unit and blended clinical partnerships Feasibility: Cont. research multi-site	IRB

Appendix A: Continued

Citation : author(s), date of publication& title	Purpose of Study	Conceptual Framework	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Appraisal of Worth to Practice Strength of the Evidence (i.e., level of evidence + quality [study strengths and weaknesses] Recommendations	Role of Ethics
				control group (traditional) and students in each of the treatment groups (DEU, blended).						
8. Sweigart L.et al. (2016) *The Journal of Nursing Education, 55*(1), 31-5. (2016).	Virtual TeamSTEPPS Simulations Produce Teamwork Attitude Changes Among Health Professions Students.	One	RCT randomization pre and posttest design.	N=109 professional nursing, medicine, occupational therapy, and social work Students were recruited via e-mail, announcements, and personal invitations from the research team on four campuses of the two universities. Access was provided to the virtual platform and the T-TAQ in a computer laboratory on each campus. All participants logged into their sessions anonymously with a randomly assigned number used for the pretest–posttest comparisons. These numbers were stratified to allow for assignment to the respective four professions.	DV No scenarios developed from TeamSTEPPS IV scenarios developed from TeamSTEPPS	(T-TAQ) assessed the change in attitudes toward teamwork before and after working through the scenarios.	T-TAQ	92 matched pretest–posttest measures, nearly half (n = 45, 48.9%) were completed by nursing students; occupational therapy students were the next largest group (n = 27, 29.3%). The remainder of the completed survey measures derived from medical students (n = 13, 14.1%) and social work students (n = 7, 7.6%). $p < .05$ d = .27 or larger, with 80% power	LOE=II Weaknesses: Include sample size and VLE game participant's comprehension of game Strengths: VLEs allow for flexibility small sample size rational to replicate study to enlarge population for data. Risk/Benefit: Benefits outweigh the risks Conclusions: Promotes safe communication Feasibility: VLE activities provide opportunities for interprofessional learning that would not otherwise exist	The institutional review boards of both Indiana State University and Ball State University certified the study as exempt.
9. Umoren, R. et al.	Virtual TeamSTEPPS scenarios for students to	One	An experiment in which subjects are	N=385 Recruited Nursing=N=183 OT=N=83	DV= no VLE virtual TeamSTEPPS simulation)	T-TAQ	SS all domains P<0.001	Nursing 4.35-4.54 OT 4.387-4.45 PA 4.29-4.38	LOE=III Weaknesses: Limitation exposure to survey level of training can't control	IRB

Appendix A: Continued

Citation: author(s), date of publication& title	Purpose of Study	Conceptual Framework	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Appraisal of Worth to Practice Strength of the Evidence (i.e., level of evidence + quality [study strengths and weaknesses] Recommendations	Role of Ethics
(2017). *Creative Nursing, 23*(3), 184-191. (2016).	overcome barrios to inter-professional learning and communication		nonrandomly assigned to a treatment group or control group.	PA=N=53 students Most Female White non-Hispanic 18-24 y/o	DV=VLE with virtual TeamSTEPPS simulation)				Strengths: VLE improves communication in teamwork Risk/Benefit: Benefits outweigh the risks Conclusions: brief learning intervention VLE =rapid dissemination of Team STEPPS Feasibility: Improves communication in teamwork	

Appendix B: Level of Evidence Synthesis Table

	1.	2.	3.	4.	5.	6.	7.	8.	9
Level I: Systematic review or meta-analysis									
Level II: Randomized controlled trial			X			X		X	
Level III: Controlled trial without randomization	X	X		X	X		X		X
Level IV: Case-control or cohort study									
Level V: Systematic review of qualitative or descriptive studies									
Level VI: Qualitative or descriptive study (includes evidence implementation projects)									
Level VII: Expert opinion or consensus									

1.Bambini, D. et al. 2. Goliat, L., et 3. Jernigan, et al.4. Kirwin, J. et al. 5. Maguire, M. et al .6. Nash, H. et al 7. Plemmons, C. et al.8. Sweigart L.et al. 9. Umoren, R. et al.

Appendix C: Intervention & Outcome Synthesis Table

Studies	1. O	2. O	3. ★	\	4. O	5. ★	6. O	7. ★	8. O
Period of delivery	Pre-clinical	N/A	Pre-clinical	Pre post	Pre post	Pre post	Pre post	Pre post	Pre post
Interventions Used	SIM	Clinical extension course	Evaluation	Lecture	Training	IPE	DEU, traditional, blended	VLE	VLE
Time Consumed									
Outcomes									
Self-efficacy	↑					↑	↑		
Communication	↑		↑	↑	↑	↑	↑	↑	↑
Clinical confidence	↑								
Teamwork	—	↑	↑	↑	↑		↑	↑	↑
Clinical judgement	↑	↑							
SIM	—			↑	↑				
Leadership		↑			↑				
Situation monitoring		↑			↑				
Mutual support		↑			↑				
Inter-professional collaboration			↑	↑	↑	↑		↑	↑
DEU							↑		
Blended							↑		
Traditional							↑		

1.Bambini, D. et al. 2. Goliat, L., et al...3. Jernigan, S. et al.4. Kirwin, J. et al. 5. Maguire, M. et al.6.Nash, H. et al 7. Plemmons, C. et al.8 Sweigart L.et al 9. Umoren, R. et al. ★LOE II; ✪LOE III; □LOE VI

Interventions & Outcomes: Legend: AHRQ- Agency for Healthcare Research and Quality ALFG& HRSA of USDA=Ascend Learning Foundation Grant and the Health Resources and Services Administration of the U.S. Department of Health and Human Services BSN= Bachelorette IPE= inter-professional education program DV=dependent variable FIC=Foundations of Inter-professional Collaboration: IPP=Inter-professional Program LOE = level of evidence IPE= inter-professional education program KIECC= Knowledge of Inter-professional Education core Competencies SIM=Simulation SS-Statistical significance SA= Statistical analysis T-TAQ=Teamwork Attitudes Questionnaire VLE=Virtual Learning Environments

Appendix D: Synthesis Table - Descriptions & Results

Study Author	Year	Sample Size	Mean Age	Study Design	Results		
					Control	Intervention	Statistical Significance
Bambini, D. et al.	2009	112		Quasi experimental repeat	No SIM	SIM	p<.01
Goliat, L et al	2013	21		Quasi experimental	No clinical immersion course	Clinical immersion course	p < 0.000
Jernigan, S. et al	2016	241		RCT	No Introduction to TeamSTEPPS	Introduction to TeamSTEPPS	p <0.05
Kirwin, J. et al.	2017	108		quasi - experimental	No Lecture	Lecture	p <0.05
Maguire, M. et al	2015	115		Quasi-experimental	No TeamSTEPPS training	TeamSTEPPS training	p= .021
Nash, H. et al.	2018	109		Two-group comparative study using cross-sectional	No IPE program	IPE program	p <0.05
Plemmons, C. et	2018	272		Quasi experimental	No DEU, blended, and traditional	DEU, blended, and traditional	p= 0.003
Sweigart L.et al.	2016	109		RCT randomization	No scenarios developed from TeamSTEPPS	Scenario's developed from TeamSTEPPS	p <.05

Appendix E: Synthesis Table

Studies with Major findings that Addresses PICOT

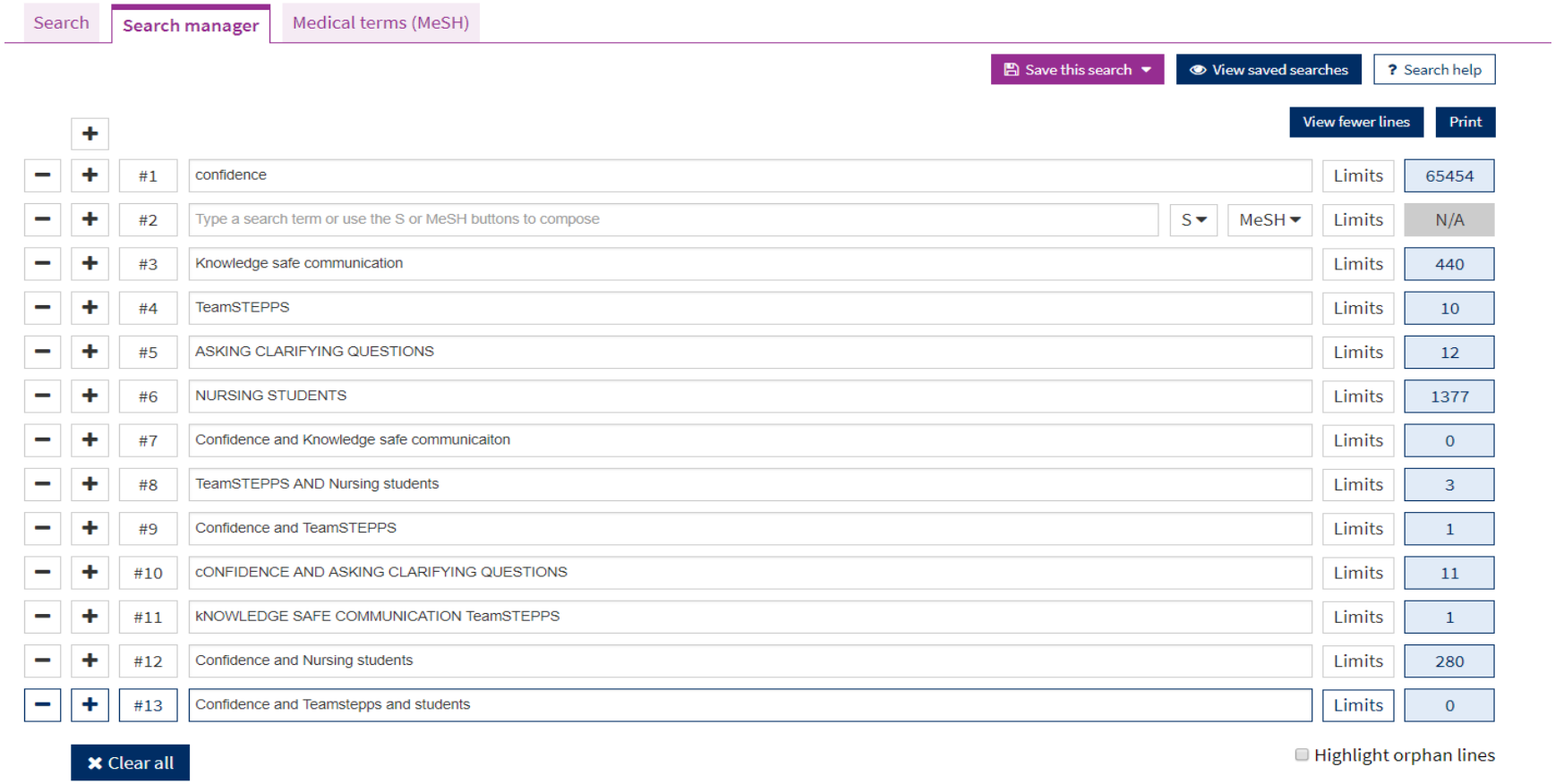
Study Author	Year	No. of Participants	Mean Age	Study Design	Intervention	Major finding that addresses PICOT
Bambini, D. et al.	2009	112		Quasi repeat	SIM	communication confidence and clinical judgement.
Goliat, L et al	2013	21		Quasi-experimental	Clinical immersion course	present as Communication intervention was offered and pre and post data revealed
Jernigan, S. et al	2016	241		RCT	Introduction to TeamSTEPPS	support large-scale implementation of this TeamSTEPPS
Kirwin, J. et al	2017	108		III non-random	Lecture	prepared them to communicate with another health care professional (90%) and helped them understand the roles and responsibilities of other members of the health care team
Maguire, M. et al.	2015	115		Quasi-experimental	TeamSTEPPS training	TeamSTEPPS training resulted in improved attitudes toward teamwork
Nash, H. et al.	2018	109		Two-group comparative study using cross-sectional	IPE program	Overall self-efficacy was significantly higher in Cohort 1
Plemmons, C. et	2018	272		Quasi-experimental	DEU, blended, and traditional	support the use of dedicated education unit and blended clinical partnerships
Sweigart L.et al.	2016	109		RCT randomization	Scenarios developed from	Promotes safe communication

Appendix F: Systematic Search

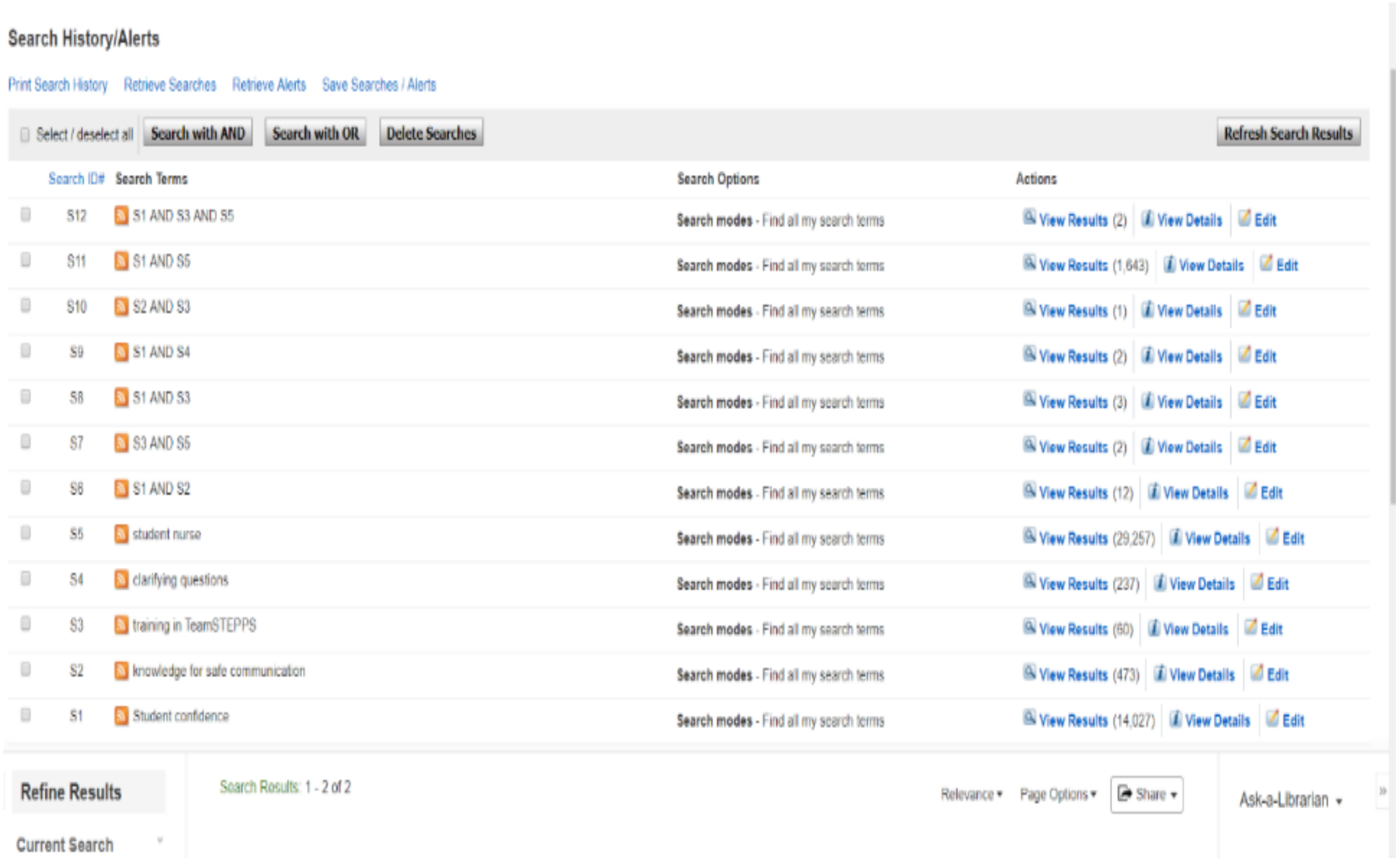
History

Download history Clear history

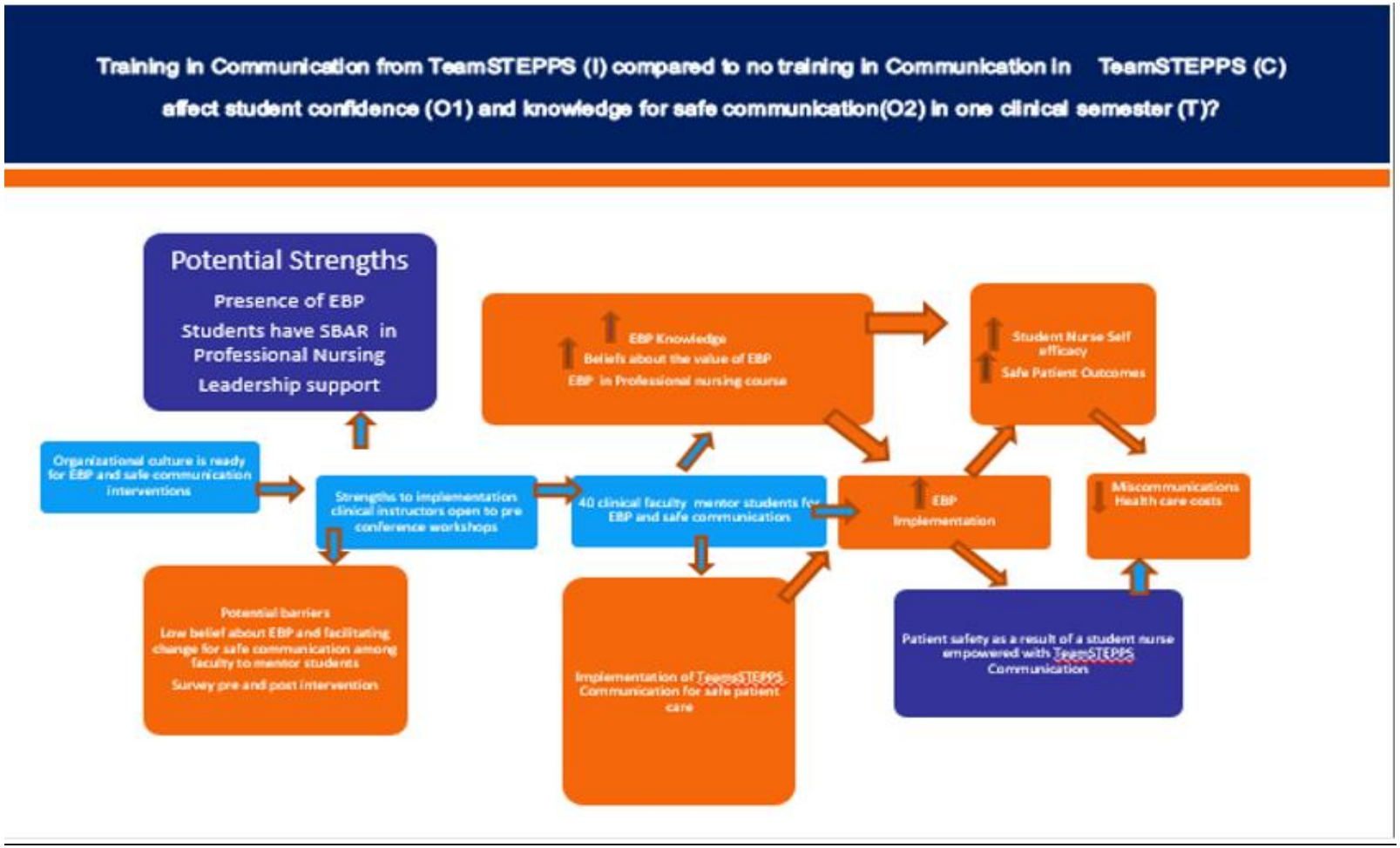
Search	Add to builder	Query	Items found	Time
#14	Add	Search **(((nursing students) AND TeamSTEPPS)) AND safe communication**	1	13:04:40
#13	Add	Search **safe communication**	6098	13:04:21
#12	Add	Search **("safe communication") AND ((nursing students) AND TeamSTEPPS)**	0	13:04:08
#11	Add	Search **"safe communication"**	20	13:03:58
#10	Add	Search **(nursing students) AND TeamSTEPPS**	19	13:02:07
#9	Add	Search **nursing students**	41211	13:01:50
#8	Add	Search **confidence students teamstepps**	3	13:00:48
#7	Add	Search **((students) AND confidence) AND TeamSTEPPS**	3	13:00:15
#6	Add	Search **students**	241725	12:59:56
#5	Add	Search **confidence**	566593	12:59:33
#4	Add	Search **clarifying questions**	493	12:56:57
#3	Add	Search **("question, clarify, and confirm")**	45	12:55:02
#2	Add	Search **"clarifying questions"**	30	12:51:15
#1	Add	Search **TeamSTEPPS**	141	12:49:17


Search
Search manager
Medical terms (MeSH)
Save this search
View saved searches
Search help
View fewer lines
Print
#1 confidence Limits 65454
#2 Type a search term or use the S or MeSH buttons to compose S MeSH Limits N/A
#3 Knowledge safe communication Limits 440
#4 TeamSTEPPS Limits 10
#5 ASKING CLARIFYING QUESTIONS Limits 12
#6 NURSING STUDENTS Limits 1377
#7 Confidence and Knowledge safe communicaiton Limits 0
#8 TeamSTEPPS AND Nursing students Limits 3
#9 Confidence and TeamSTEPPS Limits 1
#10 cONFIDENCE AND ASKING CLARIFYING QUESTIONS Limits 11
#11 kNOWLEDGE SAFE COMMUNICATION TeamSTEPPS Limits 1
#12 Confidence and Nursing students Limits 280
#13 Confidence and Teamstepps and students Limits 0
Clear all
Highlight orphan lines

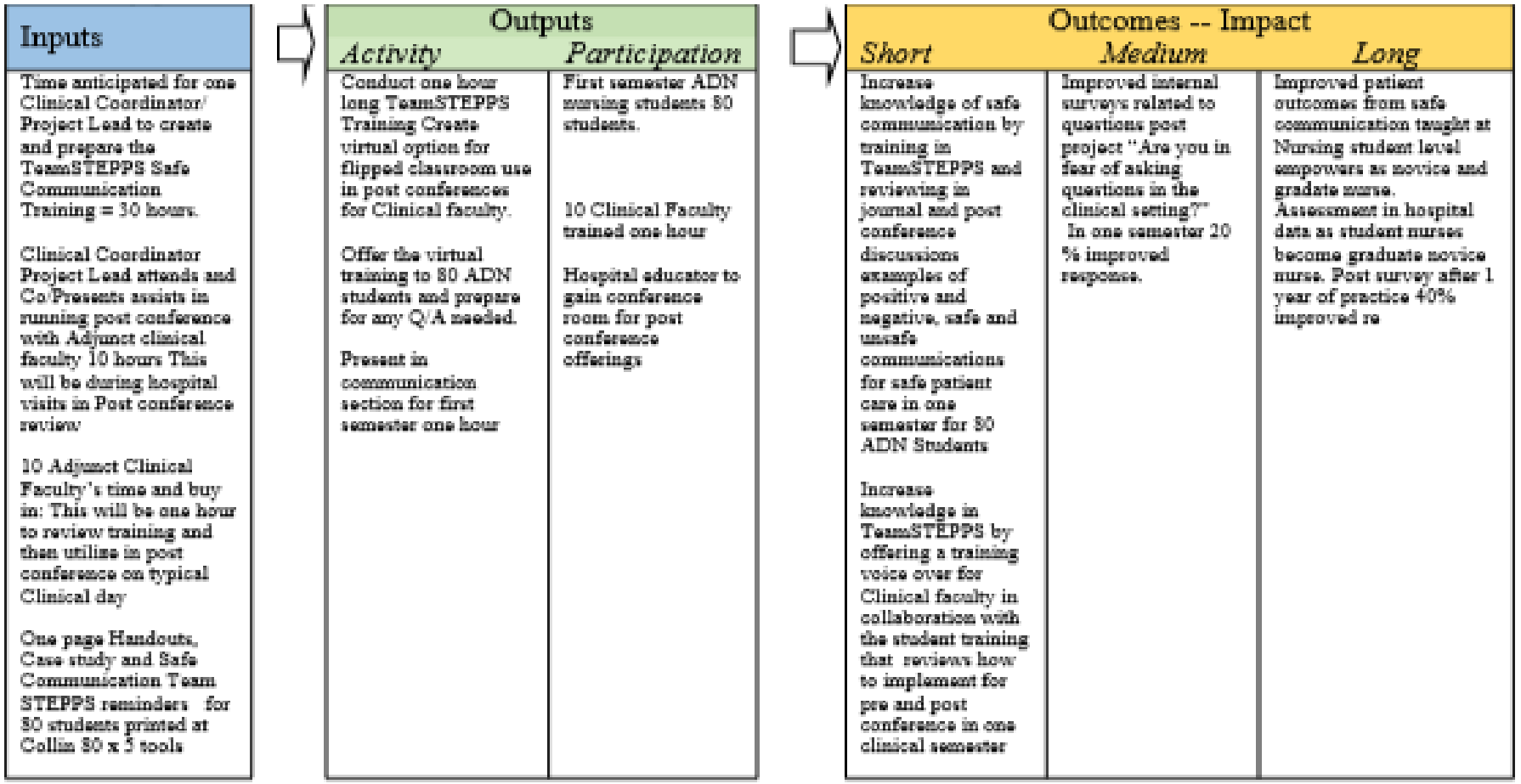
Appendix F continued



Appendix G: Evidenced-Based Practice Model



Appendix H: Logic Model



Appendix H continued

Assumptions
That all clinical faculty will buy in for success

That the students currently do not feel emposered to speakup for safety

That all 80 students will understand the value of the project and participte in the survey and evals

That the modifications from SIM to virtual from the evidence will offer a training suficient to improve the students nurses confidence to speak up for saftey

That the creator is experienced to modify TeamSTEPPS for cultural appropriateness in the current TeamSTEPPS training offered

External Factors

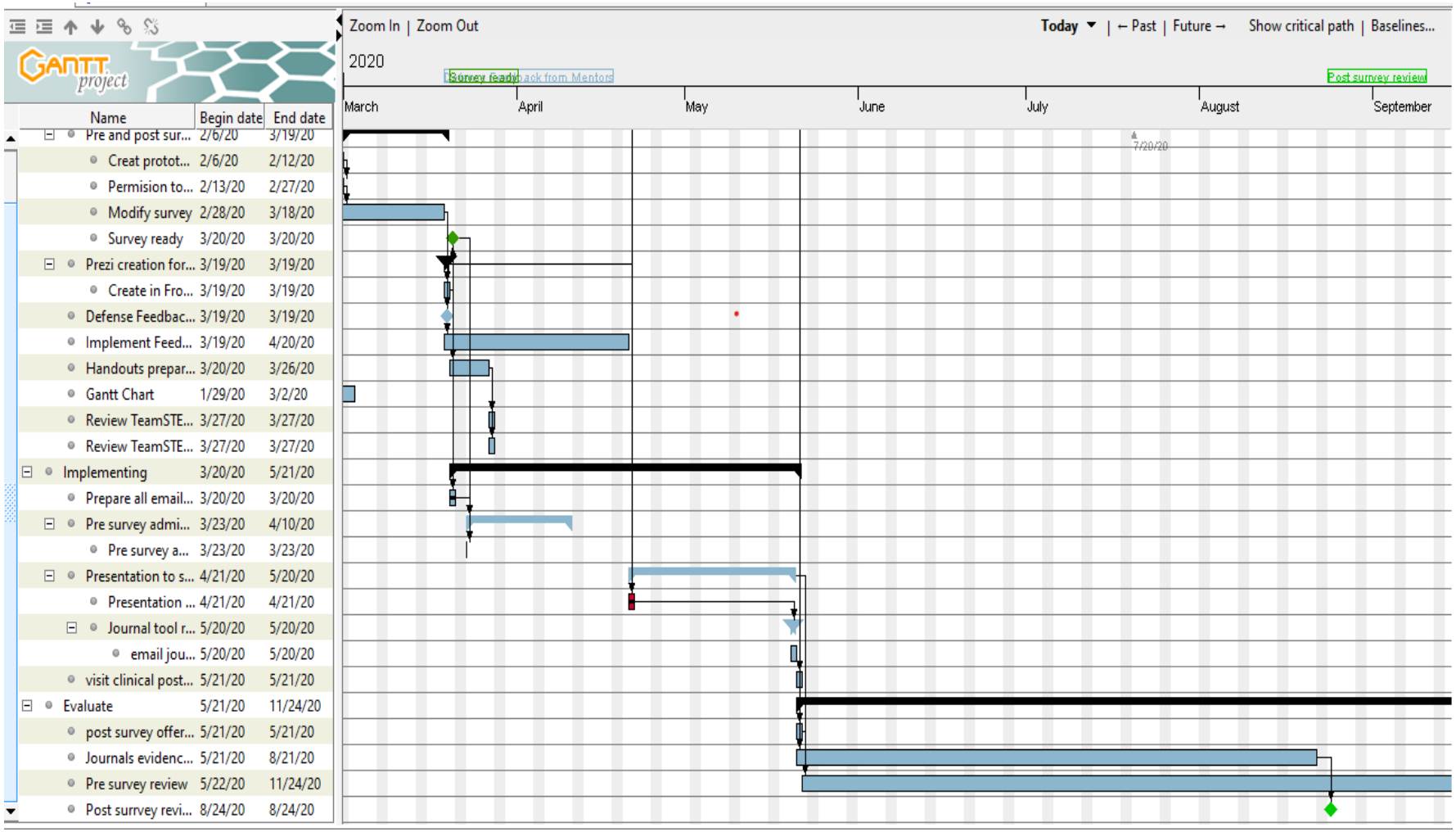
Previous expereince with TeamSTEPPS for faculty possitive or negative

Cultural variations that affect communicaiton eye contact male female roles to consider?

IRB Committee challenges that could occur

Hospitals real estate is a challenge. Post conference must occur in a private room, if conference room for Post conference is not available this could influence the success of the project.

Appendix I: Gantt Time line



Appendix J: Systems Thinking

Models used in TeamSTEPPS for safe communication for nursing students to improve Patient safety	Distinctions	System Thinking	Relationships	Perspectives
(ARCC) **EBP Model**	Enhance implementation of EBPto move the project forward	ARCC is a systems approach Move organization toward EBP culture	Implementation of the ARCC Model can: Enhance Healthcare team's beliefs beneficial with this Logic model for TeamStepps project	Improve patient outcomes for safety is a perspective to be encouraged
Lewin's Change Model	When the evidence alone does not move the change understanding people with Lewin's change theory	More recent interpretations of Lewin's review the consideration that we cannot refreeze as in today's Health care change is rapid, complex and unpredictable. Therefore, we must remain like a slushy in constant preparation or mid process of freezing and unfreezing.	Mobilizing the people side of change using Lewin assists by acknowledging that people may freeze and not want change no matter what the EBP offers.	The perspective that as humans we really do not like change and that we need to purposefully open up to changing what we have done in the past, unfreeze to implement the new EBP then we can again refreeze with the new knowledge.
OBM Leadership Model	identify performance behaviors, determine the base rate of performance, identify contingencies, select intervention strategy and evaluate.	Organizing the thinking into systems the models help actualize the planning of this project. OBM will provide positive feedback for the recognition of safe communications.	There is an ethic consideration to this model making sure relationships with positive and negative reinforcement are maintained.	The perspective that we all respond best to positive reinforcement
Logic Model	Considers specific assumptions and external factors inputs and outcomes with SMART goals	How the project is organized into systems	Relationships ae highlighted in the Logic model with stakeholders and project roles	The specifics for project planning roles, stakeholders,