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The Impact of Simulation-Based Learning Experience on Student Satisfaction, Perceived Self-Confidence, and Anxiety

Michelle Britt Warren
Gardner-Webb University

The Impact of Simulation-Based Learning Experience on Student Satisfaction, Perceived Self-Confidence, and Anxiety

by

Michelle B. Warren

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Submitted by:	Approved by:
_____	_____
Michelle B. Warren	Candice Rome, DNP, RN
_____	_____
Date	Date

Approval Page

This is to certify that the capstone project prepared by Michelle B. Warren, entitled *The Impact of Simulation-Based Learning Experience on Student Satisfaction and Perceived Self-Confidence* has been approved by this committee as satisfactory completion of the requirement for the degree of Doctorate of Nursing Practice.

_____ _____

Anne M. Jones-Sutton, MSN, RN Date
Committee Member

_____ _____

Julie Parker, PhD Date
Committee Member

_____ _____

Cindy Miller, DNP, RN Date
Chair, Graduate Studies

Abstract

Nurse educators are faced with the challenges of facilitating student learning in shorter time frames along with decreasing student opportunities to further their learning experiences in real-world clinical situations (LaFond & Van Hulle Vincent, 2012; Smith & Barry, 2013). There is an identifiable need for safe environments where students can practice and apply the knowledge they have learned in the didactic component of the course to the clinical situations (LaFond & Van Hulle Vincent, 2012; McClure & Gigliotti, 2012). The capstone project, "The impact of simulation based learning experience on student satisfaction, perceived self-confidence and anxiety" examined the implementation of three mid-fidelity simulation scenarios, including debriefing, to the learning experience in efforts to provide continued support of student learning to enhance the students' application of knowledge, decrease anxiety levels, improve satisfaction, and perceived self-confidence.

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CHAPTER I

Introduction

Nursing educators are being faced with the possibilities of decreasing student opportunities to further their learning experiences in real-world clinical situations (LaFond & Van Hulle Vincent, 2012; Smith & Barry, 2013). Patients are presenting to hospitals with more complex medical diagnoses. A combination of changes within the healthcare profession is creating a need for nurses to practice at the expert level where they exhibit expert knowledge in their area of practice in efforts to provide safe patient care (Piscotty, Grobbel, & Tzeng, 2011). Current nursing students are documented as receiving a decreased amount of traditional clinical exposure supplemented by increased exposure to simulation-based learning experiences (Bambini, Washburn, & Perkins, 2009). A survey by Hayden (2010) documents 69% of 1,060 nursing schools responding to the survey reported substituting simulated-based learning experiences for actual clinical time. Incorporation of simulation-based learning experiences provides the student with a safe environment, where the patients are exempted from harm, and student learning can be reinforced and supported (Smith & Barry, 2013).

Problem Statement

Nurse educators are faced with the challenges of facilitating student learning in shorter time frames, with concept based curriculums that are packed with exemplars that need to be covered prior to students' graduation from the programs. There is a need for safe environments where students can practice and apply the knowledge they have learned in the classroom to clinical situations (LaFond & Van Hulle Vincent, 2012; McClure & Gigliotti, 2012). This capstone project examined the implementation of

simulation with the inclusion of debriefing after three simulated-based learning experiences in efforts to provide continued support to enhance the students' application of knowledge, satisfaction, perceived self-confidence, and anxiety. In recognition of the problem related to limited clinical placement and a large amount of curriculum content to cover, there is a need for creation of a safe environment in which students can practice skills, refine their assessment techniques, apply critical thinking skills to clinical scenarios, and receive the support necessary for learning to be reinforced.

Pamela Jeffries' (2005, 2007) nursing education simulation framework provided the foundation for implementing three medium fidelity simulated-based learning experiences including a debriefing session. Debriefing was implemented at the conclusion of each of the simulated activities. Evaluation was implemented to determine the effectiveness of the medium fidelity simulation activity including debriefing on novice nursing students' satisfaction, perceived self-confidence, and anxiety using the National League of Nursing (2011) student satisfaction and self-confidence in learning scale and the nursing anxiety and self-confidence with clinical decision making (NASC-CDM) scale (White, 2014).

Justification of the Project

Nursing students are limited in their traditional clinical experiences for a variety of reasons. Some of these reasons include but are not limited to: decreasing patient census, complexity of health care issues, patient safety concerns, lack of interdisciplinary communication further limited by the introduction of electronic health records, and documentation (Jeffries et al., 2011). Nurse educators are challenged with the development of updating teaching methods and including interactive learning activities to

compensate for the above mentioned clinical limitations to student transition of learning and application of knowledge. Simulation has been documented as a method of facilitating student learning by application of theory to practice (Reese, Jeffries, & Engum, 2010).

An additional concern is that first-year, first-semester nursing students have been noted to bring extreme levels of apprehension with them to their first clinical experience. Preclinical simulation scenarios have been documented as having a significant impact on decreasing student anxiety levels (Gore, Hunt, Parker, & Raines, 2011; Szpak & Kameg, 2013).

Implementation of quality, simulated-based learning experiences, including the debriefing component, had not previously been implemented in the fundamentals course, NUR 111: Intro to Health Concepts, due to budgetary constraints and knowledge restrictions on the "how to" of implementation. Evidence of this identified problem was provided throughout the literature review and through collaboration with other associate degree nursing programs faculty members and program coordinators. Literature supports the implementation of simulations to "bridge the gap between academic knowledge and clinical practice" (Piscotty et al., 2011, p. 430).

Conceptual Framework

Jeffries nursing education simulation model was critically examined and applied as the foundation for implementation of simulation-based learning activities, as well as an intervention for change within the current concept-based nursing curriculum NUR 111 course, Intro to Health Concepts. This intervention is predicted to increase student perceived self-confidence while providing support and enhancing active student learning

within an environment that is safe and conducive to student learning (Gobbi et al., 2012). The intervention is hypothesized to support the transfer of knowledge from simulation experiences that mimic real-life situations to daily nursing encounters that reflect critical thinking skills and basic nursing knowledge.

The nursing education simulation model was developed using a theoretical and empirical foundation, which was birthed in response to demands from various professional organizations demanding improved patient safety in nursing care (Jeffries, 2005). These demands were in response to the increased number of patient deaths related to human error associated with medication administration. The origin of the model is defined as a "work of a national group organized by the National League for Nursing in partnership with the Laerdal Corporation that is currently leading efforts to guide the development and assessment of processes and outcomes for this type of innovative teaching strategy" (Jeffries, 2005, p. 96).

The simulation model encompasses five major concepts: teacher, student, educational practices, simulation design characteristics (intervention), and outcomes (Jeffries, 2005; Smith & Roehrs, 2010). In respect to the application of the model's concepts to nursing education each concept is important to consider when developing a simulation-based learning activity as an innovative pedagogical teaching method for improving student learning. Successful learning requires an appropriate interaction between each concept (Jeffries, 2005). Jeffries' model displays a triad relationship between the student, the teacher, and the educational practices which influence the design and the outcomes (Gore et al., 2011).

Consideration of the teacher in the role of observer or facilitator is imperative to the design of the simulation. Will evaluation be a part of the activity requiring the teacher to function in the role of observer? Being cognizant of the skill set of the teacher is also important. Is the teacher confident with simulation or will he/she need additional support and training prior to the implementation of the teaching method?

Student readiness includes the current level in the program of study, education program, and age. Are the students at a level in the program that correlates with the learning objectives that have been identified for achievement upon completion of the simulation-based learning activity? Are the objectives out of reach for the student, not in direct alignment with the documented program learning outcomes? Is age a barrier for the students participating in the activity?

Educational practices include: active learning, feedback, student/faculty interaction, collaboration, high expectations, diverse learning, and time on task (Jeffries, 2005). Prior to developing the simulation-based learning activity, it is important to identify the areas of educational practice for inclusion in the scenario. What teaching/learning strategies need to be implemented to support and encourage the student to actively participate? Will debriefing be used for the purposes of providing feedback to the students or videotaping with student observation upon completion of the simulation-based learning activity or will a combination of both techniques be utilized? Will there be interaction in the form of collaboration between the student and the faculty member or will the faculty member assume the observer role? What are the expectations of the students as documented by clearly defined student learning outcomes? Does the activity

support diversity of student learning styles? How much time will be allowed between identification of a change in patient status and student response?

Answers to these questions are necessary prior to the development and design of a simulation-based learning activity for the purpose of ensuring a simulation that is geared to achievement of student learning outcomes. Knowing what is expected of the student and what it is they should learn from the experience assists the faculty member in developing an organized simulation activity.

Jeffries, Bambini, Hensel, Moorman, and Washburn (2009) acknowledged that nurse educators will find the nursing education simulation model as a user-friendly model to assist them in implementing more innovative teaching methods to increase students' active learner role. As noted in Figure 1, the model is not only for educating nursing students, it is transferrable to nursing education in hospitals and other health care agencies. Hospital education departments have used the model to assist in implementing simulation for the purpose of assessing core clinical competencies for new nurses in their orientation programs as well as in the education process of new nurses to critical care concepts (Jeffries et al., 2009). It is evident that the simulation model is versatile and can be implemented in many areas of nursing education.

Conceptual-Theoretical-Empirical Construction

Conceptual Model Concepts		Theory Concepts		Empirical Indicators
Teacher		Facilitator of simulated experience		NLN (2011) Instruments for Simulation Activity The Simulation Design Scale Educational Practice Questionnaire **Satisfaction and Self-Confidence in Learning** **NASC-CDM Scale**
Student		Self-directed and active participants in simulation		NLN (2011) Instruments for Simulation Activity The Simulation Design Scale Educational Practice Questionnaire **Satisfaction and Self-Confidence in Learning** **NASC-CDM Scale**
Educational Practice		Active learning styles, collaboration, time on task,		NLN (2011) Instruments for Simulation Activity The Simulation Design Scale Educational Practice Questionnaire **Satisfaction and Self-Confidence in Learning** **NASC-CDM Scale**
Simulation Design (Intervention)		Student learning objectives, medium fidelity, debriefing		The Simulation Design Scale (NLN, 2011)
Outcomes		Clearly defined and written student learning		NLN (2011) Instruments for

		objectives		Simulation Activity The Simulation Design Scale Educational Practice Questionnaire **Satisfaction and Self-Confidence in Learning** **NASC-CDM Scale**

Figure 1. Conceptual-Theoretical-Empirical Diagram: Nursing Education Simulation Framework.

Assumptions

In regards to guidance for this project, assumptions included more nurse educators will need to learn the significance of adding simulated activities into the current concept based curriculum. Intervention is necessary to provide nursing students with opportunity in a safe environment to practice skills and apply the gained knowledge to patient scenarios. A safe learning environment decreases the risk of patient harm while supporting each students' learning style and decreasing the students' level of anxiety. The implementation of simulation as an additional teaching method will assist the nurse educator in compensating for challenges currently found in the clinical agencies that are preventing nursing students from opportunities that allow for full student engagement in the learning process. Many times a students' clinical assignment does not coincide with the didactic component as patients are admitted with many diagnosis, not just the ones currently being discussed in the classroom and lab setting. Also, there are some learning experiences that are more meaningful to students when they are allowed to make a mistake and learn from that mistake. As educators we cannot jeopardize patient safety by

allowing mistakes in the clinical setting. Clinical simulation is projected to build student perceived self-confidence, satisfaction, and decrease anxiety levels prior to skill utilization in the clinical environment. The literature supports the concern of clinical inadequacies that are a direct result of "knowledge and skills that are never fully developed or are lost over time, translating into errors during the delivery of patient care (Jeffries et al., 2011, p. 316).

Project Questions

The project administrator sought to gain answers to the following research questions:

- Does the implementation of a mid-fidelity simulated clinical activity after lecture and prior to clinical, for novice nursing students in a concept based curriculum, improve student satisfaction compared to the traditional teaching methods of lecture and case studies?
- Is there an effect on novice nursing students' perceived self-confidence and anxiety levels after participation in the mid-fidelity simulated lab activity compared to traditional clinical?

Based on the review of literature the project administrator hypothesized the following:

- It is hypothesized that this intervention implementation (mid-fidelity simulation with debriefing) will increase students' perceived self-confidence, satisfaction, and decrease levels of anxiety.

The empirical indicators selected for this capstone project were the National League of Nursing (NLN) (2011) student satisfaction and self-confidence in learning

scale along with the nursing anxiety and self-confidence-clinical decision making (NASC-CDM) scale (White, 2014). The independent variable was identified as the mid-fidelity simulation-based learning experience and the dependent variables were identified as the students' perceived level of self-confidence, satisfaction, and anxiety.

Definition of Terms

In efforts to provide clarity to the readers of this study the following terms were defined: (a) simulation-based learning experience, (b) mid-level fidelity simulator, (c) debriefing session, (d) traditional clinical, and (e) low-fidelity. For the purpose of this study simulation-based learning experience is defined as a hands-on learning activity that mimics a real-life clinical situation where the student nurse has to apply knowledge in the form of decision-making, skill intervention, and critical thinking. Simulated activities can be in the form of role-playing and utilization of manikins. Mid-level fidelity simulators are high-tech manikins that mimic human characteristics such as breathing, heartbeats, bowel sounds, and moaning. Debriefing session is the group activity that takes place directly after completion of the simulation. This is where students, led by a faculty facilitator, discuss their feelings of how the simulated activity aided in their learning, what they would change, and what they would keep the same. Traditional clinical is described as a students' presence in a health care facility for the purposes of practicing their skills and knowledge applications under the direct supervision of a nursing faculty member, employed by the College. Low-fidelity refers to traditional case studies where information is shared about a client followed by questions related to "next steps" and interventions.

Summary

This capstone project utilized the model by Jeffries' (2005, 2007) nursing education simulation framework as a guide to the implementation and evaluation of three simulation-based learning experiences including a debriefing component in the first-year, first-semester course NUR 111: Intro to Health Concepts. The National League of Nursing (NLN) (2011) student satisfaction and self-confidence in learning scale and the nursing anxiety and self-confidence with clinical decision making (NASC-CDM) scale (White 2014) were used with permission (Appendix A & B), to evaluate the implementation of the intervention simulated-based learning activity on students' perceived self-confidence level, satisfaction, and anxiety.

It was expected that the implementation of a simulated-based learning activity using a mid-level fidelity simulator, with a debriefing session at the conclusion of the activity, would provide hands on experience for students in an environment that is safe from patient harm, safe for student learning, and supported by faculty facilitation. The use of debriefing upon completion of the simulated-based learning activity was expected to reinforce student learning through self-reflection. Students self-identify areas of strengths to build upon as well as opportunities for improvement and brainstorm on ways they can improve, all with the guidance and support of a faculty member. The project administrator hypothesized that the intervention implementation would improve student perceived self-confidence, satisfaction, and anxiety while having a direct impact on the reinforcement of the students' learning.

CHAPTER II

Research Based Evidence

Current literature was reviewed in support of this capstone project. The purpose of this research interest literature review was to gain knowledge and provide insight into current literature related to the use of simulation-based learning, its impact on student satisfaction, perceived self-confidence, and anxiety including the debriefing component in nursing education.

Background

Significance

Nursing educators are being faced with the possibilities of decreasing student opportunities to further their learning experiences in real-world clinical situations (LaFond & Van Hulle Vincent, 2012; Smith & Barry, 2013). Patients are presenting to hospitals with more complex medical diagnoses. Combined, this is creating a need for nurses to practice at the expert level in their area of practice in efforts to provide safe patient care (Piscotty et al., 2011). Current nursing students are documented as receiving a decreased amount of traditional clinical exposure supplemented by increased exposure to simulation-based learning experiences (Bambini et al., 2009). Incorporation of simulation-based learning experiences provides the student with a safe environment, where the patients are exempted from harm, and student learning can be reinforced and supported (Smith & Barry, 2013).

Overview of Capstone Project

The main purpose of this capstone project was to determine if the addition of a simulated activity into the 96 required clinical hours had an impact on student

satisfaction, perceived self-confidence, and levels of anxiety. The population sample for this study included 64 currently enrolled nursing students in the NUR 111 Intro to Health Concepts course. Two community colleges in rural eastern North Carolina, both identified as serving tier-one counties, participated in the study. To ensure validity of the study, a minimum of 42 participants were needed. The Intro to Health Concepts nursing course consisted of five didactic, three lab, and six clinical hours per week over a 16-week semester. Students were divided into clinical groups and the clinical schedule was followed when implementing the simulation activity related to the nursing process, head-to-toe assessment and wound care.

Prior to the simulation activity the students were introduced to the nursing concepts and content using traditional lecture. At the conclusion of the lecture the control group participated in traditional clinical activities while the experimental group participated in three simulation clinical activities prior to traditional clinical experiences. Each of the groups completed the pretest and posttest using the nursing anxiety and self-confidence with clinical decision making (NASC-CDM) scale (White 2014) before and after simulation and/or traditional clinical. The experimental group was given a posttest using the NLN (2011) student satisfaction and self-confidence scale at the conclusion of the three simulation activities. It was hypothesized that this intervention implementation would increase students' perceived self-confidence, satisfaction, and decrease levels of anxiety.

Conceptual Framework

Jeffries nursing education simulation model is clearly applicable to nursing education as a foundation for the selection, implementation, and evaluation of a

simulated-based learning activity. This intervention is for improving students' active participation in the learning process as well as providing the students with a safe environment to practice skills without harming a patient. As noted in Figure 2, the simulation model encompasses five major concepts: teacher, student, educational practices, design simulation design characteristics (intervention), and outcomes (Jeffries, 2005; Smith & Roehrs, 2010). In respect to the application of the model's concepts to nursing education each concept is important to consider when developing a simulation-based learning activity as an innovative pedagogical teaching method for improving student learning. Successful learning requires an appropriate interaction between each concept (Jeffries, 2005).

Nursing schools are competing with others for time in the clinical agencies to provide students with valuable learning experiences (Reese et al., 2010). Patients are reporting to hospitals and other health care agencies with more complicated diagnoses requiring nurses to be knowledgeable at the expert level instead of at the beginner level (Gobbi et al., 2012). These changes have directly impacted the need for nursing education to respond with new, innovative student learning activities that adequately prepare future nurses National Council of State Boards of Nursing (NCSBN), 2005; NLN, 2005). The inclusion of more simulated opportunities for students to implement critical thinking skills in response to patient status changes without risk of patient harm is becoming imperative to the learning process. Jeffries nursing education simulation model provides a valid and reliable template to assist nursing educators in implementing simulation interventions to enhance the student learning experience while supporting students in the active learner role verses the passive learner role. These simulated experiences are

hypothesized to have a direct impact on improving student learning, improving students' level of perceived self-confidence, enhancing critical thinking skills, decreasing levels of anxiety, improving student satisfaction, and providing opportunity to gain experience in providing nursing care to complex patients.

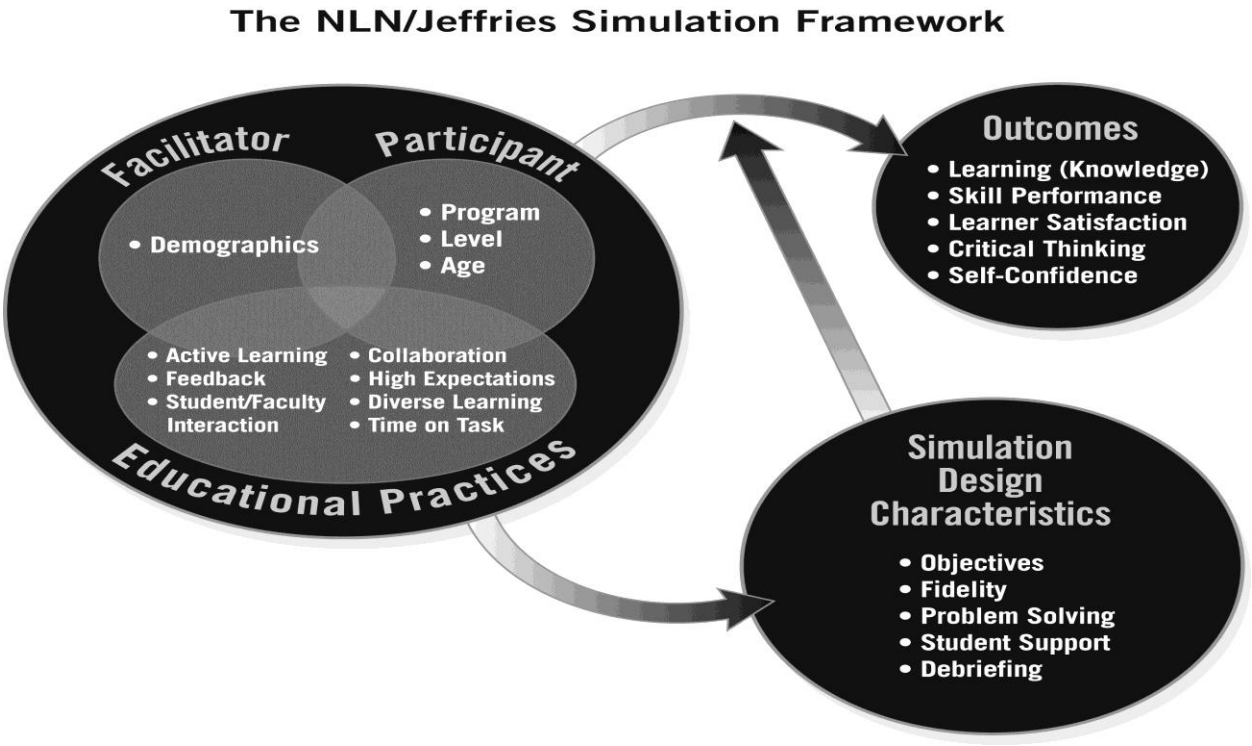

Figure 2. "The NLN/Jeffries Simulation Framework," Jeffries, P. R. (2012). Simulation in nursing education: From conceptualization to evaluation. New York, NY: National League for Nursing, p. 37. Reprinted with permission (Appendix C).

Method

A variety of databases and search engines were explored for the purpose of generating an inclusive literature review related to the implementation of simulation-based learning activities and the use of debriefing after simulated activities for the purpose of improving students perceived self-confidence level, decreased levels of anxiety, and satisfaction. The literature review for this capstone project was conducted using the following research databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), Education Resource Information Center (ERIC), Google Scholar, ProQuest, PubMed, Bulldog Search, and Sage Premier 2013. Key words searched included: nursing simulation education framework, debriefing, theory, self-direction, simulation, and nursing, associate degree nursing, nursing education, transformation of learning, anxiety, and Jeffries.

Literature Summary

Simulation

Simulation-based learning can include a variety of teaching methods from high to low-fidelity simulator manikins, unfolding case studies, case studies, and role playing between students and faculty members. Current literature reviewed included simulation using manikins, some high-fidelity and some low-fidelity.

Implementation of Debriefing

Gunn, Greenhill, and Dix (2011) described a qualitative study, involving 16 out of a possible 21 health care professionals' perspectives on the implementation of a debriefing session after a simulation activity. According to Gunn et al. (2011) CSiM is defined as a one day training workshop that involves the use of simulators in South

Australia. The scenarios build on the concept of obstetric emergencies and include a detailed debriefing at the conclusion of the simulated activity. The intervention of a debriefing session for this study took place at the conclusion of the simulated activity using video playback. Facilitators for the debriefing sessions consisted of a registered midwife and a specialist obstetrician.

Interviews that were 20 minutes in length, were semi-structured and took place on two separate occasions; immediately following the CSiM, and then again between three and six months. The interviews were recorded and transcribed verbatim with three common themes developing: self-reflexivity, connectedness, and social context.

In the area of self-reflexivity the participants reflected on their personal values and beliefs, acknowledging discourse with other participants and themselves while viewing the video tapes, and communicating to reach a consensus which is in direct correlation with Mezirow's transformational learning theory. Individuals remove themselves from their original frames of reference, examining others assumptions and improving on their ability to practice based on what they could do differently after participating in self-reflection.

The debriefing process followed the recommendations established by Jeffries (2005, 2007) in her nursing simulation education framework, where the design is learner centered and included a teacher, student, educational practices, simulation characteristics, and outcomes. The facilitator of the simulation is responsible for observing and facilitating the debriefing session at the conclusion of the simulated activity.

Immersion in the clinical simulation experience allowed a feeling of connectedness between the participant and the scenario. This connectedness allowed the

individual to continue to critically reflect on their response to varying situations, which continues to enhance their learning and perceived self-confidence.

Social context allowed the participants to learn what interventions they implemented that were observed as positive as well as some ways they could have improved their response to the presented scenario. A supportive statement related to the use of debriefing reads: "The social context of group debriefing encourages meaningful collaboration and peer learning" (Gunn et al., 2011, p. 29).

Sim TRACT, a reflective conceptual model for debriefing, was developed by the authors using the 10 steps of Mezirow's transformative learning theory, Lederman's seven common elements and Rudolph, Simon, Raemer, and Eppich's three phases of debriefing (Gunn et al., 2011, p. 31). Debriefing models are rare in the simulation literature; therefore the Sim TRACT model may become a valuable resource for implementing the concept of debriefing after simulation.

Conclusions of the study revealed that a structured simulation activity followed by a debriefing session allows for fostering of transformative learning and supports Jeffries' (2005, 2007) nursing education simulation framework. There is a noted alignment between theory and the findings of the study but a consistency between all study participants is lacking, creating a need for further research. The researchers believe that the level of connectedness to a "disorienting" experience can interfere with the individual's ability to self-reflect and properly engage with the group (Gunn et al., 2011, p. 37).

Dreifuerst (2012), using a quasi-experimental, pretest, posttest research design, test the relationship between Debriefing for Meaningful Learning (DML) to the

development of clinical reasoning skills in comparison to other debriefing tools that are currently being used with simulation-based learning activities. The six components of the model were identified as follows: participant engagement, explore options, explanation of decisions and actions, elaboration, evaluation, and extend on inferential and analytic thinking. Incorporation of the model is justified as the catalyst to student learning.

The sample, consisting of three separate enrollments, combined for a total of 240 nursing students, enrolled in their seventh semester of a baccalaureate degree nursing curriculum at a Midwestern United States school of nursing. Students were informed of the study and gave their consent to participate. Random assignment was used in placement of students into an experimental and a control group. A power analysis was completed to ensure the appropriateness of the sample size.

Three weeks prior to the simulated activity, students completed an online pretest consisting of a 33-item health science reasoning test (HRST) and six demographic questions. The simulation was scheduled to last four hours incorporating high-fidelity simulation in an environment that was symbolic of a real-life clinical setting. Students were randomly assigned various roles such as primary nurse, secondary nurse, recorder, and family member upon their arrival to the simulated clinical site. At the completion of the debriefing session all students were instructed to complete two instruments: debriefing assessment for simulation in healthcare-student version (DASH-SV) and debriefing for meaningful learning supplemental questions (DML-SQ). At the next three week interval the posttest (second version of HRST) was administered online with the option of also completing the second DML-SQ.

Data analysis supported the implementation of higher perceptions of quality debriefing as being significant to increasing students reasoning skills. A structured debriefing session provides "opportunity for teaching and learning that cultivates the thinking necessary for clinical reasoning" (Dreifuerst, 2012, p. 331). Students using the DML method were noted as perceiving the experience to be a positive learning experience.

Limitations to the study included the challenges of an instrument to measure clinical reasoning skills by nursing students. The HRST, used in the study for data collection, was not specific to the nursing profession. Students were not able to be completely randomly assigned which created selection bias.

Review of the study supported the need for implementation of a debriefing session at the completion of a simulated-based learning experience for the purpose of reinforcing student learning. The use of the DML provided structure for the debriefing session, which according to current literature is a missing link in the process that would be beneficial to further enhancing student transformation of learning.

McClure and Gigliotti (2012) support debriefing as an important component to students' learning when using simulation-based learning exercises as shared in their implementation of an educational debriefing tool to guide the debriefing session. They use medieval figures as metaphorical symbols to Neuman's conceptual model to assist in bridging the learning gap between classroom and clinical learning experiences. The article concluded that the use of medieval metaphorical adaptation (MMA) in debriefing will aid the students' rapid transfer of knowledge through "internalization of nursing

concepts, stimulate critical thinking, and promote self-reflection of nursing performance" (p. 323).

In Transforming Learning

Smith, Witt, Klaasen, Zimmerman, and Cheng (2012) shared their comparison study of implementing a high-fidelity simulation-based learning experience for the purpose of providing "an innovative and transformational teaching method" in efforts of reinforcing learning in a legal/ethical course (p. 391). Students were not relating the importance of this course to other nursing courses that included lab hours, which created a concern for faculty. Students did not realize that legal and ethical issues are encountered on a daily bases within nursing practice. It is for this reason that simulated-based learning activities were developed and incorporated into the junior year (third semester), legal/ethical course.

The population consisted of 60 junior level nursing students, randomly assigned to one of three groups: in person case study, online case study, high-fidelity human simulation (HFHS) experience. Each group consisted of four or five students, assigned to a one hour time slot for completion of the same scenario. The first two groups, due to a computer glitch, did not complete the evaluation immediately after the simulated activity, therefore the sample size dropped to 43 participating participants.

The study used a combination research design which included quantitative and qualitative properties. Students completed a one page survey at the completion of the simulation-based learning activity that was analyzed using content analysis. A Likert scale was used for students' to rate their overall learning experience.

Limitations to the study included: a small sample size, use of one course, no comparison group, and the initial study design was not a qualitative design which limited the identification of themes and subthemes. A final limitation of the study was the lack of identified learning outcomes that were student specific.

In conclusion, based on the student and faculty comments preceding the simulation-based learning experience, the use of a high-fidelity human simulation provided the students with a transformational learning experience. The positive comments supported the implementation of a simulated experience into subsequent legal/ethical courses.

Challenges in Nursing Education

Challenges are inherent in many aspects of education and may vary with teaching methods and pedagogies used in facilitating student learning. Gobbi et al. (2012) shared challenges encountered during the development and evaluation phases of simulation-based learning in nursing education, from their review of literature and studies completed locally, over a seven year time frame (2003-2010). The primary purpose of their study was to "develop and evaluate the necessary infrastructures to conduct, research and analysis" the similarities of various teaching methods and pedagogies related to simulation-based learning including the use of virtual interactive practice (VIP®) (p. 330-331). VIP was described as the use of technology, computers, or simulators for the purpose of providing students interaction opportunities with scenarios that closely resemble practice and real clinical environments. The majority of their work was focused on mid-fidelity simulators.

The population sample was selected using a purposive sample, where all relevant potential participants were invited through receipt of a letter or oral invitation to participate in the quantitative/qualitative research design. There were three stages to the study. Stage one consisted of 15-20 students from the child branch. Stage two included approximately 400 adult and child students with stage three concluding with the population sample from stage two.

Methods of data collection included "surveys (open and closed responses), group interviews and debriefs, observational field notes, audio visual data, computer mannequin logs, sequences of student activities (performance and computer interactions), event histories of web-based products and student record data" (Gobbi et al., 2012, p. 338). Common themes were identified from video analyses, group interviews and debriefs, symbolic of a qualitative research design. Five point Likert scales and percentages were used for descriptive data analysis, symbolic of a quantitative research design.

Some of the challenges presented in the study included the large amount of information obtained from video analysis, where several individuals were included in the videotaping, making the analysis overwhelming. The population became too large to use data mosaics as initially planned. Identification of factors that could possibly have an influence on student learning was noted as information that was difficult to pinpoint. Next, the challenge of link tracking during video capture, which internet links were students using during the simulation to provide knowledge necessary for evidence-based decision making, a challenge for future studies.

In conclusion, the study supported the lack of current analytical tools available to consistently measure "complexity of student/practitioner learning, behaviors and

performance over time" (Gobbi et al., 2012, p. 342). Limitations of the study included the use of one institution, technical infrastructures inconsistencies across institutions, and technical incompatibilities.

Satisfaction and Self-Confidence

Smith and Roehrs (2010), in a descriptive, correlational study assessed the effects of a simulated experience and the correlating factors on student satisfaction and self-confidence. The nursing education simulation framework was identified as the foundation for the study. Two outcomes of the model were measured: student satisfaction and self-confidence. Five research questions were formulated for the 68 out of 72 possible junior level baccalaureate nursing students enrolled in their first medical-surgical course, who volunteered to participate. Ninety percent of the participants were females with an average age of 23.4 years. Sixty nine percent reported having experience in a health care setting outside of nursing school. The range of experience was from zero to 11 years. The setting consisted of a small public nursing school in the western United States.

Descriptive and correlational statistical analysis was used including mean and standard deviation, Spearman's rho, and multiple linear regressions. Data analysis concluded "that a combination of demographic and design characteristics accounts for half the variance in satisfaction and self-confidence when using HFS" (Smith & Roehrs, 2010, p. 77).

Implications for nursing included the need for nurse educators to ensure a quality simulation design. The results of the study supported the need for an adjustment in

faculty workloads to allot for time to develop simulated activities that include clearly defined objectives, and appropriate problems to solve.

Anxiety Level of Students

First-year, first semester nursing students bring to the learning experience extreme levels of apprehension when it comes to providing patient care for the first time according to a study by Gore et al. (2011). The authors conducted research to determine if there was a significant difference in students' anxiety levels when participating in preclinical simulation activities verses students who did not participate.

The convenience sample size included a total of 70 first semester junior baccalaureate nursing students in fundamentals skills and health assessment course at a southeastern university. Eighty-eight percent were females, 98% white and the average age was noted as 22 years. Random assignment was used for two groups: preclinical simulation experience (intervention group) and no simulation experience. The intervention took place in a mock hospital unit where students provided patient care once the patient problem was identified. A total of four hours was spent on the simulation exercise followed by a debriefing meeting.

STAI (State-trait anxiety inventory) was the measurement tool used in the research study. Results document a significant difference in the anxiety scores of the control and simulation group. The group receiving the simulation exposure noted lower levels of anxiety (11.0) than the control group (13). A two-tailed *t* test, from the study results, showed a statistically significant difference in the STAI mean scores with a p=.01. Aside from the statistical analysis of the study, faculty identified the evaluation of students' clinical judgment and abilities as a positive outcome of the simulated learning

activity. This gained knowledge assisted the faculty members with making clinical assignments that were more pertinent to students' identified learning needs.

Limitations of the study included the sample size which contained similar demographic characteristics, and the use of a single school of nursing, which decreased the generalizability of the study. Also, the self-reporting of the students' anxiety levels may not be representative of actual feelings. A pilot study was conducted prior to the actual research study which supports the findings of the larger study.

Another study from Szpak and Kameg (2013) explored the impact of high-fidelity human simulation on nursing students' levels of anxiety prior to interaction with mentally ill patients. A quantitative, non-randomized, quasi-experimental study was used including a sample size of 44 students, divided into three groups. Students were currently enrolled in a psychiatric nursing course. Each student attended a two-hour lecture on therapeutic communication followed by a simulation exercise. A private, suburban university provided the location for the study.

The measurement tool identified for this study was also the STAI, however with this study there were two categories measuring state anxiety and trait anxiety. State anxiety was defined as a subjects feelings towards stressors and trait anxiety was defined as a person's personality and "proneness" to anxiety (Szpak & Kameg, 2013, p. e15).

Results from the study were significant in capturing changes in student anxiety levels following simulation experience. The results supported the use of high fidelity human simulation in decreasing students' anxiety levels.

Limitations of the study were noted as a small sample size (n=44) and limited randomization. The structure of the simulation exercise lacked standardization between

instructor and student interaction. Instructors were the voice of the mental health patient in the scenario which was noted as possibly affecting the outcome. The inability of the simulator to project nonverbal communication cues and lack of sampling diversity were also notable limitations of the study.

Interdisciplinary Collaboration

Reese et al. (2010) documented a study, using a combined research design of quantitative and qualitative analysis, for the purpose of implementing simulation-based learning activities to improve interdisciplinary collaboration. Five research questions were proposed that related to the students perceptions of the educational experience in relation to the nursing education simulation framework, increased self-confidence in the care of a postsurgical patient, satisfaction with interdisciplinary collaboration, and perceptions of differences between the two groups: medical students and nursing students.

This small study used a convenience sample which consisted of 15 third-year medical students and 13 senior level baccalaureate nursing students. Males and females were equal with ages ranging from 18 to 36 years. Ethnicity consisted of Caucasian, Asian, African American, and Latino.

Simulation-based learning activity took place in a room that had been decorated to resemble a monitored patient suite, including oxygenation, cardiac monitors, and code cart with realistic medications. Prior to the simulated activity the nursing students received a taped end of shift report while the medical student received verbal report from a physician on five patients. Once the nursing student arrived in the patient room to complete the head-to-toe assessment there was a noted change in the cardiac monitor

which clued the nursing student to use the intercom in the room to requisition assistance and contact the medical student. Upon the arrival of the medical student, the two were encouraged to collaborate in efforts to provide patient care in the emergency situation. Immediately after completion of the 20 minute simulation activity there was a structured debriefing session where each individual was asked 11 questions. At the completion of the debriefing session participants were given survey instruments to complete.

The simulation design scale (SDS) uses 20 items with five subscales and a five-point Likert scale to evaluate the design. Another instrument used was the satisfaction and self-confidence scale, containing 14 items for the purpose of measuring the students' self-confidence in providing care to the postsurgical patient. A third instrument utilized in the data collection process was the collaboration scale which measured the interdisciplinary collaboration. There were three open-ended questions at the end of this instrument used for qualitative analysis.

Results of the study identified students' improved self-confidence, appropriate simulation activity based on where the students were in their current learning, and documented support of their independence in problem solving. There were no noted significant differences between the two groups (nursing students and medical students) in the areas of self-confidence, appropriateness of the learning experience, and satisfaction with the collaboration. Four themes were evident from the qualitative analysis of data: "interaction with other disciplines, real-life situations, experience with a code, and uncertainty" (Reese et al., 2010, p. 36). The findings from this study are supportive of the need for simulation-based learning activities to be carefully constructed, with identifiable student learning objectives.

An identified strength of the study was the use of a conceptual model in the development of the simulation-based learning activity along with the use of instruments that have documented reliability and validity. The use of the concept in structuring the simulation-based learning activity afforded clear and concise student learning objectives. One identified weakness of the study was the small sample size decreasing the generalizability of the study.

Gaps in Literature

From the literature review there was a noted continuous gap in having an instrument that was consistent across nursing curriculums, for measuring the reliability and validity of the implementation of a simulation-based learning experience in nursing education. Scant amounts of literature document the educational outcomes of students learning when exposed to simulation (Seropian, 2003). There were personal reports and completed student response surveys that supported the transformation of learning, application of knowledge, and increased student perceived self-confidence that took place when simulation was incorporated into the curriculum. Literature was also scant in documenting the use of simulation in associate degree nursing programs. A higher percentage of the published literature documents on the use of simulation at the university level. There was also a noted gap in the literature on instructions on how to structure effective simulated activities; however Pamela Jeffries' nursing education simulation framework provided the structure for this capstone project, as it was beginning to emerge in the simulation literature as a valid and reliable model.

Strengths and Limitations of Literature

The identified strengths of the literature included the documented need for more simulation-based learning activities in nursing education curriculum due to the increasing limits that are being placed on traditional clinical opportunities. Also, with the increased use of electronic health record documentation there is a stronger push for incorporating effective communication skills within the simulated activity in the area of role play between students and physicians, supporting the collaboration between the two disciplines in efforts to deliver safe, effective, nursing care. Another identified strength of the literature was the identification of the role that a safe and supportive environment, created within the simulation-based learning activity, provides the students in support of their learning.

Limitations of the literature were: small sample sizes, predominately BSN prepared students and limited ADN prepared students, utilization of one institution verses multisite, structured-consistent student learning outcomes, and lack of a specific, consistent measurement tool for capturing clinical reasoning used by students.

Summary

In summary, nursing education faculty are challenged with incorporating teaching methods that are satisfying to students' learning styles while at the same time increasing the students' perceived self-confidence, satisfaction, and application of knowledge. Nursing students are being limited on the time they can spend in clinical agencies fine tuning assessment skills and practicing effective communication due to concerns of patients' increasing acuity levels and patient safety. Patients are reporting to the clinical sites with more challenging health care issues than they were in the past, creating the

need for novice level students to achieve at higher levels of confidence than in the past. First-year nursing students have been documented as demonstrating extreme levels of apprehension on their first clinical day predisposing them to interruptions in the learning process (Gore et al., 2011). Students need environments that are safe for them to practice in, limiting the risk of patient harm (LaFond & Van Hulle Vincent, 2012).

Implementation of simulation-based learning, including the debriefing component, supports the students' transfer of knowledge acquired from the didactic sessions to the application of that knowledge in the simulation process. Debriefing allows the student to self-reflect, while being supported by faculty and colleagues in the learning situation. Literature supports and encourages debriefing immediately following the simulation-based learning activity in efforts to capture the positive and explore the areas of needed improvement (Reese et al., 2010). A model such as the DML would provide consistency for faculty as they support student learning in the debriefing session. This consistency would reflect in the promotion of student learning and acquisition of increasing use of clinical reasoning skills (Dreifuerst, 2012).

CHAPTER III

Methodology

Nursing students are limited in their traditional clinical experiences for a variety of reasons. Some of these reasons include but are not limited to: decreasing patient census, complexity of health care issues, patient safety concerns, lack of interdisciplinary communication further limited by the introduction electronic health records and documentation (Jeffries et al., 2011). Nursing educators are implementing simulation learning activities into the lab and clinical component of the course to enhance student learning, however literature is deficient in documenting the results this intervention has on students enrolled in associate degree nursing courses, especially in the first-year, first-semester course, NUR 111 Intro to Health Concepts.

Nursing educators are being faced with the possibilities of decreasing student opportunities to further their learning experiences in real-world clinical situations (LaFond & Van Hulle Vincent, 2012; Smith & Barry, 2013). Nurse educators are challenged with the development of updating teaching methods and inclusion of interactive learning activities that compensate for the above mentioned clinical limitations to student transition of learning and application of knowledge. Simulation has been documented as a method of facilitating student learning by application of theory to practice (Reese et al., 2010).

Statement of Purpose

This capstone project included the implementation of three mid-fidelity simulation-based learning scenarios into the current concept-based curriculum NUR 111 course at one local rural community college. The results were compared to the second

participating community college that continued using traditional clinical in their NUR 111 course. Jeffries (2005, 2007) nursing education simulation model provided the framework for the selection, implementation, and evaluation of the three simulation-based learning scenarios. The effect of simulation-based learning activities on perceived self-confidence levels of novice students will lead the reader to gain knowledge of two identified purposes:

- The purpose of this capstone project was to determine the effect mid-fidelity simulation has on perceived self-confidence levels, and satisfaction of novice nursing students in an associate degree nursing program first-year, first-semester course.
- The purpose of the capstone project was to determine if implementation of simulation into the first-year, first-semester nursing fundamentals course decreased students' anxiety levels prior to their first clinical experience.

Capstone Project Description

Design

A quantitative, pretest-posttest comparison group design was used for the purpose of comparing traditional clinical with clinical incorporating mid-fidelity simulation. There was an experimental (simulation) group and a control (traditional) group using students currently enrolled in the nursing course NUR 111 at the local community colleges. Students were randomly assigned to clinical groups.

All nursing students currently enrolled in NUR 111 Intro to Health Concepts at the identified community college participated as the experimental group, in a total of

three simulated based learning scenarios during the time designated in the current curriculum when content is covered related to the nursing process, head-to-toe assessments, and wound care. Each of the simulated activities included a debriefing session, facilitated by a current faculty member. Prior to the first day of simulation/clinical each group, experimental and control, completed the nursing anxiety and self-confidence with clinical decision making (NASC-CDM) scale (White 2014). At the conclusion of the third debriefing session the students in the experimental group were asked to complete the NLN (2011) instrument related to student satisfaction and perceived self-confidence for the purpose of data collection. All students in the experimental and control group were asked to complete the nursing anxiety and self-confidence with clinical decision making (NASC-CDM) scale (White 2014) again at the conclusion of the simulation/traditional clinical experience (Figure 3). The data collected was submitted to an identified statistician for assistance with data analysis and interpretation.

Figure 3. Sampling Procedure

Setting

A nursing lab within a small rural community college located in eastern North Carolina provided the setting for the research interest capstone project. The lab currently provides a combination of stasis adult and pediatric manikins along with two mid-fidelity adult simulators. The lab mimics a small community emergency room with remote control beds and stretchers. Simulated oxygen equipment is attached to a wall over the beds. The two beds containing the mid-fidelity simulator manikins have laptops that serve as monitors for the patients' blood pressure, oxygen saturation, pulse, and heart rhythm. Supplies are available for students to actively perform various skills such as inserting an intravenous access line, nasogastric tube, foley catheter, bandages, and medication administration. Interdisciplinary collaboration is encouraged and supported with the use of cell phones and wireless microphone system for the purpose of relaying and receiving pertinent patient information to various members of the interdisciplinary teams. Monitors are strategically placed for the purpose of monitoring student interaction at the patients' bedside.

Sample

Experimental Group

The convenience sample included random assignment of 32 first-year, first-semester nursing students, ranging in age from 18 to 50 years, currently enrolled in NUR 111 Intro to Health Concepts course within the associate degree nursing program. Students participated in simulation-based learning activities as a part of meeting their required 96 hours of clinical. Upon completion of an orientation to the capstone project and student expectations, the students were asked to voluntarily participate in the

evaluation section of the study otherwise, they were all expected to participate in the simulation-based learning activities. Their participation or lack of participation would not affect their course grade. A power analysis was calculated prior to implementation of the intervention to determine an appropriate sample size of 42 participants, 21 participants were need in each group.

Control Group

The control group included currently enrolled NUR 111 students from the second participating rural, tier one community college. This group was exposed to traditional clinical without inclusion of the simulated activity. There were a total of 32 students in this group.

Power Analysis

A statistical power analysis was performed by the project administrator utilizing the computer program GPower 3.1 developed by Faul, Erdfelder, Buchner, and Lang (2009). Power analysis was based on one-tailed test with an effect size of 0.8, significance level or alpha (α) of 0.05, and a power of 80%. Minimum sample size was determined to be 42 participants, with 21 each in experimental and control groups.

Protection of Human Subjects

The project administrator completed the Collaborative Institutional Training Initiative (CITI) through the university on May 24, 2013. Appropriate forms were submitted and approved by the Institutional Review Board (IRB) prior to conducting any research. Each community college was aware of the research and gave consent to participate prior to conducting research.

No identified risk of harm to participants and no deception or incentives were granted as stated in the consent form. The return of the completed survey instrument was considered the students' informed consent. Deceptions were defined as the students' expectations of something expected but not received. For example, their participation would not lead to a higher grade than the one they were currently earning in the classroom, lab and clinical. Incentives were defined as gifts given to students' for their participation in the project, such as gift cards and excused class absences. Students in the experimental group were expected to participate in the simulation-based learning activity however their participation in the evaluation section of the simulation-based learning activity was on a volunteer basis.

Instruments

Two tools of measurement were used in the capstone project: NLN (2011) student satisfaction and perceived self-confidence scale and nursing anxiety and self-confidence with clinical decision making (NASC-CDM) scale (White, 2014). These instruments were chosen to collect the students' perception of the effect the simulation activity had on their perceived level of self-confidence, satisfaction, and anxiety.

The posttest, only instrument used in the capstone project, is from the NLN (2011) and measures student satisfaction and perceived self-confidence. There are four NLN instruments that were permitted by the NLN (2011) for utilization in the project related to the simulation design, educational practice, satisfaction and self-confidence. The instruments are in questionnaire form, and using paper and pencil, only the instrument related to student satisfaction and perceived self-confidence was administered

to the students directly following the debriefing session of the third simulated-based learning activity.

The student satisfaction with learning scale is a five-item instrument to measure the students' satisfaction of the simulated-based learning activity. Nine experts in the field established content validity of the instrument while a Cronbach's alpha for reliability was recorded as 0.94 (Jeffries & Rizzolo, 2006).

The next instrument that was used in the capstone project was the self-confidence in learning simulation scale for the purpose of measuring students' perceived self-confidence. The instrument contains eight items with content validity being established by nine clinical experts and reliability recorded with a Cronbach's alpha of 0.87 (Jeffries & Rizzolo, 2006).

The nursing anxiety and self-confidence with clinical decision making (NASC-CDM) scale (White, 2014) is a 27-item, 6-point Likert-type tool, with two subscales was also utilized in the project with permission. A stable three-dimensional scale was produced from the construct validity assessment, using exploratory factor analysis. A positive, moderate, and statistically significant correlation of the tool subscales was demonstrated during the convergent validity assessment. Internal consistency reliability was documented with α =.97 for self-confidence and α=.96 for anxiety. A Cronbach's alpha for the self-confidence subscale α=.98 and for the anxiety subscale α=.97. "No substantial influences" were noted if any item in the subscales were deleted (White, 2014, p. 20.). White (2014) suggest the NASC-CDM scale as a beneficial tool for nurse educators to use in assisting novice nursing students to improve in the area of skills related to clinical decision making.

Method

Groundwork

Following receipt of the *DNP Capstone Project Proposal Approval* and IRB approval the project administrator began planning for implementation of the capstone project "The impact of simulation-based learning experience on student satisfaction, perceived self-confidence and anxiety." Program directors from both community colleges met to finalize dates for survey completions, which were to occur prior to any clinical experiences, and assess the number of enrolled students in both NUR 111 courses. Next, the project administrator met with the course coordinator of the experimental group to finalize the dates of the three simulated-based learning activities, decide on which nursing concepts would be used as simulated scenarios, and to review simulation objectives, debriefing, and evaluation methods. There were two instructors, including the course coordinator for the experimental group, both of which were informed of the opportunity to participate; however only one participated.

The three simulations included concepts related to the nursing process, head-to-toe assessment, sterile and non-sterile wound care. Simulation scenarios were adapted from *Clinical Simulations in Nursing Education* by Gasper and Dillon (2012). Documentation of the validity of the chosen simulation scenarios was unknown. Jeffries nursing education simulation model was applied during the review of the simulation scenarios to ensure the five major concepts: teacher, student, educational practice, simulation design characteristics (intervention), and outcomes were included allowing for relevancy of the projects conceptual-theoretical-empirical construction diagram (Figure 1).

Control group

The capstone project was explained to the student group and the consent/declination forms handed out, at the beginning of class. Time was given for the students to complete the consent/declination forms. Next, pretests were administered to the group, the week prior to the students first day of the traditional clinical experience. The posttests were also administered as a group, just prior to class during the week after the traditional clinical experience concluded.

Experimental group

The capstone project was explained to the student group, consent/declination forms handed out, completed. Next, pretests were completed as a group, five weeks into the semester, one week prior to the first simulation scenario and just before the simulation orientation dialogue. Both the consent/declination forms and the pretests were collected using previously provided envelopes. The group was further divided using the clinical group assignments for each individual student, resulting in a total of three groups. Two groups met on Thursdays with one group attending the morning session and the other attending an afternoon session. The remaining student group met on Fridays. The simulation orientation included a brief overview of how the simulation experiences would unfold, expectations of them as students, and the role of the instructors as facilitator and observer. Students were informed of the concepts that would be covered and provided the dates of the simulation activities with the first one scheduled to begin in one week at the completion of their didactic session related to introduction of the nursing process including the collection and assessment of vital sign data. The remaining two simulations were scheduled to coincide with the content didactic sessions: head-to-toe

assessment and care of wounds. The objective for each simulation activity was discussed on the day of simulation prior to implementation of the students' active participation in the scenario. Opportunity was provided for students to answer questions in between the sharing of objectives and transition to the simulated setting, known as the "patients" hospital room.

On the day of the first simulation activity students were randomly paired, the scenario and objectives were shared and students were provided 15 minutes to reference any handwritten notes or textbook notes necessary to complete the simulation activity. The simulation lab was set up the day before the scheduled activity to allow the project administrator and course coordinator more time to spend in the role of facilitator. The project administrator along with the course coordinator ran the simulation scenario with each of them facilitating two students through the simulation simultaneously. At the conclusion of the scenario, when all students for that day had completed the experience a debriefing session was held based on Jeffries (2007) simulation framework using the following open-ended questions: (a) "How did you feel throughout the simulation?" (p. 30) and (b) "Were you satisfied with your ability to work through the situation?" (p. 30). Jeffries' framework poses a third question related to the group, however the simulations in this project only included pairs of students therefore the question was reworded to ask, "What did you do well as a pair?" An additional question was added, "What did you do well independently?" The next two simulation scenarios ran using the same order as the first: introduction to simulation activities, sharing of objectives, 15 minute review of notes, engagement in simulation scenario, and debriefing session.

At the conclusion of the third simulation scenarios' debriefing session the students in each of the three groups completed the posttest. With the students divided over two days the posttests were not all completed on the same day, but were completed in the same week prior to the students' participation in any traditional clinical experiences.

Data Collection

Data was collected using the NLN (2011) student satisfaction and self-confidence in learning instrument along with nursing anxiety and self-confidence with clinical decision making (NASC-CDM) scale (White, 2014). These instruments were on paper and were provided for students to complete using pencils. Students' completion of the instruments supported their previous signed consent for participation. Information collected was anonymous, as names were not asked to be included on the survey instrument. The main purpose of the capstone project was to learn if the use of simulation-based learning activities had an impact on students' perceived self-confidence, satisfaction, and anxiety.

Statistical Analysis

Statistical Packages of the Social Sciences (SPSS®) was used to analyze the data, and asses the mean changes of the experimental and control groups for a significant difference in students' satisfaction, perceived self-confidence and anxiety after exposure to a mid-fidelity simulation lab activity verses traditional clinical. A statistician with expert knowledge in the area of research ran the statistical analysis and shared the results with the project administrator.

Limitations

A limitation of the study might be the use of two separate colleges; however each is located in a rural area of eastern North Carolina and both are classified as serving tier one counties. The small, homogenous sample size and the nursing faculty selection of and adaptation of the three simulation scenarios could be seen as a limitation. Another limitation of the study was identified as the use of the NLN (2011) student satisfaction and self-confidence in learning tool as a post test for the experimental group only.

Summary

This study used a quantitative, pretest/posttest research design, with a sample size of 64 first-year, first-semester nursing students within an associate degree nursing program. The purpose of the study was to determine if the implementation of a mid-fidelity simulation-based learning experience as a component of the learning process prior to traditional clinical experience had a direct impact on students' perceived self-confidence levels, satisfaction, and anxiety levels. Current literature is deficient in documenting significant evidence of the impact simulation-based learning experiences have on students' satisfaction and self-confidence levels, especially at the associate degree level. Changes in health care such as the acuity level of patients and the competition for clinical space and time has directly impacted the need for nursing education to respond with new, innovative student learning activities that adequately prepare nurses (NCSBN, 2005; NLN, 2005). The inclusion of simulated-based learning activities is one example of an innovative teaching strategy that increases critical thinking skills, self-confidence, and satisfaction (Jeffries & Rizzolo, 2006; Smith & Barry, 2011; Smith & Roehrs, 2010) while also decreasing students' levels of anxiety (Gore et al.,

2011; Szpak & Kameg, 2013). This capstone project serves as an extension of current studies found in the literature to add validity and reliability to the use of simulation as an extension or supplement to traditional clinical experiences. It also supports the use of simulation-based learning activities as an innovative teaching strategy to decrease anxiety levels, improve students' perceived self-confidence, and satisfaction in associate degree nursing programs.

CHAPTER IV

Results

This capstone project included the implementation of a mid-fidelity simulation-based learning activity into the current concept-based curriculum NUR 111 course at one local rural community college and a comparison of the results to the second participating community college utilizing only traditional clinical in their NUR 111 course. This chapter presents the results of statistical analysis to the two identified purposes:

- The purpose of this capstone project was to determine the effect mid-fidelity simulation has on perceived self-confidence levels, and satisfaction of novice nursing students in an associate degree nursing program first-year, first-semester course.
- The purpose of the capstone project was to determine if the implementation of simulation into the first-year, first-semester nursing fundamentals course decreases students' anxiety levels prior to their first clinical experience.

Sample Characteristics

The sample population included all 64 students enrolled in NUR 111 from two rural community colleges with 100% of these students completing the pretest. During the semester, five students withdrew from the course and one student was absent on the day the last survey was completed resulting in a final sample population of 58 students. A return rate of 91% is considered adequate for this project.

Characteristic information was collected during administration of the pretest for a total population of 64 students. The two groups were evenly divided with 32 students enrolled at each participating community college. Females accounted for 89.1%, while

males accounted for 10.9% of the population. Student's ages ranged from 19 to 59 years with a mean age of 29.2 years (*SD* = 9.09). Ethnicity of the sample included African American (*n* = 28, 43.8%), American Indian (*n* = 1, 1.6%), Caucasian (*n* = 34, 53.1%), and other (n = 1, 1.6%). The majority of the population are currently unemployed (*n* = 46, 71.9%). Previous college experience ranges from one to two semesters (*n* = 2, 3.1%), three to four semesters (*n* = 27, 42.2%), greater than four semesters (*n* = 21, 32.8%), and completion of a degree (*n* = 14, 21.9%). Of all students, seven (10.9%) report having previously experienced simulation activities in other trainings, while 57 (89.1%) deny having experienced simulation activities. Of all students, six (9.4%) were confused as to what an externship was, while 54 (84.4%) responded that they had not participated in any type of externship prior to this simulation experience, with the remaining two (6.3%) having previously participated in some type of externship. The frequency distributions of the characteristic variables of the population are presented in Table 1.

Table 1

Frequency Distribution of Characteristic Variables of All Students

Characteristic Variable	*N*	%
Group		
Intervention (Simulation Activity)	32	50
Control (Traditional Clinical No Simulation)	32	50
Gender		
Males	7	10.9
Females	57	89.1
Ethnicity		
African American	28	43.8
American Indian	1	1.6
Caucasian	34	53.1
Other	1	1.6
Currently Working		
No	46	71.9
Yes	18	28.1
College Experience		
1-2 semesters	2	3.1
2-3 semesters	27	42.2
>4 semesters	21	32.8
Degree Completed	14	21.9
Participation in Externship		
Confused (Did not know what this was.)	6	9.4
No	54	84.4
Yes	4	6.3
Prior Simulation Experience		
No	57	89.1
Yes	7	10.9

Characteristics of Control Group

A total of 32 (50%) students participated in the traditional clinical experience. Students' ages ranged from 20-48 with a mean age of 28.88 years (*SD* = 8.5). Six (18.8%) report currently working while 26 (81.3%) deny current employment. Three (9.4%) of the control group participants are male, while 29 (90.6%) are female. Ethnicity includes African American (*n* = 14, 43.8%), American Indian (*n* = 1, 3.1%), and Caucasian (*n* = 17, 53.1%). Previous college experience includes three to four semesters (*n* = 15, 46.9%), greater than four semesters (*n* = 9, 28.1%), and completion of a degree (*n* = 8, 25.0%). Participation in an externship includes some students being confused and not sure of what an externship is (*n* = 2, 6.3%), while others have never participated in externship (*n* = 28, 87.5%) and some have (*n* = 2, 6.3%). Of the 32 students, 29 (90.6%) have no previous experience with simulation learning activities and three (9.4%) note previous exposure to simulation. The frequency distributions of the characteristics variables of students in the control group are presented in Table 2.

Characteristics of Intervention Group

A total of 32 (50%) students participated in the simulation learning experience. Students' ages ranged from 19-59 years with a mean age of 29.4 years (*SD* = 9.8). Twelve (37.5%) report currently working while 20 (62.5%) deny current employment. Four (12.5%) of the control group participants are male, while 28 (87.5%) are female. Ethnicity includes African American (*n* = 14, 43.8%), other (*n* = 1, 3.1%) and Caucasian (*n* = 17, 53.1%). Previous college experience includes one to two semesters (*n* = 2, 6.3%), three to four semesters (*n* = 12, 37.5%), greater than four semesters (*n* = 12, 37.5%), and completion of a degree (*n* = 6, 18.8%). Participation in an externship

includes some students being confused and not sure of what an externship is (*n* = 4, 12.5%), while others have never participated in externship (*n* = 26, 81.3%) and some have (*n* = 2, 6.3%). Of the 32 students, 28 (87.5%) have no previous experience with simulation learning activities and four (12.5%) note previous exposure to simulation. The frequency distributions of the characteristic variables of students in the control group are presented in Table 2.

Table 2

Frequency Distribution of Characteristic Variables Between Groups

Demographic Variable	Traditional *n* (%)	Simulation *n* (%)
Gender		
Male	3 (9.4)	4 (12.5)
Female	29 (90.6)	28 (87.5)
Ethnicity		
African American	14 (43.8)	14 (43.8)
American Indian	1 (3.1)	0 (0.0)
Caucasian	17 (53.1)	17 (53.1)
Other	0 (0.0)	1 (3.1)
Currently Working		
No	26 (81.3)	20 (62.5)
Yes	6 (18.8)	12 (37.5)
College Experience		
1-2 semesters	0 (0.0)	2 (6.3)
3-4 semesters	15 (46.9)	12 (37.5)
>4 semesters	9 (28.1)	12 (37.5)
Degree Completed	8 (25.0)	6 (18.8)
Externship		
Confused	2 (6.3)	4 (12.5)
No	28 (87.5)	26 (81.3)
Yes	2 (6.3)	2 (6.3)
Prior Simulation		
No	29 (90.6)	28 (87.5)
Yes	3 (9.4)	4 (12.5)

Review of Instruments

The Nursing Anxiety and Self-Confidence with Clinical Decision Making Scale (NASC-CDM) was used to measure students' perception levels of confidence and anxiety during their clinical making decision process in three dimensions. Twenty-seven questions make up the scale, with each question categorized into one of three dimensions. Dimension one reflects the students' level of confidence and anxiety in the area of gathering resources and fully listening. Dimension two examines the students' use of information to see the big picture, while dimension three reflects knowing and acting in clinical decision making. Both the intervention and control group completed the NASC-CDM as a pretest and posttest.

The National League for Nursing Student Satisfaction and Self-Confidence in Learning (NLN, 2005) instrument was completed by the intervention group only at the completion of the third simulated learning experience. The purpose of this instrument was to measure the students' level of satisfaction with the simulated learning experience. This instrument is described in more detail later. Internal consistency reliability (coefficient alpha) of dimensions for the pretest (NASC-CDM) is noted in Table 3.

Table 3

Internal Consistency Reliability

Dimension	Self Confidence	Anxiety
1	α= .96	α= .98
2	α= .92	α= .94
3	α= .94	α= .95

Findings

Students' Perceived Self-Confidence

The initial purpose of this capstone project was to determine the effect mid-fidelity simulation has on perceived self-confidence levels of novice nursing students in an associate degree nursing program during the first-year, first-semester course. A paired sample *t*-test was used to compare pre to post change scores within the intervention and control groups for each of the three dimensions using the NASC-CDM instrument. Dimension one reflects the students' level of confidence and anxiety in the area of gathering resources and fully listening with a noticeable larger effect size and mean improvement achieved in the control group ($t(28) = 5.58$, $p < .001$, $d = 1.05$) rather than the intervention group ($t(28) = 2.61$, $p = .014$, $d = 0.49$). Dimension two which examines the students' level of self-confidence in the area of using information to see the big picture reveals statistically significant results in both groups with $p < .001$, with the following results: intervention group ($t(28) = 4.73$, $p = .000$, $d = 0.89$) and the control group ($t(28) = 5.22$, $p = .000$, $d = 0.98$). The third dimension related to the students' self-confidence in their knowing and acting in the clinical decision making process was statistically stronger in the control group ($t(28) = 4.91$, $p < .001$, $r = 0.68$) than in the intervention group ($t(28) = 2.67$, $p = .013$, $r = 0.45$). Each group had statistically significant improvements in self-confidence from the pre- to posttest; however the improvement was stronger in the control group with a $p < .001$ for all three dimensions related to students' perceived self-confidence. Results are presented in Table 4.

Table 4

Between Group Comparison of Students' Perceived Self-Confidence Dimension 1-3

Dimension/Group	*t*	*n*	*Df*	*p*	*d*	Pre *M*	Post *M*	*SD*
Dimension 1								
Intervention Group	2.61	29	28	.014	0.49	4.36	4.81	.45
Control Group	5.58	29	28	.000	1.05	3.59	4.93	1.34
Dimension 2								
Intervention Group	4.73	29	28	.000	0.89	3.78	4.52	.74
Control Group	5.22	29	28	.000	0.98	3.33	4.49	1.15
Dimension 3								
Intervention Group	2.67	29	28	.013	0.50	3.78	4.35	.58
Control Group	4.91	29	28	.000	0.93	3.03	4.17	1.14

The descriptive statistics associated with student self-confidence mean changes between the intervention and control group across three dimensions are reported in Table 5 and 6. It can be seen that the intervention group on dimension one had a smaller gain in self-confidence (M = .45, SD = .92) compared to the control group (M = 1.34, SD = 1.29; F (1, 56) = 9.20, p = .004, d = 1.05). Thus, the null hypothesis of no difference between the mean change was rejected. Results are presented in Table 6.

It can be seen that the intervention group on dimension two had a smaller gain in self-confidence (M = .74, SD = .84) compared to the control group (M = 1.15, SD = 1.19; F(1,56) = 2.34, p = .132, d = 0.98). Thus, the null hypothesis of no difference between the mean change was rejected for dimension two. Results are presented in Table 5 and Table 6.

Dimension three shows the intervention group with a smaller gain in self-confidence (M = .58, SD =1.17) compared to the control group (M = 1.14, SD = 1.25; F(1,56) = 3.18, p = .08, d = 0.93). Therefore, the null hypothesis of no difference between the mean change was also rejected for this dimension. Results are noted in Table 5 and 6.

Table 5

Comparison of Mean Changes Between Intervention and Control Groups Dimensions 1-3

Dimension/Group	*M*	*N*	*SD*	*t*	*df*	*d*
Intervention/Dimension 1	.45	29	.92	2.61	28	0.49
Intervention/Dimension 2	.74	29	.84	4.73	28	0.89
Intervention/Dimension 3	.58	29	1.17	2.67	28	0.50
Control/Dimension 1	1.34	29	1.29	5.58	28	1.05
Control/Dimension 2	1.15	29	1.19	5.22	28	0.98
Control/Dimension 3	1.14	29	1.25	4.91	28	0.93

Table 6

Descriptive Statistics for Student Self-Confidence between Groups

Dimension	*Df*	*f*	*p*
Dimension 1 (Between Groups)	1	9.204	.004
Within Groups	56		
Dimension 2 (Between Groups)	1	2.338	.132
Within Groups	56		
Dimension 3 (Between Groups)	1	3.182	.080
Within Groups	56		

Anxiety

The next purpose of this capstone project was to determine if the implementation of simulation into the first-year, first-semester nursing fundamentals course decreases students' anxiety levels prior to their first clinical experience compared to first-year, first-semester students who just participate in traditional clinical experiences. A paired sample *t*-test was used to compare the differences between the intervention (simulation learning experience) and control (traditional clinical) group within each of the three dimensions from the NASC-CDM instrument. Dimension one reflects the students' level of anxiety in the area of gathering resources and fully listening with a larger effect size and mean improvement in the intervention (t (28) =2.99, p = .006, d = .56) group, rather than in the control group (t(28) = 1.54, p = .134, d = .29). Dimension two which examines the students' level of anxiety in the area of using information to see the big picture reveals a larger effect size and mean improvement in intervention group (t(28) = 3.76, p = .001, d = .71) compared to the control group (t(28) = 1.99, p = .057, d = .38). The third dimension related to the students' level of anxiety in their knowing and acting in the clinical decision making process revealed a larger effect size and mean improvement in the intervention group (t(28) = 3.71, p = .001, d = .70) than in the control group (t(28) = 2.57, p = .016, d = .48). The intervention group had statistically significant improvements in anxiety on all three dimensions (p < or = .001) while the control group had a significant improvement only on dimension three (p = 0.16). Descriptive statistical results are presented in Table 7.

Table 7

Comparison of Student's Level of Anxiety Dimensions 1-3

Dimension/Group	*t*	*Df*	*p*	*d*
Dimension 1				
Intervention Group	2.99	28	.006	0.56
Control Group	1.54	28	.134	0.29
Dimension 2				
Intervention Group	3.76	28	.001	0.71
Control Group	1.99	28	.057	0.38
Dimension 3				
Intervention Group	3.71	28	.001	0.71
Control Group	2.57	28	.016	0.38

The descriptive statistics associated with student anxiety levels across three dimensions on the posttest are reported in Table 8. It can be seen that the intervention group on dimension one had the smallest mean of student reported anxiety (M = 2.55, SD = 1.44) compared to the control group (M = 2.66, SD = 1.58; F(1,56) = .007, p = .93, d = 0.29). Thus, the null hypothesis of no difference between the mean change was not rejected. Results are presented in Table 8.

It can be seen that the intervention group on dimension two had a numerically smaller mean in student reported level of anxiety (M = 2.78, SD = 1.29) compared to the control group (M = 2.93, SD = 1.21; F(1,56) = .169, p = .683, d = 0.38). Thus, the null hypothesis of no difference between the mean change was not rejected for dimension two. Results are presented in Table 8 and Table 9.

Dimension three shows the intervention group with a numerically smaller mean in student reported level of anxiety (M = 2.83, SD =1.19) compared to the control group (M = 2.88, SD = 1.04; F(1,56) = .008, p = .768, d = 0.48). Therefore, the null hypothesis of no difference between the mean change was not rejected for this dimension. Results are noted in Table 8 and Table 9.

It can be seen that the intervention group in dimension one posttest was associated with the numerically smallest mean of student reported anxiety (M = 2.55, SD = 1.439) while the control group in dimension two was associated with the numerically highest mean level of student reported anxiety (M = 2.93, SD = 1.211). In order to test the hypothesis that simulation decreases a students' level of anxiety, a between-groups ANOVA was performed. There were no significant differences between the groups on reduction in anxiety on any of the three dimensions. The independent between-groups ANOVA displayed no statistically significant effect as noted by the following: F(1,56) = .007, p = .993; F(1,56) = .169, p = .683; F(1,56) = .088, p = .768. Thus, the null hypothesis of no difference between the means was not rejected with no statistically significant reduction in anxiety levels within three dimensions. Results are presented in Table 8 and Table 9.

Table 8

Comparison between Groups of Students' Mean Change in Anxiety Dimensions 1-3

Dimension/Group	*M*	*N*	*SD*	*t*	*df*	*d*
Intervention/Dimension 1	2.55	29	1.44	2.99	28	0.56
Intervention/Dimension 2	2.78	29	1.29	3.76	28	0.71
Intervention/Dimension 3	2.83	29	1.19	3.71	28	0.70
Control/Dimension 1	2.66	29	1.58	1.54	28	0.29
Control/Dimension 2	2.93	29	1.21	1.99	28	0.38
Control/Dimension 3	2.88	29	1.04	2.57	28	0.48

Table 9

Descriptive Statistics for Student Anxiety between Groups

Dimension	*Df*	*f*	*p*
Dimension 1 (Between Groups)	1	.007	.933
Within Groups	56		
Dimension 2 (Between Groups)	1	.169	.683
Within Groups	56		
Dimension 3 (Between Groups)	1	.088	.768
Within Groups	56		

Satisfaction

A final purpose of this capstone project was to determine the effect mid-fidelity simulation has on satisfaction of novice nursing students in an associate degree nursing program first-year, first-semester course. The National League for Nursing Student Satisfaction and Self-Confidence in Learning (NLN, 2005) instrument was completed by the intervention group only at the completion of the third simulation learning

experiences. The purpose of this instrument was to measure the students' level of satisfaction with the simulated learning experience.

This instrument consists of 13 total questions (five in satisfaction and eight in self-confidence in learning) using a 5 point Likert scale ranging from strongly disagree to strongly agree. Twenty nine students out of the original 32 completed the survey. A total mean score of 4.34 out of a possible 5 was achieved verifying the students' overall satisfaction and self-confidence in the simulation learning experience. A mean of 4.39 was recorded for satisfaction, while a mean of 4.32 was recorded for self-confidence. These results are noted in Table 10. Several students commented after each simulation activity that they were glad this activity had been implemented and they felt that they were more prepared after completion of the simulation experience to interact with "real" patients.

Table 10

Descriptive Statistics for NLN Instrument

NLN Category	*N*	*M*	*SD*
Satisfaction	29	4.39	.659
Confidence	29	4.32	.458
Total	29	4.34	.499

Summary

In conclusion, we see that both groups had statistically significant improvements in perceived self-confidence from pre- to posttest; however that improvement was stronger in the control group for all three dimensions ($p = .000$). When comparing gains in perceived self-confidence between the two groups the control group had a significantly larger gain in dimension one than the intervention group ($p = .004$). The intervention group had significant improvements in reduction in anxiety for all three dimensions, while the control group had significant improvement only in domain three. There was not a noted significant difference between groups in reduction of anxiety in any of the three dimensions. Overall, students in the intervention group reported satisfaction with the simulation as well as improved levels of perceived self-confidence and decreased anxiety after participation in the learning activity.

CHAPTER V

Discussion

This capstone project examined the implementation of simulation with the inclusion of debriefing after simulated-based learning experiences, to evaluate the measurable impact of the experience on the students' satisfaction, perceived self-confidence, and anxiety. Pamela Jeffries' (2005, 2007) nursing education simulation framework provided the foundation for implementation of three medium fidelity simulated based learning experiences including a debriefing session after each. Simulation scenarios emphasized content from the first year, first semester NUR 111 Intro to Health Concepts course: (a) steps of the nursing process, (b) sequence of completing a head-to-toe assessment, and (c) wound care (sterile and non-sterile technique). Sixty-four, first year, first semester students volunteered to participate from two rural community colleges located in Northeastern North Carolina. The instruments included The Nursing Anxiety and Self-Confidence with Clinical Decision Making Scale (NASC-CDM) (White, 2014) and the National League of Nursing (NLN) (2011) student satisfaction and self-confidence in learning scale were utilized in the capstone project to collect data. A paired sample *t*-test was used to compare pre to post changes within the intervention and control groups; result data was reported in Chapter IV.

Review of Significance

Significance of this project relates to the challenges currently experienced by healthcare educators in meeting the obligations of preparing students to deliver safe, quality patient care upon graduation to increasing numbers of complex patients (Piscotty et al., 2011). Some of the challenges included but are not limited to: decreasing patient

census, complexity of health care issues, patient safety concerns, lack of interdisciplinary communication further limited by the introduction of electronic health records and documentation (Jeffries et al., 2011). There is a need for safe environments where students can practice and apply the knowledge they have learned in the classroom to clinical situations (LaFond & Van Hulle Vincent, 2012; McClure & Gigliotti, 2012) while experiencing lower levels of anxiety and improved self-confidence. Implementation of simulation has been documented as a method of facilitating student learning by application of theory to practice (Reese et al., 2010) and also a method to decrease the levels of anxiety students' bring with them to the clinical experiences (Gore et al., 2011).

Prior research supported simulation scenarios as having a significant impact on decreasing student anxiety levels (Gore et al., 2011; Szpak & Kameg, 2013). Currently within the literature there is disconnect as to the impact simulated-based learning experiences have on associate degree nursing students' anxiety and self-confidence levels. A higher percentage of the published literature documents on the use of simulation at the university level. This chapter examines the impact of simulated-based learning on associate degree nursing students' anxiety and self-confidence levels through discussion of the project's results highlighted in Chapter IV. Additionally, a discussion of implications for nursing education, need for further research and study limitations are included in this chapter.

Sample

The intervention and control groups for this project were noted as similar according to the frequency distribution of demographics between groups. There were

three males in the control group and four in the experimental group. The mean age of the sample population was 29.2 years (*SD* = 9.09).

Additional similarities between the groups included the level of college experience, ethnicity, participation in an externship, and prior simulation. There were eight students in the control group and six in the experimental group who held college degrees. Each group was made up of the same number of African American and Caucasian participants with the majority of the participants in each group having no prior simulation or externship experience.

A dissimilarity was noted in regards to currently working, where more students in the experimental group were noted as currently working (*n* = 12) than in the control group (*n* = 6). An additional dissimilarity was noted as the participants in the project were predominately female (89.1%), with males accounting for 10.9% of the sample population, however the individual groups were similar in frequency distribution.

Results

Research Question 1

The first research question was to determine if the incorporation of a series of three medium-fidelity simulation scenarios had a measurable effect on students' perceived self-confidence levels, and satisfaction of novice nursing students in an associate degree nursing program first-year, first-semester course. The results of a paired sample *t*-test was used to compare pre to post-test changes in scores within the intervention and control groups for each of the three dimensions: (1) students' level of confidence and anxiety in the area of gathering resources and fully listening, (2) students' use of information to see the big picture, and (3) students' knowing and acting in clinical

decision making. The analysis revealed each group had a statistically significant improvement in the area of self-confidence from the pre- to posttest; however the improvement was stronger in the control group for all three dimensions.

Based upon the findings, implementation of simulation-based learning experiences significantly improved a students' self-confidence but no more than traditional clinical experiences. These findings may be related to the newness of the groups' educational experience, not knowing the differences between traditional and nontraditional clinical experiences. Similar student characteristics may affect perceptions of learning and self-confidence when using human patient simulators (Blum, Borglund, & Parcells, 2010; Brannan, White, & Bezanson, 2008). No research was found discussing this possibility with medium-fidelity simulators.

The second section of question one relates to the effect mid-fidelity simulation has on satisfaction of novice nursing students in an associate degree nursing program first-year, first-semester course. The National League for Nursing Student Satisfaction and Self-Confidence in Learning (NLN, 2005) instrument was completed by the intervention group only. The analysis revealed an overall achievement of student satisfaction with the simulated learning experience. Qualitative data collected supports students' verbalization of their satisfaction related to the experience and a shared feeling of readiness to interact with a "real" patient after the conclusion of three simulated scenarios.

Research Question 2

The second research question sought to determine if the implementation of simulation-based learning experiences in the first-year, first-semester nursing

fundamentals course decreases students' anxiety levels prior to their first clinical experience. The results of a paired sample *t*-test was used to compare pre to post-test changes in scores within the intervention and control groups for each of the three dimensions: (1) students' level of confidence and anxiety in the area of gathering resources and fully listening, (2) students' use of information to see the big picture, and (3) students' knowing and acting in clinical decision making. The analysis revealed the intervention group had statistically significant improvements in anxiety on all three dimensions while the control group had a significant improvement only on dimension three. There was not a noted significant difference between groups in reduction of anxiety in any of the three dimensions.

Based on these findings, the implementation of simulation-based learning had a significant impact on students' anxiety levels. These findings may be correlated with the use of an environment that is familiar to the student verses that of an unfamiliar environment like the hospital. The instructors' use of clearly defined objectives related to the simulation experience may be a contributing factor in decreasing levels of students' anxiety. Students' familiarity with nursing faculty could potentially alleviate some of the anxiety associated with patient care in a simulated environment verses patient care in an unfamiliar health care agency. When a students' anxiety level is heightened, related to the clinical experience their opportunity to experience a positive patient interaction may be decreased, therefore facilitating the student learning through simulation can result in a decreased anxiety level which places the student in a better position to have a more positive interaction with their patient. Preclinical simulation scenarios have been

documented as having a significant impact on decreasing study anxiety levels (Gore et al., 2011; Szpak & Kameg, 2013).

Summary

Overall, the findings of this project supported traditional and simulated clinical experiences as equivocal in regards to students' perceived level of self-confidence, satisfaction, and anxiety. There were no statistical differences between the two sample groups of this project. There was noted improvements in anxiety levels and self-confidence within each of the groups; however no statistical significant differences between the two groups. Based on the results of this project, simulation-based learning experiences appear to be as equally effective in enhancing students' perceived satisfaction and self-confidence, while improving levels of reported anxiety as traditional clinical experiences. As nurse educators continue to face the challenges of graduating nurses who are competent in acquisition of essential skills required of novice nurses to deliver safe, effective, quality patient care the use of simulation over traditional clinical is not a challenge they should continue to embrace.

Implications for Nursing Education

Nurse educators are faced with challenges of facilitating student learning in shorter time frames and with limited availability of clinical placement facilities (LaFond & Van Hulle Vincent, 2012; McClure & Gigliotti, 2012). The results of this project validated simulation as an alternative to traditional clinical and align with the NCSBN National Simulation Study by Hayden, Smiley, Alexander, Kardong-Edgren, and Jeffries (2014), supporting the use of simulation as an instructional pedagogy. Substantial

evidence exist which supports up to a 50% simulation substitution for traditional clinical as being effective in the student learning process (Hayden et al., 2014).

Evaluation of scenarios is important to assure the course objectives are attainable. Jeffries nursing education simulation model was instrumental in evaluating which prewritten simulation scenario to implement. It allowed faculty to evaluate the scenario using the five major concepts identified in the model: teacher, student, educational practices, simulation design characteristics (intervention), and outcomes (Jeffries, 2005; Smith & Roehrs, 2010). Simulation has been documented as a pedagogy facilitating student learning by application of theory to practice (Reese et al., 2010), which was noted in this project as students transferred knowledge from the classroom didactic sessions to the simulation scenarios in lab.

Additionally, nurse educators are challenged in channeling students' anxiety into a positive learning experience. The use of simulation-based learning was noted in this project as an instructional pedagogy that decreased student anxiety levels. Prior research validates the use of preclinical simulation scenarios as significantly impacting students' levels of anxiety (Gore et al., 2011; Szpak & Kameg, 2013).

Nurse educators need to be reminded that self-confidence does not indicate competence (Paskins & Peile, 2010). Few studies reported statistically significant differences in students improved levels of self-confidence (Baillie & Curzio, 2009; Brannan et al., 2008). However, the findings of this project noted statistically significant improvements in self-confidence from the pre- to posttest in each group which supports a study by Moule, Wilford, Sales, and Lockyear (2008).

Limitations of Research

One limitation noted in the project arose during data analysis, the evaluation of the experimental groups' satisfaction using the National League for Nursing Student Satisfaction and Self-Confidence in Learning (NLN, 2005) instrument. Results were only collected once and from only one group, the experimental group. The use of an additional instrument to measure the satisfaction of the control group with their involvement in a traditional clinical experience would add validity to the project and is recommended for any future studies.

An additional limitation of the project was the collection of the final survey from the control group. It appeared that some of the students were anxious and rushed through recording their final results. The students were scheduled to complete a comprehensive predictor exam as soon as the survey results were collected. For any further studies it is recommended to assess what other events are scheduled on the days that surveys will be completed.

A homogenous sample may not reflect the attitudes of the general population. The sample size was also considered small, but adequate for this project, however not large enough to generalize the results across other educational facilities.

Finally, incorporating into the simulation orientation session an introduction of how the mid-fidelity simulator works prior to implementation of the first scenario would be beneficial to students. This may have afforded the students more opportunity to focus on the application of knowledge instead of manikin function. It is recommended to introduce the manikin to the students prior to any simulated experiences for any future projects related to simulation and student learning.

Recommendations

In efforts to improving any future studies it is recommended that pre- and posttest surveys are administered to each participating group for the purpose of having baseline data to compare. Another recommendation is to effectively communicate with all individuals involved in the planning phase of the study to ensure that data is not being collected on days when students have scheduled test. Their anxiety related to the upcoming test could possibly interfere with their honesty on the survey, therefore skewing collected data. Studies that involve the use of medium to high-fidelity manikins should incorporate time to introduce students to the functions of the manikin. This could possibly alleviate their anxiety related to fear of the equipment or fear of interrupting the scenario due to user error. Reassuring the student that they cannot interrupt the scenario considering the facilitator has the controls. Additionally, it is recommended that the study continue using a larger sample size and incorporating additional simulation scenarios over a full 16-week semester.

Implications of Findings

Nurse educators are challenged to implement active learning strategies as a way to involve students in the learning process. They are also meeting resistance from clinical agencies to place students in positive clinical learning experiences due to an increase in the acuity level and complexity of current hospitalized patients. Evidence-based practice requires the nurse educator to utilize research findings, supporting change in pedagogy. The findings of this project provided additional quantitative research to further support the substitution of simulation, as much as 50%, in place of traditional clinical. It also documented the use of simulation as an innovative teaching method to further meet the

demands of incorporating interprofessional education (IPE) into the current nursing curriculum (World Health Organization (WHO), 2010; Interprofessional Education Collaborative Expert Panel, 2011).

Implications for the nursing profession may include nurses that are better prepared to critical think in situations where they are required to "think on their feet", not having the time to ponder their response. Simulation allows for changes to occur in a patients' status that are completely unexpected during the delivery of patient care, creating a need for students to reassess and implement interventions in a shorten time frame. It is speculated that students who have clinical experiences that are more positive and challenging will become better nurses.

Conclusion

The findings from this project implementing simulated-based learning experiences into first-year nursing students' first-semester, increases opportunities for active learning and supports the use of simulation as an equivalent to traditional clinical. Students involved in simulation activities report decreasing levels of anxiety and improving students' perceived self-confidence. However, results of the project should be interpreted with caution due to the samples homogeneity and small sample size. Considering the results of this project revealed a significantly larger gain in self-confidence in the control group, simulation should not be implemented as an alternative to traditional clinical for the sole purpose of improving students' perceived self-confidence. Simulated activities are an additional pedagogy to further enhance a students' transition of knowledge from didactic to application and synthesis in an environment that is non-threatening and supportive to learning.

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Appendix A

Permission for Use of Tool (NLN Satisfaction and Self-Confidence in Learning)

RE: Instrument Question

Lindsey Fry <lfry@nln.org> on behalf of NLN Research <nln-research@NLN.ORG>

Fri 1/31/2014 10:02 AM

To:Ms Michelle Britt Warren <mwarren1@gardner-webb.edu>;

3 attachments

Instrument 3_Simulation Design Scale.pdf; Instrument 1_Educational Practices Questionnaire.pdf; Instrument 2_Satisfaction and Self Confidence in Learning .pdf;

It is my pleasure to grant you permission to use the "Educational Practices Questionnaire," "Simulation Design Scale" and "Student Satisfaction and Self-Confidence in Learning" NLN/Laerdal Research Tools. In granting permission to use the instruments, it is understood that the following caveats will be respected:

1. It is the sole responsibility of (you) the researcher to determine whether the NLN questionnaire is appropriate to her or his particular study.
2. Modifications to a survey may affect the reliability and/or validity of results. Any modifications made to a survey are the sole responsibility of the researcher.
3. When published or printed, any research findings produced using an NLN survey must be properly cited as specified in the Instrument Request Form. If the content of the NLN survey was modified in any way, this must also be clearly indicated in the text, footnotes and endnotes of all materials where findings are published or printed.

I am pleased that material developed by the National League for Nursing is seen as valuable as you evaluate ways to enhance learning, and I am pleased that we are able to grant permission for use of the "Educational Practices Questionnaire," "Simulation Design Scale" and "Student Satisfaction and Self-Confidence in Learning" instruments.

From: Ms Michelle Britt Warren [mailto:mwarren1@gardner-webb.edu]
Sent: Monday, January 20, 2014 5:09 PM
To: NLN Research
Subject: Instrument Question

Good afternoon,
I am currently enrolled in the DNP program at Gardner-Webb University. Our cohort is in the process of searching for instruments for our upcoming capstone projects. My personal project will involve the implementation of simulation learning activities into our first level first semester of an associate degree nursing program. I have read about the instruments that were included in the NLN/Laerdal simulation project and therefore my inquiry of an article or location that I could review the instrument for possible use in my project. I understand that in order to use the instrument that I will need to gain permission. Is it permissible to review the instrument to see if it is a fit to my capstone? Thanks!
Michelle Warren

Appendix B

Permission for Use of Tool (NASC-CDM)

PENNSYLVANIA COLLEGE of HEALTH SCIENCES

February 21, 2014

Dear Ms. Warren,

Thank you for your interest in the *Nursing Anxiety and Self-Confidence with Clinical Decision Making* (NASC-CDM) scale. This letter is written to acknowledge your request to utilize the NASC-CDM scale in your research study. You are granted permission to use the scale and modify the demographic questions to best accommodate the intent of your study.

One condition does exist in relation to the permission to use the NASC-CDM scale. The scale may not be printed in its entirety in any documents related to your study or in any subsequent publications which may commence upon the completion of this research study.

Please use the following notation when writing a sample of items:
Used with permission, Krista A. White PhD, RN, CCRN.

Best wishes with your upcoming research.

Sincerely,

Dr. Krista A. White

RN

CCRN

Krista A. White, Ph.D., R.N.,

Instrument developer
Lancaster, PA
kawhite4288@gmail.com

Appendix C

Permission to Reprint NLN/Jeffries Simulation Framework

Amy McGuire <amcguire@nln.org>

Thu 2/26/2015 1:43 PM

To:

Michelle Warren;

You replied on 2/26/2015 3:01 PM.

nursing_framework_figure_k.jpg 737 KB

Download all

Dear Michelle:

The NLN has received your request for permission to include the figure of the NLN/Jeffries Simulation Framework in your dissertation. We are pleased to grant you copyright permission according to the following.

"The NLN/Jeffries Simulation framework," developed as part of the 2003- 2006 NLN/Laerdal Simulation Study and most recently published on page 37 of the work noted below, may be used within your dissertation."

Jeffries, P. R. (2012). Simulation in nursing education: From conceptualization to evaluation. New York, NY: National League for Nursing.

In granting permission to use this Framework, it is understood that the following assumptions operate and "caveats" will be respected.

- The Framework will only be used for the purpose outlined above.
- The Framework will be included in its entirety and not modified in any way.
- The National League for Nursing is the sole owner of these rights being granted.
- No fees are being charged for this permission.

Best wishes as you complete your research.
Respectfully,
Amy

Amy McGuire | Administrative Coordinator, NLN Chamberlain Center | National League for Nursing | www.nln.org |

amcguire@nln.org | Tel: 202-909-2509 | The Watergate | 2600 Virginia Avenue NW, 8th Fl, Washington, DC 20037