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# Clinical Simulation and Nursing Student Perceptions of Satisfaction, Self-Confidence, and Critical Thinking

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2017

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MA, University of Central Florida, 2009

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Abstract

Although the number of nursing programs has increased in Florida, the number of hospital sites available for clinical experiences have not, resulting in limited clinical time for each nursing program. To address this shortage of clinical time, local colleges are increasing the use of simulations in the curriculum. Guided by andragogy, this sequential mixed methods study was conducted to explore differences in students' perceptions of satisfaction, self-confidence, and critical thinking between two groups of students with different amounts of clinical simulation. In an associate degree nursing program, 34 nursing students completed a single survey on student perceptions of satisfaction and self-confidence, 12 students completed a critical thinking test, 37 student reflection papers were reviewed, and 4 faculty members were interviewed. Independent *t* tests were used in analyzing quantitative data, and content analysis was used in the analysis of qualitative data. Statistical analysis and content analysis showed no difference between the groups of students for satisfaction, self-confidence, and critical thinking. However, results should be interpreted with caution because quantitative analyses were underpowered, increasing the risk of type II error. Overall, students had positive comments about simulations in regard to satisfaction, self-confidence, and critical thinking. The results of this study will allow nursing faculty in the local setting to make better decisions with regard to using additional simulation in their programs. The results may benefit nursing students and the patients they care for in their future nursing careers in providing quality healthcare.

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Section 1: The Problem

## Introduction

Formal nursing education has been in existence for more than 150 years. Nursing education dates back to 1860 when Florence Nightingale established the first nursing school to help educate nurses in preventing illnesses and speeding up the recovery of ill patients (Nightingale, 1992). Before Nightingale established a nursing school, nurses cared for patients without any formal education. Since this early time, nursing education has experienced vast changes with the development of associate, baccalaureate, and graduate nursing programs.

Nursing program curricula have expanded along with medical knowledge and now include didactic and hands-on clinical experience. The Florida Nurse Practice Act (2016) stated that nursing curricula must include clinical experience and theoretical instruction. Courses include surgical, geriatric, pediatric, medical, and psychiatric nursing. Instruction occurs in the classroom, and nursing programs provide clinical experience to students with the help of hospital affiliates. Nursing faculty use clinical sites to help educate their students about real-life situations. There has been an increase in nursing programs in the state of Florida, which has led to a decrease in clinical availability (Nursing Dean, personal communication, June 25, 2015). Due to the lack of clinical space available for one local nursing program, nursing faculty have increased the use of clinical simulations. For this study, I explored differences in nursing students' perceptions of satisfaction, self-confidence, and critical thinking scores of two groups of students who had experienced different amounts of clinical simulation experience.

## Definition of the Problem

The decrease in the availability of healthcare sites for training nursing students has caused the target college in this study to increase the use of clinical simulation. Program faculty have been concerned that students are not gaining as much from their experiences as they would in a real clinical environment. Faculty are concerned that students are not satisfied, do not have self-confidence, and do not use critical thinking with the simulation experience. The purpose of this mixed methods study was to explore differences in two groups of nursing students who have been provided with different levels of clinical simulation experience and their perceptions of satisfaction, perceptions of self-confidence, and critical thinking

The target institution was a local college in the central Florida area that has a two-year associate degree nursing program. Once in the program, students take a series of courses that helps prepare them for the clinical setting; these courses have laboratory components that include simulations (Nursing Faculty, personal communication, February 1, 2016). Nursing faculty have experienced a decrease in the availability of healthcare sites for clinical training required of their nursing students.

In 2009, there was a nursing shortage in the state of Florida. In response to this, the Florida Board of Nursing changed the laws to make it easier for nursing programs to open their doors. This led to an increase in nursing programs in the local area. The increasing number of nursing programs has increased the pressure on clinical sites and affected the available clinical space for area colleges (Nursing Dean, personal communication, June 24, 2015). The lack of clinical space has caused nursing faculty to

make adjustments in their courses, such as increasing the use of clinical simulation in curricula and replacing actual clinical time with clinical simulations. Clinical simulation use has increased in the local program to help alleviate the pressure due to the lack of available clinical space (Nursing Dean, personal communication, May 11, 2015).

A lack of available clinical space nationwide, along with other nursing program concerns caused a large-scale, randomized, controlled study to be conducted by the National Council of State Boards of Nursing (NCSBN). The purpose of the NCSBN study was to determine if simulation time can replace clinical hours (Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014). This study included 10 nursing programs across the United States with 666 participants. Data were collected from clinical competency, course outcomes, critical thinking, and ATI scores. The results provided evidence that simulation could indeed substitute for up to half of the required clinical hours (Hayden et al., 2014).

Following this study, a bill passed in Florida that allowed nursing programs to increase the use of simulation from 25 to 50 % of their clinical training (Florida Department of Education, 2014). At the target local college in Florida, simulation has been a component in all nursing courses. Faculty can use simulation to support lecture material, clinical skills, and laboratory practical. Each course in the program uses a different amount of simulation. The basic medical surgical nursing course has been testing the use of simulation in lieu of 25 % of a student's clinical time, and the program anticipates increasing the amount of simulation time for all classes in the future. (Nursing Dean, personal communication, May 11, 2015). If using clinical simulation in lieu of

clinical time is beneficial, other specialty areas in the local nursing program may also use this teaching alternative.

The NCSBN simulation study did not address satisfaction with simulation or self-confidence. Many factors can contribute to students not being satisfied with clinical simulation. When increasing the use of simulation, addressing factors such as student satisfaction is important. The reason for this study is faculty members at the local college expressed concern about students' displeasure with simulation due to the technology that is involved. Other student concerns included having to work with other students and video recording of simulations (Nursing faculty, personal communication, May 11, 2015). Students' lack of satisfaction with the fidelity level of simulations is another factor to be considered, because the outcome of simulation can be dependent on the level of fidelity (Jeffries, 2012). Low-fidelity simulation uses basic mannequins to practice skills, and high fidelity uses simulators that produce a more realistic simulation (Azzopardi et al., 2014). Addressing these issues before the start of the simulation may help alleviate student concerns.

While nursing faculty are concerned about student satisfaction, they also need to ensure that nursing students build self-confidence during clinical simulations. According to Messmer, Jones, and Taylor (2004), many new nurses are not confident in their critical care skills. Faculty members at the local college expressed concern about the lack of self-confidence in their student nurses (Nursing faculty, personal communication, November 4, 2015). According to Lewis and Ciak (2011), nursing students reported increased self-confidence with simulation. However, in the large-scale study conducted by the NCSBN,

self-confidence was not researched in nursing students. Nursing faculty at the local college want to ensure that their students are confident in addition to having critical thinking skills.

According to the American Association of Colleges of Nursing (2008), a measurable outcome for nursing programs is critical thinking. Previous critical thinking tests given to local nursing students showed low scores for nursing students (Nursing Dean, personal communication, May 11, 2015). One objective of increasing the use of clinical simulation at the local college was to help increase critical thinking skills in nursing students. Shin, Ma, Park, Ji, and Kim (2015) examined various levels of simulation experience of groups of nursing students. Results showed that students who were exposed to more simulations had significant gains in critical thinking. Though there is literature that supports simulation improving critical thinking scores, my study focused on the differences, if any, between the amount of clinical simulation time provided and nursing students' critical thinking scores in the program at the local college.

Because of a decrease in the availability of healthcare sites for training nursing students, the local college has increased training its students using clinical simulation. Although the NCSBN national study examined various outcomes, including critical thinking, it did not address student satisfaction or self-confidence with simulation. In a review of research, Nehring (2010) found some studies indicating that students were satisfied with simulation and had improved self-confidence, and other researchers concluded that there were no differences with regard to self-confidence. Lapkin, Levett-Jones, Bellchambers, and Fernandez (2010) performed a meta-analysis of simulation.

During their research, they found the results to be inconclusive for clinical reasoning. Although there is literature to support the use of clinical simulation, it is still not clear if nursing students are more satisfied, have more self-confidence, and have higher critical thinking abilities relative to the amount of time spent with simulations. The purpose of this study was to explore differences, if any, in students' perceptions of satisfaction, perceptions of self-confidence, and critical thinking of groups of students receiving different amounts of clinical simulation. With an increase in student satisfaction, self-confidence, and critical thinking scores, the local college may improve student-learning outcomes and produce better-prepared nurses.

## Rationale

### Evidence of the Problem at the Local Level

To help alleviate the lack of available clinical space in the local nursing program, the use of clinical simulation was increasing (Nursing Dean, personal communication, May 11, 2015). Clinical simulation has begun to reduce the time students are spending in hospital sites, and faculty have become concerned as to whether students are gaining as much from the clinical simulation time as they do in a real clinical environment. In recent years, local college graduate nurse pass rates on the NCLEX examination surpassed the state and national pass rate averages. With a change in the amount of clinical exposure, program faculty members want to make sure that nursing students are satisfied with clinical simulation while still achieving self-confidence in their skills and higher critical thinking faculties before they graduate. Ensuring that graduate nurses are ready to enter the workforce once they graduate is vital. In this study, I explored the differences in

students' perceptions of satisfaction, self-confidence, and critical thinking among groups of students receiving different amounts of clinical simulation.

**Evidence of the Problem from the Professional Literature**

Since the 2009 modification of legislation in the state of Florida, the number of nursing programs has increased by 151% (Florida Legislator, Office of Program Policy Analysis and Government Accountability [OPPAGA], 2015), and the increase has negatively impacted clinical availability. Because of the decrease in the amount of clinical space in Florida, the United States, and internationally, many nursing programs have begun to utilize simulation to educate their students (Dowie, 2011; National League for Nursing, 2015). The NCSBN study concluded that simulation can replace 50% of actual clinical time (Hayden et al., 2014). The NCSBN study outcomes that were addressed, however, were limited to clinical competency, ATI scores, critical thinking, and readiness for practice. They did not address student satisfaction with clinical simulation or students' self-confidence. Evidence that clinical simulation improves student satisfaction and self-confidence is still uncertain. Lisko and O'Dell (2010) determined that clinical simulation helped nursing students build self-confidence. However, Alinier, Hunt, Gordon, and Harwood (2006) revealed that there were no differences between their control and experimental group for self-confidence. In their study, Scherer, Bruce, and Runkawatt (2007) compared simulation (experimental group) to a case study group (control group) and found self-confidence to be higher in the control group. Lapkin et al. (2010) performed a meta-analysis of simulation outcomes and found that an increase in clinical reasoning was inconclusive. Medley and Horne

(2005) noted that students believed that they learned better by interaction with actual patients in a real clinical environment rather than in a simulation environment. Further investigation of clinical simulation is needed that focuses on student satisfaction and self-confidence.

The problem for this study was that program faculty were concerned about student satisfaction, whether students were as satisfied with clinical simulation as they were with their experience in a real clinical environment. Cant and Cooper (2010) systematically reviewed 12 studies of medium to high fidelity simulation and compared simulation outcomes to additional educational practices. They established that simulation was a valid teaching strategy for all 12 studies. However, gains in critical thinking, knowledge, satisfaction, or confidence were indicated in only six of the 12. According to Larue, Pepin, and Allard (2015), there was no significant difference in the use of clinical experiences and using simulation to replace 50% of clinical hours.

Though many researchers have findings supporting the use of clinical simulation, there are some studies where the findings have not made all the benefits of simulation clear. Given the decrease in the availability of healthcare sites for training students and the resulting increase in student use of clinical simulation, further research into the benefits or lack of benefits is warranted. The purpose of this mixed methods study was to explore differences, if any, in nursing students' perceptions of satisfaction, self-confidence, and critical thinking of groups of students receiving varied amounts of clinical simulation.

## Definition of Terms

*Critical thinking:* Critical thinking is defined as "purposeful, self-regulatory judgement which results in interpretation, analysis, evaluation, and inference" (Facione, 1990, p. 2).

*High-fidelity:* High fidelity is defined as using computerized mannequins for simulations (Kardong-Edgren et al., 2011).

*Low-fidelity:* Low fidelity is defined as simulations that use task trainers and noncomputerized mannequins (Kardong-Edgren et al., 2011).

*Satisfaction:* Satisfaction is "a short-term attitude resulting from an evaluation of a student's educational experience" (Elliott & Healy, 2001, p. 2).

*Self-confidence:* "Self-confidence is the perception of one's ability to successfully complete a task" (Perry, 2011, p. 224).

*Simulation:* Simulations are activities created to mimic a real clinical environment for students, which will enable them to demonstrate procedures and skills and use critical thinking skills to make decisions while using devices such as mannequins (Jeffries, 2005).

## Significance of the Study

There is an abundant amount of prior research on nursing simulation. Many researchers have studied student perceptions, self-confidence, and critical thinking as variables in their studies. However, the results of these studies are unclear. In Nehring's (2010) review of studies, some researchers found no differences in students' self-

confidence. Lapkin et al. (2010) performed a meta-analysis of simulation studies and found that in the level of clinical reasoning was inconclusive.

The present study was conducted to explore differences, if any, in students' perceptions of satisfaction, self-confidence, and critical thinking between groups of students receiving varied amounts of clinical simulation. Understanding students' perceptions of simulation and any differences identified in student satisfaction, self-confidence, and critical thinking in this study should assist the local college's nursing faculty in better understanding the differences between the variables. This may lead to changes in the nursing program curriculum. If faculty increase simulation time in the nursing program curriculum due to the results of this study, students may benefit from such a change.

The results of this study may not only benefit the local college in deciding on program modifications, it may also help at a state level. Given the change in state legislation that has allowed an increase in simulation used in lieu of clinical time, this study may be beneficial to all nursing programs. The results may help nursing faculty determine if they need to make changes in the amount of clinical simulation time their students receive. If the results show significant differences, faculty may consider using more clinical simulation time rather than sending students to clinical sites. If there is no difference between the variables, faculty may look at other means of evaluating simulation before implementing a change in curriculum. The International Nursing Association for Clinical Simulation and Learning (INACSL) developed what is known as Standards of Best Practice: SimulationSM. These standards lay out guidelines to aid in

developing and evaluating quality simulation (INACSL, 2015). These guidelines may assist faculty in the decisions required to transition curricula to include more simulation.

## Research Question

The target local college has experienced a decrease in available clinical sites for its nursing students. Due to the decreasing availability of clinical sites, the program has increased the use of clinical simulation, and faculty are concerned that students are not satisfied with the change, do not have self-confidence, and do not use critical thinking. The purpose of this mixed methods study was to explore differences in perceptions of satisfaction, self-confidence, and critical thinking between groups of students receiving varied amounts of clinical simulation. The three research questions were:

RQ1. What is the difference, if any, in nursing student satisfaction between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida?

$H_0$1: There is no difference in nursing student satisfaction between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida.

$H_a$1: There is a difference in student satisfaction between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida.

RQ2. What is the difference, if any, in nursing student self-confidence between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida?

$H_0$2: There is no difference in nursing student self-confidence between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida.

$H_a$2: There is a difference in nursing student self-confidence between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida.

RQ3. What is the difference, if any, in nursing student critical thinking scores between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida?

$H_0$3: There is no difference in nursing student critical thinking scores between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida.

$H_a$3: There is a difference in nursing student critical thinking scores between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida.

A great deal of research has been completed in the past on simulation use. Many of the studies included student perceptions of simulation, self-confidence, or evaluating students' critical thinking skills with simulation. With the decreasing availability of clinical sites for nursing students, the local college is using more simulation instead of real clinical time. This study explored the differences, if any, in students' perceptions of satisfaction, self-confidence, and critical thinking between groups of students receiving 15 or 30 hours of clinical simulation. Based on the majority of prior research reviewed,

the hypothesis was that students who experience a greater amount of clinical simulation time would be more satisfied with simulation, have higher self-confidence, and higher critical thinking scores. The measurement of clinical simulation time was determined by the students' course enrollment. I measured student perceptions of self-confidence using the National League for Nursing (NLN) Student Satisfaction and Self-Confidence in Learning Survey (SSSCL). The California Critical Thinking Skills Test (CCTST) was used to measure critical thinking skills.

## Review of the Literature

### Theoretical Foundation

The theoretical framework that was used for this study comes from educator Malcomb Knowles. According to Clapper (2010), "Knowles has greatly influenced the clinical world, particularly those conducting simulation for the improvement of health care" (p. 7). For this reason, I used Knowles' adult learning theory known as andragogy as the framework. Knowles (1970) defined andragogy as the science of helping adults learn. As adults get older and accumulate more experiences, these experiences become a resource for their learning (Knowles, 1970). Although andragogy is the science of helping adults learn, there are specific learning theories that have been developed. Experiential learning theory, developed by Kolb (1981) guided this study.

Experiential learning theory integrates many different aspects of cognitive development and cognitive style. Kolb's theory of experiential learning relates to students learning via simulations. Kolb (1981) stated that for learning from experience, the student must exhibit four abilities: "(a) concrete abilities, (b) reflective observation, (c) abstract

conceptualization, and (d) active experimentation" (p. 236). The student must be open to the experience, observe and reflect on what occurs, and use those reflections to think critically and make decisions for the simulation to be effective. Students gain self-confidence during the active experimentation phase while immersed in the simulation and applying skills. Clapper (2010) stated that adult learners bring positive and negative references into their learning, and bad learning experiences may make them frustrated. Bad experiences may alter a student's perception of simulation. According to Kolb (1981), being open to new experiences is the foundation of experiential learning.

This review of the literature focused primarily on nursing education, definition of simulation, the different types of simulation (i.e., low fidelity and high fidelity), and various reasons as to why simulation use in nursing programs is on the rise. This study was conducted to explore how the amount of clinical simulation exposure affected student perceptions of satisfaction, self-confidence, and critical thinking scores.

**Review of the Broader Problem**

In the past 20 years simulation has been integrated more into nursing education (Aebersold & Tschannen, 2013). Simulation use in healthcare education has been increasing steadily, and I found an abundant amount of research available. Supporting literature for this study came from conducting searches in numerous databases including CINAHL, ProQuest, Science Direct, and Medline. Search terms included *nursing, allied health, student satisfaction, high-fidelity simulation, stimulation, student perceptions, self-confidence, critical thinking,* and *clinical simulation.* Nursing education, simulation definition, increased use of clinical simulation, student perceptions of simulation and

self-confidence, and how critical thinking places a role in clinical simulation are the topics that are discussed in this literature review.

**Nursing Education**

Before becoming a registered nurse (RN), students must complete an accredited nursing program and pass the National Council licensure examination known as NCLEX-RN. The NCSBN developed the NCLEX-RN examination to be consistent with current nursing practice (NCSBN, 2015). The profession of nursing involves many different tasks and skills. According to the American Nurses Association (2015), nurses protect and promote for their patients in addition to helping prevent illnesses, injuries, and helping to alleviate suffering. The task of ensuring that nursing students can fulfill the requirements of being competent nurses falls on nurse educators. With technology constantly changing, it is important for nursing faculty to stay up to date on innovations, including simulation (National League for Nursing, 2016b).

**Simulation**

Clinical simulation use in nursing education has been increasing (Frick, Swoboda, Mansukhani, & Jefferies, 2014). Jeffries (2005) wrote, "Simulations are defined as activities that mimic the reality of a clinical environment and are designed to demonstrate procedures, decision-making, and critical thinking through techniques such as role-playing and the use of devices such as interactive videos or mannequins" (p. 97). In healthcare education, simulation use has various functions and benefits. The Society for Simulation in Healthcare (2015) observed that "healthcare simulations are designed to meet four main purposes, (a) education, (b) assessment, (c) research, and (d) health

system integration in facilitating patient safety" (para. 1). Clinical simulation gives opportunities to students and enables them to practice in a safe, nonthreatening environment. Giving students experience in a simulated environment improves clinical skills that can be used in actual clinical practice (Frick et al., 2014). Clinical simulation gives students a nonthreatening setting in which to practice their skills and get "hands on" experience before they go into the real hospital and work with patients (Curtin, Finn, Czosnowski, Whitman, & Cawley, 2011).

Simulation comes in different forms including high fidelity simulation and low fidelity simulation. Shinnick, Woo, Horwich, and Steadman (2011) explained that high fidelity simulation is costly in regard to time and money and teaches students hands-on experience with a realistic mannequin. Low-fidelity simulation includes equipment such as plastic arms, static mannequins, or case studies (Tosterud, Hedelin, & Hall-Lord, 2013). According to the Society of Simulation in Healthcare (2015), simulations help faculty bridge the gap between what faculty teach didactically and real clinical experience. Faculty can use simulations for novice nursing students for both basic skills and more advanced simulations. Jeffries (2012) detailed the framework needed for simulations, indicating that simulations must have objectives, planning, fidelity, cues, and debriefing. Debriefing occurs after the simulation is complete. According to Mariani, Cantrell, and Meakim (2014), "Debriefing is a collaborative learning experience in which reciprocal learning occurs between faculty and student, as well as among students in a safe environment" (p. 330). During the debriefing, students and faculty can reflect on the simulation to aid in the learning process.

**Increase in Simulation Use**

A lack of both clinical space and clinical faculty are factors in students experiencing more clinical simulation than in previous years. With an increase of 151% in nursing programs in the state of Florida since 2009, hospitals have experienced a significant increase in students needing to complete their clinical rotations (OPPAGA, 2015). This has placed a strain on the hospital systems and reduced the available clinical time for existing programs. To address the issue of limited clinical space, nursing faculty members have begun to use other ways to support their lectures, including simulation (Dowie, 2011). With a lack of clinical faculty, nursing programs have begun to use simulation to more efficiently utilize the faculty they have (Richardson, Goldsamt, Simmons, Gilmartin, & Jeffries, 2014). This is not only a state issue, it is also an issue nationwide.

Howell and James (2012) described the problem created by an increase in student nurse population at Morehead University, Kentucky, and unchanging clinical site availability. The nursing department at Morehead has addressed this issue of limited clinical space by using clinical simulation to enhance their students' learning. The NLN report on the Annual Survey of Schools of Nursing for academic year 2013- 2014 indicated that 41% of bachelor of science in nursing programs stated that the main obstacle to admitting students to capacity was a lack of clinical space (NLN, 2015). The lack of clinical space is affecting nursing schools everywhere, not just in the United States. International schools have begun to experience issues associated with the decline of clinical availability as well.

Dowie (2011) wrote that nursing faculty in the United Kingdom have seen a decrease in availability of training sites for students due to rising staff shortages and decreasing budgets. This has led nursing faculty to begin using alternate methods of teaching clinical skills, and the most popular method has been simulation. Some colleges have changed their curricula due to the lack of clinical space. Dutile, Wright, and Beauchesne (2011) described the situation in the School of Nursing at Northeastern University in Boston, Massachusetts: "Multiple factors such as shortage of nursing faculty and increasingly competitive clinical sites have encouraged nurse educators to seek alternative pedagogies to supplement traditional hands-on clinical practice" (p. 43).

Use of simulation training is common in other industries including aviation and military (Lateef, 2010) and in healthcare programs other than nursing. Allied health programs also use simulation to educate their students. Paramedic programs use simulation-based assessments (SBA). Tavares, LeBlanc, Mausz, Sun, and Eva (2014) discussed the goals of the SBA for its paramedic students, "One of the goals of SBA is to extrapolate the observations collected in a simulated environment to enable inferences to be drawn about future performance in real clinical contexts with real patients" (p. 116). Respiratory care departments and other medical professionals have also begun using simulation across the United States to help educate, create a strong clinical foundation, and increase confidence (Hanlon, 2014). Students believe that integrating the theory of what they are learning in simulation allows them to apply the information in a real situation (Bevan, Joy, Keeley, & Brown, 2015). "Experience in these settings has shown to develop the clinical skills that can be synthesized, retained, and applied in clinical

practice" (Frick et al., 2014, p. 9). Clinical simulation is common in different aspects of healthcare education, and each profession has its reason for using simulation to educate its students.

**Student Perception of Satisfaction**

When using simulation, positive student perceptions are necessary for a successful simulation program. In a large-scale study conducted by Hayden et al. (2014) that prompted the state of Florida to allow an increase in simulation use up to 50% of required clinical hours, student satisfaction with simulation was not studied. Other researchers have, however, examined student perceptions. Research on nursing student perceptions on incorporating simulation to help teach obstetrics revealed that students were excited. One student stated, "The technology was awesome. I enjoyed seeing the heart rate monitors on both the mother and baby actually working, rather than just seeing a photo in a text" (Partin, Payne, & Slemmons, 2011, p. 187). In a study conducted by Casida and Shpakoff (2012) to investigate the effectiveness of high fidelity simulation, participants included baccalaureate level nursing students. Students believed that (a) more simulation was needed in the program, (b) simulation should be introduced early in the nursing program, and (c) simulation was a great way for nursing students to learn. Different students may have different opinions of simulation; some researchers have examined variables within simulation that may affect student perceptions.

Published research on simulation has revealed a focus on different variables regarding student perceptions. Researchers comparing student perceptions of low fidelity versus high fidelity simulation showed that students were satisfied regardless of the type

of simulation (Tosterud et al., 2013). The integration of simulation of different levels of fidelity into nursing education has received positive feedback from different types of students. Millennial students reported a positive experience and expressed the belief that the simulators and scenarios enhanced their critical thinking and overall learning experience (Montenery et al., 2013). Whether it was low fidelity, high fidelity, or millennial students, student perceptions of simulation have been positive.

Students enjoy simulations for a variety of reasons. Key themes found in research using simulation in a community-based home visit course were that (a) students believed the simulation was realistic, (b) it was fun, (c) they were able to think creatively, and (d) they enjoyed being in the role (Wheeler & McNelis, 2014). Improving students' safety practices with simulation resulted in helping students become more comfortable with reporting and investigating errors (Mariani, Cantrell, Meakim, & Jenkinson, 2015). In Guhde's 2011 investigation of the use of simulation to assess thinking, assessment, and learner satisfaction, students contended that simulation should be used in all courses. Students reported that simulation was beneficial because they could experience being a nurse, and it forced them to think critically while doing the simulation (Guhde, 2011). Student perceptions of satisfaction is not the only variable that has been researched in regard to simulation. Another variable that has been researched using clinical simulation is student self-confidence.

**Self-Confidence and Simulation**

Self-confidence is based on an individual's self-esteem, sense of self, sense of efficacy, and experiences related to the setting (Perry, 2011). Self-confidence and student

satisfaction were two variables not addressed in the NCSBN study (Hayden et al., 2014). Because this major study has been responsible for Florida's increasing simulation use in nursing programs, and nursing faculty are integrating simulation into the curriculum to help build self-confidence in students prior to working with real patients, additional research on self-confidence is needed.

Many researchers have supported the use of clinical simulation in building self-confidence in nursing students. Using the NLN Student Satisfaction and Self-Confidence tool, Lewis and Ciak (2011) confirmed positive results for nursing students' self-confidence when investigating the effectiveness of a simulation laboratory experience for learning. In 2014, Hampson and Cantrell used pre- and postsimulation self-efficacy surveys that showed an increase in students' abilities to assess their patients while using standardized patients (Hampson & Cantrell, 2014). After using high fidelity simulation and concept mapping, "Students reported an increase in self-confidence because of the overall experience" (Samawi, Miller, & Haras, 2014, p. 408). Many variations of simulation technology have assisted students in building their self-confidence.

Several studies have shown that using simulation in nursing education does indeed help students build confidence in themselves and their nursing skills. Mould, White, and Gallagher (2011) demonstrated that simulation scenarios were effective and that nursing students improved their self-confidence and competence. Findings in a study investigating the use of low fidelity simulation with sophomore nursing students were encouraging in promoting active and diverse learning for nursing students. However, trying to test students' confidence and critical thinking was a greater task than expected

(Sharpnack & Madigan, 2012). Alfes (2011) compared the effectiveness of simulation to that of traditional skills laboratories and discovered that students' confidence in their skills increased with the simulation experience. Although these researchers focused on self-confidence in clinical simulations, other researchers have studied the relationship between clinical simulation and critical thinking.

**Critical Thinking**

A necessary outcome in nursing education programs is the development of critical thinking skills (National League for Nursing Accrediting Commission, 2004). Because critical thinking is an important attribute of future nurses, it is crucial that nursing faculty structure curricula to help teach these necessary skills. Helping students understand the importance of critical thinking skills can be a challenging task for educators. "Educators have to equip nursing students with skills that promote their critical thinking to solve complex issues" (Kaddoura, 2011, p. 1). In one study, critical thinking scores of freshman and senior nursing students were compared using the California Critical Thinking Test. Both groups were low in critical thinking, and completing the nursing program did not affect the students' critical thinking scores (Aziz-Fini, Hajibagheri, & Adib-Hajbaghery, 2015). Because data have shown over time that nursing students lack critical thinking skills and the importance of these skills has been documented, nursing programs have increasingly used clinical simulation to help students gain the skills that they need.

Additional factors in simulation and their relationship to students' critical thinking scores are topics in other researchers' studies. Shin et al. (2015) researched nursing students' exposure to simulation and examined how it affected their critical thinking

skills. Students exposed to more simulations had significant gains in critical thinking (Shin et al., 2015). “Clinical simulations provide a safe working environment for students to practice technical skills as well as to develop critical thinking skills based on an interpretation of patient variables” (Wane & Lotz, 2013. p. 163). In a quasi-experimental study, researchers explored the effects of low versus high fidelity simulation on critical thinking scores. Both groups showed an increase in critical thinking ability (Goodstone et al., 2013). In the study conducted by Goodstone et al. (2013), regardless of the level of fidelity, exposing students to realistic experiences helped increase their critical thinking skills. Though many researchers have found that simulation increases students’ critical thinking abilities, Lapkin et al. (2010) found in their meta-analysis of simulation studies that change in the level of clinical reasoning was inconclusive. The present study was conducted to explore the differences in students’ perceptions of satisfaction, self-confidence, and critical thinking between two groups of students receiving either 15 or 30 clinical simulation hours.

## Implications

Nursing faculty have begun to experience a shortage of clinical sites for their students. One solution to this, according to Sharpnack and Madigan (2012), was to use clinical simulation to help students experience clinical situations. Previous researchers have revealed positive student perceptions regarding clinical simulation. Students enjoy the technology of simulation and benefit from the simulated experience (Partin et al., 2011). Goodstone et al. (2013) found that students’ critical thinking scores improved with more clinical simulation experience.

It was posited that if this study resulted in positive findings with regard to student perceptions, self-confidence, and critical thinking scores that could be attributed to simulation time increases, the local nursing program may continue increasing the use of clinical simulation. A possible project that may emerge as a result of the research in this study was the development of a curriculum plan. At the time of the study, courses at the local college were testing using 25% of clinical simulation in exchange for clinical time. The findings of this study may warrant an increase to 50% as allowed by the state legislature. Identifying a curriculum plan will help faculty members when using clinical simulation.

## Summary

The local problem was that program faculty were concerned that students were not benefitting as much from the simulation experience as they would in a real clinical environment. Faculty were concerned that students were not satisfied, did not have self-confidence, and did not use critical thinking skills. Due to the lack of clinical space, the local nursing program was increasing the use of simulation to compensate for the decrease in clinical site availability. There are existing studies on student perceptions of simulation for satisfaction and self-confidence, and researchers have linked simulation and critical thinking in students. The present study was conducted to explore differences in students' perceptions of satisfaction, self-confidence, and critical thinking between groups of students receiving varied amounts of clinical simulation. Findings from this study may help not only the local college but other colleges in the state, as the change in legislation was statewide. Nursing faculty can review these data to determine if there are

needed changes to the curriculum in relation to student satisfaction, self-confidence, and critical thinking scores. The next section presents the methodology used to conduct the study.

Section 2: The Methodology

## Introduction

This section describes the methodology of this study. It includes the different components of the study including the research design, the setting, and the sampling methods. Also outlined are the instruments and data analysis for this study. This section also includes assumptions, limitations, and ethical considerations.

## Research Design and Approach

For this research, I conducted a mixed methods study using a one-time survey format to collect data from two different groups of students, interviews of nursing faculty, and analysis of student reflection papers on simulation. According to Fowler (2009), common survey techniques measure opinions and perceptions. In this study, I measured student perceptions about clinical simulation using a survey. Babbie (1990) observed that survey research is appropriate to examine relationships between variables in a population using a sample. It allows the researcher to collect data and confirm a theory about social behavior. Using a survey, a causal-comparative study allowed me to collect data from two different groups of nursing students (the independent variables). Data collected from their perceptions of satisfaction and self-confidence and their critical thinking scores allowed me to explore the differences between the two groups.

For this study, I used two existing instruments to collect quantitative data. Quantitative research allowed me to test a theory and support or reject the hypotheses based on attitudes of the participants (Creswell, 2009). Collecting quantitative survey data enabled me to test hypotheses based on student perceptions of simulation.

Other research methods include qualitative and mixed methods. In qualitative research, investigators explore topics of interest and collect data with different approaches, including interviews and case studies (Creswell, 2009). A qualitative design was not initially planned for this study. One reason is that in previous research, researchers measured the same concepts and used valid and reliable instruments and those same instruments were used in this study. Also, the purpose of this study was not exploratory, which is an appropriate rationale for qualitative research. In mixed methods research, both qualitative and quantitative research are used. Mixed methods was not initially planned for this study; however, due to an underpowered quantitative study, qualitative data were added. Quantitative data helps eliminate bias by using numbers, and there is no influencing results by the researcher's interpretation when using numerical data. A causal-comparative design was initially used instead of an experimental design, because randomization of participants in the two groups was not possible. Participants were in pre-existing groups as defined by their course enrollment. When qualitative data were added, it made this study a mixed methods design.

**Setting and Sample**

The setting for this study was an associate degree-nursing program at a local college. Inclusion criteria included enrolled nursing students in the Basic Concepts of Medical Surgical (BMS) course and the Advanced Concepts of Medical Surgical (AMS) course at the local college. I used these two courses for this study because students enrolled in both courses gained clinical simulation experience. Students in the BMS course had approximately 15 hours of clinical simulation time and composed one group.

Students in the AMS course had approximately 30 hours of clinical simulation time and composed the second group.

For this study, I used a convenience sample. Convenience sampling is common because of the easy access to participants (Cooksey & McDonald, 2011). In each course, there were approximately 75-80 students. The ages of the students ranged from 18 to 45, with the majority of them falling into the 18-24 age range. In both courses, there were more females than males, 86.4% compared to 13.6% and 73% compared to 25.7%, respectively. Race/ethnicities included Caucasian, African American, Hispanic, and Asian, with Caucasian students making up 55.7% and 64.9% in the two courses. Exclusion criteria for participants were nursing students not enrolled in either of these two courses.

As a faculty member of the college, I had access to students enrolled in the nursing college who were potential participants. After IRB approval from Walden University (Walden approval no. 07-14-16-0389922) and the local college, I attended each class for a brief period of time to introduce the study and obtained e-mail addresses from students who were interested in participating in the study. The first semester I collected 100 e-mail addresses; in the second semester, I collected 91 e-mail addresses for a total of 191 potential participants. All students in the two courses received e-mails requesting their participation and an explanation of the study details. Students who agreed to participate in the study clicked on a link to the online survey and a second link to take the online critical thinking test, thereby giving their implied consent. As the program manager of another department in the allied health field, I had no authority over

the participants in this study. For this study, students enrolled in the two different nursing courses were potential participants and represented the nursing population at the local college.

G*Power Version 3.1.9.2 (2014) software recommended a total sample size of 278 participants with a set effect size of 0.3, $\alpha = 0.05$, and Power $(1-\beta) = .8$. I had a potential sample size of approximately 150 participants from the two groups for each semester. In order to obtain the recommended sample size, I sought out other potential participants from other semesters. I collected data from the summer semester and the fall semester. According to Fowler (2009), using e-mail as a source of data collection is not ideal, especially if participants do not know the source of the sender. However, there are steps that can be taken to help maximize a positive response rate. To reduce nonresponse bias, I spoke to both classes prior to the beginning of the study to explain the study and collect student e-mails. The e-mail invitations included information to participate and explained why the study was taking place. If students chose not to participate, I sent follow up e-mails to again request participation. With these steps, and a potential pool of 150 participants per semester, the goal was to have the recommended sample size of 278 participants.

After speaking with both classes each semester, I collected the e-mail addresses of 191 potential students out of a possible 236 students who could be invited to participate in the study. These students provided their e-mail address to me because they were interested in the study. Unfortunately, the overall participation rate was low. Of the 191 students, 34 (17.8%) participated in the survey and 12 (6.3%) completed the critical

thinking test. To help increase participation, I extended the data collection time during a period of no classes due to holiday break. Unfortunately, this did not help increase participation. Due to not collecting personal data from students, I was unable to determine which students completed the survey and not the critical thinking test. All quantitative data that were collected were used and analyzed.

**Instrumentation and Materials**

To measure the dependent variables, I used two separate instruments, the NLN SSSCL and the CCTST. The following paragraphs contain a detailed description of each instrument including reliability, validity, and content.

**Student Satisfaction and Self-Confidence in Learning Survey.** I used the SSCSL to measure two dependent variables, student perception of satisfaction and self-confidence. The SSCSL (2005) uses a Likert scale ranging from 1 to 5 where 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree regarding their satisfaction and self-confidence after experiencing simulations. The SSCSL measured student satisfaction with questions related to (a) teaching methods involved with simulation, (b) materials used during the simulation, and (c) students' enjoyment of the simulation. The SSCSL measured self-confidence with questions related to students' feeling confident that the simulation covered all skills for the course and their confidence in their ability to perform these skills. Reliability for this instrument using Cronbach's alpha for satisfaction = 0.94, self-confidence = 0.87 (NLN, 2016a).

Content validity for the NLN available instruments was accomplished by a panel of 10 content experts in testing and simulation development (NLN, 2016a). I

administered the survey to each student online using Qualtrics. The NLN tool was not modified for this study. The SSCSL is a 13-item instrument with five items measuring student satisfaction and eight items measuring student self-confidence in learning. The mean score from the satisfaction and self-confidence sections of the survey was established for each student. Lewis and Ciak (2011) also used the SSSCL survey for their research to investigate the impact of simulation on students' self-confidence and satisfaction. They found that students' participation in simulation had a positive impact on satisfaction and self-confidence.

**California Critical Thinking Skills Test.** This test measured participants' critical thinking, the third dependent variable for this study. The design of the test allowed the test takers to demonstrate their critical thinking skills by answering questions to everyday scenarios. As the test continues, the difficulty of the questions increases (Insight Assessment, 2013). The California Critical Thinking Skills Test (CCTST) results provided quantitative data to measure analysis, deduction, induction, evaluation, inference, and overall reasoning skills (Insight Assessment, 2013). The scores included an overall score of critical thinking which I used for this study. Administration of the test took approximately 45-50 minutes, the test length established to allow for maximum performance. The reliability for the CCTST is the KR-20 coefficient; reliability coefficient for all tests offered by the company is 0.77-0.83 (Insight Assessment, 2013).

The validity for the CCTST is derived from results of the APA Delphi Research Study (1988-1990). Scales on the CCTST correspond with the reports of critical thinking skills, and items were tested for over 20 years and went through all validation studies

(Insight Assessment, 2013). For this study, each participant took this test via an online platform. In other research, this test was used to measure nursing students' critical thinking skills. Yuan, Kunaviktikul, Klunklin, and Williams (2008) conducted a study using the CCTST to measure pre- and postcritical thinking skills after problem-based learning was implemented. Fero et al. (2010) also used the CCTST to examine a relationship between critical thinking skills and nursing students' performance in simulated clinical scenarios.

The NLN SSSCL survey is available for review in Appendix B. The NLN made this instrument available for individual researchers for noncommercial use. The link for this instrument is listed on the reference page under National League for Nursing, descriptions of available instruments. Due to copyright laws, the CCTST instrument is not available for publication; therefore it has not been included in an appendix. However, more information on the test can be accessed at the link located on the reference page under Insight Assessment. Tables depicting the difference between the independent and dependent variables are available in the data analysis section.

**Data Collection Analysis Results**

I collected data from the NLN SSSCL, and the CCTST. Students in the BMS course have approximately 15 hours of previous clinical simulation time, and students enrolled in the AMS course have approximately 30 hours of clinical simulation. After completing their simulation experience, each student received an e-mail with the survey and the critical thinking test online links. The critical thinking test determined each

student's critical thinking score, and the survey provided data on each student's perception of satisfaction and self-confidence.

After data collection was completed, I had data on 34 students for the survey and 12 for the critical thinking test. These data were separated into two separate groups based on students' course of enrollment (BMS or AMS). I input the data for the three dependent variables into SPSS. Each variable for this study produced interval scales. Data cleaning took place in SPSS to make sure all data were valid. In this study, no data were out of range or missing. Once data cleaning was complete, I ran descriptive statistics on the three dependent variables for each data set. Descriptive statistics, including the mean, mode, standard deviation, median, and range, are available for review in tables.

Once descriptive statistics were complete, I conducted an independent *t* test to explore the difference between the mean scores of student satisfaction, self-confidence, and critical thinking scores in each group. This test determined if there was a difference between the means of the two independent groups (Laerd, 2015). Using this statistical analysis allowed me to explore the differences, if any, between the independent variable (group membership) and all three dependent variables (student perceptions of satisfaction, self-confidence, and critical thinking scores).

**Protection of Participants' Rights**

Before conducting the research study, I received approval from the Institutional Review Board at the target college and Walden University. A review of all ethical considerations took place. According to Bishop-Clark and Dietz-Uhler (2012) ethical considerations involve informed consent from the participants, the right to protect the

privacy of participants, the risk of no harm, and debriefing. Prior to beginning the study, I attended each class from which participants were drawn. I introduced myself, explained the purpose of the study, and informed potential participants that they would receive an e-mail with more information. There was no collection of demographic data or personal information during the data collection process to keep all data anonymous. No physical or psychological harm occurred to participants while conducting the study. Participation in the study did not have an impact on students' grades within the nursing courses. All instruments used and data collected remain under my supervision and locked via password access on my computer. After 5 years, I will destroy all data collected for this study.

**Summary**

This study took place at a local college with a two-year associate degree-nursing program. I used mixed methods research with a one-shot survey format for this study. Using two groups with different amounts of clinical simulation experience, I explored differences in student perceptions of satisfaction, self-confidence, and critical thinking scores. Data collection took place via an online survey and an online critical thinking test. Once data were collected, an independent *t* test analysis determined if there was a difference in the means of the two groups. Participants for this study were in either the BMS or AMS course at the local college. No personal data were collected, and students had the right to not participate. The findings of this study were intended to aid faculty members with curriculum development and clinical simulation.

## Research Findings

The purpose of this study was to explore differences, if any, in student perceptions of satisfaction, self-confidence, and critical thinking between two groups of students receiving 15 or 30 hours of clinical simulation. Data collected consisted of quantitative data from nursing students' satisfaction and self-confidence survey and a critical thinking skills test. Qualitative data included reflection papers of students and nursing faculty interviews. Data were analyzed using SPSS. The results of all analyses are presented using narratives and supportive tables for descriptive statistics and independent *t* test results. The NLN created the survey that measured student satisfaction and self-confidence and the CCTST was purchased from Insight Assessment.

### Data Analyses for Student Satisfaction

The first dependent variable in this study was student satisfaction. Student satisfaction for this study was measured by the NLN survey. The survey is available for review in Appendix B. A Likert scale of 1-5 was used to measure agreement with a statement from 1(*strongly disagree*) to 5 (*strongly agree*). This portion of the survey was comprised of five questions. The five items were related to teaching methods, materials used, and student's enjoyment of the simulation. The research question for student satisfaction was:

> RQ1: What is the difference, if any, in nursing student satisfaction between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida?

$H_0$1: There is no difference in nursing student satisfaction between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida.

$H_a$1: There is a difference in student satisfaction between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida.

Table 1 lists the descriptive statistics for student satisfaction for this study. The AMS group, which had 30 clinical simulation hours, had 15 participants, and the BMS group, which had 15 clinical simulation hours, had 19 participants. The mean for the AMS was slightly higher than the BMS group, the median for the AMS group was higher than the BMS group, and the ranges for the BMS group was higher than the AMS group.

Table 1

*Descriptive Statistics for Student Satisfaction*

| Course | *n* | Mean | *SD* | Median | Range |
|---|---|---|---|---|---|
| AMS | 15 | 21.0 | 3.04 | 22 | 17-25 |
| BMS | 19 | 20.2 | 4.00 | 20 | 9-25 |

*Note*. AMS = Advanced Concepts of Medical Surgical Course. BMS = Basic Concepts for Medical Surgical Course.

The inferential analysis used was the independent *t* test, and the results of this analysis are in Table 2. Levene's Test was conducted to test the homogeneity of variances of the two groups. The Levene's Test was not significant ($p = .930$); thus, the assumption was met and the group variances were not significantly different. An independent *t* test was run to determine if there were significant differences in nursing student satisfaction between students receiving 15 hours versus students receiving 30 hours of simulation at a local nursing program in Florida. There was no significant difference between the means of the AMS group and the BMS group ($p = .560$). The results fail to reject the null hypothesis for student satisfaction. There was no significant difference in nursing student satisfaction between students receiving 15 hours versus students receiving 30 hours of simulation at a local nursing program in Florida.

A statistical power analysis was performed to determine the power for each test based on these results. For student satisfaction, a post hoc power analysis determined the power was 0.16. An adequate power is 0.80. This low power shows that there was not enough power to run the analyses and an increased risk for type II error. Type II error is when you fail to reject the null hypothesis when you should have. Low participation for

student satisfaction caused this research question to be underpowered, and the small power of 0.16 supports that.

Table 2

t *test for Student Satisfaction*

| t | df | Sig. (2-tailed) |
|---|---|---|
| .589 | 32 | 560 |

**Data Analyses for Self-Confidence**

The second dependent variable in this study was student self-confidence. Self-confidence was also measured by the NLN survey. The survey is available for review in Appendix B. A Likert scale of 1 -5 was used to measure agreement with a statement where 1 (*strongly disagree)*, 2 (*disagree*), 3 (*undecided*), 4 (*agree*), and 5 (*strongly agree*). This portion was comprised of eight questions related to students' feeling confident that the simulation covered all skills for the course and their confidence in their ability to perform these skills. The research question for self-confidence was:

RQ2: What is the difference, if any, in nursing student self-confidence between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida?

$H_0$2: There is no difference in nursing student self-confidence between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida.

$H_a2$: There is a difference in nursing student self-confidence between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida.

Table 3 contains the descriptive statistics for self-confidence for this study. The AMS group, which had 30 clinical simulation hours, had 15 participants, and the BMS group, which had 15 clinical simulation hours, had 19 participants. The means for both groups were similar. The median for both groups were the same, and the ranges were also similar.

Table 3

*Descriptive Statistics for Self Confidence*

| Course | *n* | Mean | *SD* | Median | Range |
|---|---|---|---|---|---|
| AMS | 15 | 33.8 | 4.64 | 35 | 24-40 |
| BMS | 19 | 33.7 | 4.58 | 35 | 23-40 |

*Note*. AMS = Advanced Concepts of Medical Surgical Course. BMS = Basic Concepts for Medical Surgical Course.

The results of the independent *t* test are displayed in Table 4. Levene's Test was conducted to test the homogeneity of variances of the group. The Levene's Test was not significant ($p = .776$), thus, the assumption was met and the group variances were not significantly different. An independent *t* test was run to determine if there was a difference in nursing student self-confidence between students receiving 15 hours versus those receiving 30 hours of simulation at a local nursing program in Florida. There was no statistical difference between the means of the AMS group and the BMS group ($p = .935$). The results failed to reject the null hypothesis for self-confidence. There was no

difference in nursing student self-confidence between students receiving 15 hours versus those receiving 30 hours of simulation at a local nursing program in Florida.

A statistical power analysis was performed to determine the power for each test based on the results. For student self-confidence, a post hoc power analysis determined the power was 0.06. This low power shows that there was not enough power to run the analyses and an increased risk for type II error. Type II error is when you fail to reject the null hypothesis when you should have. Low participation for student self-confidence caused this research question to be underpowered, and the small power of 0.06 supports that.

Table 4

t *test for Self-Confidence*

| t | df | Sig. (2-tailed) |
|---|---|---|
| .082 | 32 | .935 |

**Data Analyses for Critical Thinking**

The third dependent variable was critical thinking. Insight Assessments' California Critical Thinking Skills Test measured critical thinking for this study. Due to copyright laws and the integrity of the test, it was not available for review. Students received a login to access the test on Insight Assessment's website. The test took students approximately 40 – 45 minutes to complete. An overall reasoning score was generated along with scores on analysis, deduction, induction, evaluation, inference, and overall

reasoning skills. For the purpose of this study, each student's overall reasoning score was used. The research question for critical thinking was:

RQ3: What is the difference, if any, in nursing student critical thinking scores between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida?

$H_0$3: There is no difference in nursing student critical thinking scores between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida.

$H_a$3: There is a difference in nursing student critical thinking scores between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida.

Table 5 lists the descriptive statistics for critical thinking. Due to the longer time constraint of the critical thinking test, fewer students participated. The AMS group had six participants and the BMS group had six participants. The mean for the BMS was slightly higher than the AMS group, and the medians were the same, but the ranges were higher for the AMS group.

Table 5

*Descriptive Statistics for Critical Thinking*

| Course | *n* | Mean | *SD* | Median | Range |
|---|---|---|---|---|---|
| AMS | 6 | 72.50 | 6.57 | 73 | 61-79 |
| BMS | 6 | 74.83 | 5.15 | 73 | 71-85 |

*Note*. AMS = Advanced Concepts of Medical Surgical Course. BMS = Basic Concepts for Medical Surgical Course.

The results of the independent *t* test are presented in Table 6. Levene's Test was conducted to test the homogeneity of variances of the group. The Levene's Test was not significant ($p = .530$), thus, the assumption was met. An independent *t* test was run to determine if there were differences in nursing student critical thinking between students receiving 15 hours versus those receiving 30 hours of simulation at a local nursing program in Florida. There was no significant difference between the means of the AMS group and the BMS group ($p = .509$). The results failed to reject the null hypothesis for critical thinking. There was no significant difference in nursing student critical thinking between students receiving 15 hours versus those receiving 30 hours of simulation at a local nursing program in Florida.

A statistical power analysis was also performed to determine the power for critical thinking. A post hoc power analysis determined the power was 0.15. This low power shows that there was not enough power to run the analyses and an increased risk for type II error. Type II error is when you fail to reject the null hypothesis when you should have. For this portion of the study there were fewer participants than the first two research questions and as a result, the study was underpowered.

Table 6

t *test for Critical Thinking*

| t | df | Sig. (2-tailed) |
|---|---|---|
| .685 | 10 | .509 |

In summary, for all three dependent variables, there was no significant difference between student satisfaction, self-confidence, and critical thinking for nursing students

that had received different amounts of clinical simulation time. Thus, for each research question, there was a failure to reject the null hypothesis.

**Assumptions**

Assumptions are when someone reads the research and thinks that things are assumed to be true; however, they need verification. The first assumption was that all participants answered the survey questions truthfully. The second assumption was that every participant took the critical thinking skills test seriously and answered those questions correctly. The third assumption was that all students received the accurate amount of simulation time and were tested the same. If any of these assumptions were not true, this would alter the results of the study.

**Limitations**

There were a few limitations for this study for both the quantitative and qualitative sections. One is that the students in the AMS course have been in the nursing program a semester longer than the BMS students. The additional education and training could affect students' perceptions and critical thinking scores overall, and this can potentially alter the results of the study. A second limitation is the inadequate power and the increased chance of a type II error. The number of potential study participants was only 191, and G*power software had a recommended sample size of 278 participants. This created a risk for a Type II error due to low power. The low power reduced the likelihood of detecting an effect in the study. The lower the power, the higher the chance of a Type II error which raises the risk of failing to reject the null hypothesis even when it is false. An additional limitation was the threat to internal validity from a poor response

rate to the survey and critical thinking test. The length of the critical thinking test was an additional limitation for this study. For the qualitative section the limitation was due to the reflection paper not allowing students to provide more negative feedback about the simulation. The way the assignment was written it was guided more for positive feedback rather than negative feedback. Students names were removed prior to sending to me, however, this was an assignment rather than an anonymous reflection therefore this may have affected student responses.

The survey response rate was 17.8 % and the critical thinking test response rate was 6.2 %. Faculty members informed me that participants were overwhelmed with their existing course work in the nursing program and the time necessary to complete the critical thinking test resulted in low participation. The low response rate resulted in non-response bias. According to Fowler (2009) non-response bias is the percentage of selected participants who did not respond who are biased which means they may differ from the population being surveyed. In this study, the high percentage of selected participants who did not participate could affect the results. There may have been reasons why participants did not complete the survey and critical thinking test. However, if the reason was related to their perceptions of simulation, this could have given rise to bias and could have altered the results of the study if they had participated. It students who did not participate in the study did not like simulations then the data collected would have a bias toward positive student perceptions. If students who did not participate liked simulations, then this may have created a bias toward negative student perceptions.

### Scope

The scope of this study was confined to survey responses and critical thinking scores of students enrolled in the BMS course and the AMS courses at the local college. The independent variable was the group membership based on clinical simulation time. Three dependent variables included student perception of satisfaction, self-confidence, and critical thinking scores.

### Delimitations

This study was limited to students enrolled in the nursing program in two particular classes. I chose the two courses due to the amount of simulation associated with the courses. Students that had less than 15 hours of clinical simulation or greater than 30 hours were not participants in the study.

## Qualitative Approach

Due to low participation and an underpowered study, a qualitative portion was added to the existing study to enhance the results from the quantitative portion. The following section is the research design and approach used in the qualitative portion of the study. Detailed information is provided related to the participants, the data collection process, and the data analysis.

### Research Design and Approach

For the project study, a sequential mixed methods study design was used. First, quantitative data were collected and then, due to the low power and poor response rate, qualitative data were collected. The theoretical framework for this study was andragogy, which is defined as the science of helping adults learn (Knowles, 1970). Qualitative

research allows the researcher to understand participants' experiences (Merriam, 2009). For this study, I used documents from student reflections of a simulated clinical day, archival data, and I conducted faculty interviews. These data allowed me to better understand student reflections of simulation and faculty perceptions of nursing students' satisfaction, self-confidence, and critical thinking. The three research questions were:

RQ1. What is the difference, if any, in nursing student satisfaction between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida?

RQ2. What is the difference, if any, in nursing student self-confidence between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida?

RQ3. What is the difference, if any, in nursing student critical thinking scores between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida?

The nursing students were required to write a reflection paper with a minimum of 500 words, including their thoughts and feelings about the simulation day, if they believed the objectives were met, and if they believed they needed improvement in their clinical performance. This reflection aligns with students' satisfaction and self-confidence with simulation. Faculty interviews were also conducted to collect qualitative data about faculty perceptions of student satisfaction, self-confidence, and critical thinking within their courses.

**Participants**

For this portion of the study, a convenience sample was used. A convenience sample is established when the researcher chooses participants based on availability and accessibility (Yin, 2010). As a faculty member, I have access to nursing faculty and nursing students. Before starting my qualitative research, I submitted changes in my study to the site IRB and received approval to make the changes. Participants for the qualitative portion of the study were nursing students who wrote the reflection papers and four faculty members who were interviewed. Two faculty members taught the AMS course and two taught the BMS course. I used iterative sampling while reviewing the reflection papers completed by 70 students. During iterative sampling the researcher reviews data until no new information is found and saturation is met (Cohen & Crabtree, 2006). All data were kept confidential, and I obtained informed consent from the faculty members prior to the start of the study. I received approval from the nursing program director and dean of nursing to review the papers for this study. All student reflection papers were de-identified, so no identifiable student information was used in the data. For faculty interviews, pseudonyms were used to protect confidentiality.

**Data Collection for Qualitative Sequence**

Two instruments were used for the qualitative data collection. The first was a reflection paper completed by nursing students and the second was an interview protocol for faculty developed by the researcher. The interview protocol is available for review in Appendix C. The reflection paper was completed by nursing students after a clinical simulation day. The reflection paper directions are available in Appendix D. The papers

include the students' thoughts and feelings for the day, if they met the objectives for the simulation, if they could identify any clinical performance improvements, and what they took away from the experience that would help them in their clinical experience. While it was 500 word minimum for the assignment, many students wrote more than 500 words so that they could adequately express how they felt about the simulation day.

The questions I asked faculty members in the interview included questions as to whether faculty members believed the simulations were helpful and effective for their courses. I also asked if they felt simulations enhanced student learning, if students had expressed concerns about their satisfaction or self-confidence, if students lacked critical thinking abilities, and if they believed that simulation affected students' critical thinking ability.

I emailed the nursing faculty in the medical surgical courses, explaining the study and requesting their participation. The informed consent forms were delivered to the faculty members via e-mail for their review. Once they gave informed consent, a 30-minute interview time was arranged. Interviews were conducted in faculty offices, and I recorded them using my cell phone. Once the interviews were transferred to my computer and password protected, I deleted the audio from my phone. Student reflection papers were emailed to me by nursing faculty after I received IRB approval. All reflection papers were deidentified and no student information was collected.

**Qualitative Data Analysis**

Content analysis was used for all qualitative data. After faculty interviews were transcribed, reviewed, and analyzed. I sent the faculty interview transcripts back to the

participants for transcript review. After faculty approved, faculty interviews were open coded for common themes among the research questions. Student reflections were also open coded. According to Strauss and Corbin (1990) open coding is "the process of breaking down, examining, comparing, conceptualizing, and categorizing data" (p. 61). I clustered the analysis based on the three concepts in the three research questions: student satisfaction, self-confidence, and critical thinking. The results included qualitative themes from the reflection summaries and faculty interviews for the BMS and AMS nursing courses. Though the data in some cases may not have directly related to my initial findings, I posited that the data would be complementary to my initial quantitative research.

## Qualitative Research Findings

### Data Analyses for Faculty Interviews

The purpose of the qualitative portion was to explore differences, if any, in student perceptions of satisfaction, self-confidence, and critical thinking between groups of students receiving varied amounts of clinical simulation. Data collected consisted of faculty interviews with four faculty members, two who taught the AMS course and two who taught the BMS course. All interviews were audio recorded and each faculty member was asked the same questions. After the interview, transcripts were shared with each faculty member for review prior to writing this data analysis section. Interviews were coded for the three common themes, (i.e., student satisfaction, self-confidence, and critical thinking). Each theme is discussed in detail in the following sections.

**Data Analysis for Student Satisfaction**

The research question for student satisfaction was: What is the difference, if any, in nursing student satisfaction between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida?

Faculty members for both the AMS course and the BMS course had heard positive and negative feedback about clinical simulation from nursing students. The one major concern for both courses was that some students did not like being put on the spot or feeling as if they were on stage in front of everyone. Following this feedback, nursing faculty have made adjustments so other students can watch via video feed rather than being in the room with the participating students. Although a few students had some negative feelings about clinical simulation, the majority of the students were very favorable toward it. Faculty members from both courses had heard positive feedback from students, (e.g., they enjoy working in the safe simulated clinical environment). One faculty member stated, “It's just the matter of helping them understand that our simulation are never high-stakes. They are all educationally focused. I want them to make mistakes, and I encourage mistakes.” Students like this and feel that clinical simulation is more valuable to them as an educational tool; it brings theory and actual skills together. Between the two nursing courses at this college, there was no difference in nursing student satisfaction with clinical simulation.

**Data Analysis for Self-Confidence**

The research question for self-confidence was: What is the difference, if any, in nursing student self-confidence between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida?

The BMS course faculty had more to say in regard to nursing students' self-confidence than did the AMS course faculty. Both BMS faculty members stated that students' confidence was typically low at the beginning of the semester, but as they were able to practice skills and participate in simulations, their confidence grew. One BMS faculty member stated, "I think there's a confidence kind of being built from the fact that they are able to transfer knowledge from one course simulation to a second course simulation."

The AMS course faculty members believed that their nursing students' confidence was present, however, the students start to second guess themselves or are too critical because they know what they should and should not be doing. One AMS faculty member stated, "They are very concerned about how this is the second to the last semester before they're actually taking care of patients on their own." Although students in both courses seemed to have self-confidence concerns, they appeared for different reasons. The BMS course students lacked self-confidence only because they had not had the hands-on experience early in the semester; rather they gained it as the semester progressed. The AMS course students had self-confidence. However, they displayed nervousness as they moved closer to being finished and on to their practical.

**Data Analysis for Critical Thinking**

The research question for critical thinking was: What is the difference, if any, in nursing student critical thinking scores between students receiving 15 hours versus 30 hours of simulation at a local nursing program in Florida?

The nursing faculty for both courses believed that clinical simulation has helped students with critical thinking and has helped improve their test scores. One AMS course faculty member stated, "They definitely grow in our course as far as critical thinking, because, again, they come from basic medical surgical, and more of our questions and our exams are analyzing and applying to the content." The other faculty member in that course agreed that students' critical thinking improved and test scores had increased, but she expressed the belief that critical thinking comes with experience from real life experiences, not being a student in a clinical setting or sitting in a classroom. One BMS course faculty stated in regards to clinical simulation, "I think it impacts it tremendously, because it forces them to think about a situation from a variety of viewpoints." Faculty members in both courses believed that critical thinking was improved with clinical simulation, whether it be on an examination where they can reflect on their experience or while they are participating in the scenario and treating a patient.

**Data Analyses for Student Reflections**

The student reflection papers included the individual student's thoughts and feelings for the day, if objectives for the simulation were met, noting any clinical performance improvements, and knowledge that they gained that will help them in their clinical experience. I reviewed 37 student reflection papers of the simulation experience,

open coding the themes from the papers. Satisfaction with the simulations, self-confidence, and critical thinking were common themes in the students' papers. Because these papers were from students in the whole nursing program and not just the AMS course and BMS course, each theme is discussed as a whole.

The majority of the students were very satisfied with the clinical simulation. One student stated, "The best part that made the simulation such an effective learning experience was putting into practice everything we have learned this semester." Students found the simulation to be fun and engaging. They also enjoyed the environment of the simulation, because it was safe and they could learn from their mistakes without causing harm to a patient. Another student stated, "This simulation was honestly, the most engaging and fun experience I have had so far at the college." Students were proud of themselves after the simulations and indicated they wanted more simulation in the program.

Self-confidence was another common theme in the reflection papers. Students were not only confident in themselves, but also in their classmates and clinical groups. They were confident in their skills, communication with patients and peers, and their knowledge. One student reflected, "I also believe that by actively participating in the simulation, I gained trust in myself about the knowledge that I hold." The students expressed that being able to take what they learned in class and use that information in a clinical setting gave them more confidence overall.

Students believed that clinical simulation helped with their critical thinking skills. They also learned that remaining calm helps with critical thinking. One student wrote,

"My big take away from this experience is to not panic because it is not conducive to critical thinking." Another student observed, "It was exhilarating to be thrown into a realistic scenario with a patient, where I was forced to critically think and act." Critical thinking happened at various points throughout the simulation for students. Some reflected on it after the scenario was completed, and other students were able to critically think during the scenario. One student wrote, "It was required of us to implement the critical thinking needed to adjust to care of the patients…. This was much more than we were able to see in a complete day of clinical."

After reviewing the student reflection papers, it was evident that there was a majority positive response to clinical simulation from the majority of the nursing students. However, a small number of students expressed concern about the simulations. One student's reflection paper expressed concern about being uncomfortable because they felt like they were on stage. Others felt anxious about the simulations because they did not know what to expect. Another student recommended allowing students to have an orientation to the simulator. They stated, "When I went to assess the baby, I was not sure what the doll could and could not do." Overall, many students stated that they would like to see more simulation used in the program. They enjoyed the safe environment, while practicing their skills and building their critical thinking skills and confidence.

Additional research was conducted to see if previous studies revealed students being dissatisfied with clinical simulation. All of the literature used for this project study had positive results for simulation from students. One recent review of studies showed that students did have higher stress levels associated with simulation, however, they felt

that clinical simulation was a valuable learning tool (Cantrell, Meyer, & Mosack, 2017). While some students may feel hesitant about working with simulators, the overall feedback is that students enjoy the experience and would like to see it used more in their programs.

## Conclusion

The purpose of this sequential mixed methods study was to compare two different groups of nursing students to determine if there was a difference in their satisfaction, self-confidence, and critical thinking because they had experienced different amounts of clinical simulation time. The BMS course students had 15 hours of clinical simulation and the AMS course students had 30 hours of clinical simulation. Quantitative data showed that there was no significant difference between the two groups of nursing students for satisfaction, self-confidence, or critical thinking. The qualitative portion of this study showed minimal difference between the two courses as well. This section presented the methodology of this study along with the findings. The next section will discuss the project for this study.

# Section 3: The Project

## Introduction

The purpose of this study was to explore differences in students' perceptions of satisfaction, self-confidence, and critical thinking between two groups of students receiving either 15 or 30 hours of clinical simulation time. The quantitative portion of this study was underpowered due to the small sample size. This prompted a qualitative portion to be added to the study.

The quantitative findings revealed there was no significant difference between student satisfaction, self-confidence, and critical thinking for nursing students who had different amounts of clinical simulation time. Similarly, there was no difference in the qualitative findings regarding student satisfaction, self-confidence, and critical thinking. Therefore, based on the data from this mixed methods study, it was shown that an increase in clinical simulation did not affect satisfaction, self-confidence, or critical thinking in nursing students, and the nursing program can increase clinical simulation in the program with no deleterious impact. This project focused on utilizing more clinical simulation in the program. In this section, I present a 10-week curriculum plan (Appendix A), focused on the use of clinical simulation in the nursing program. The rationale for this project is explained in detail in the following section.

## Rationale

Based on the study that was completed, comparing two different groups of nursing students with different amounts of simulation time and the results of this study, a curriculum plan was an ideal project for this study. A curriculum plan will guide nursing

faculty to incorporate additional simulation into the program. Data showed that students enrolled in the BMS course and the AMS course had no significant difference in their perceptions for clinical simulation for satisfaction and self-confidence. This mixed method study did not find a significant difference in their critical thinking scores. Based on this study, the amount of clinical simulation time in the program did not affect students' perceptions of satisfaction, self-confidence, or their critical thinking. According to Florida Department of Education (2014), nursing programs in the state of Florida use clinical simulation up to 50% for overall clinical training. This curriculum plan was designed to help nursing programs use more clinical simulation in their programs. A review of literature supported this project.

## Review of the Literature

The curriculum plan was developed based on the findings of my study and my review of literature. The search was conducted through various databases including Proquest, ScienceDirect, CINAHL, and MEDLINE, CINAHL and MEDLINE Simultaneous Search, and CINAHL Plus. Search terms included *clinical simulation, nursing students, curriculum, nursing faculty, simulation development, implementation, evaluation,* and *training.* There was limited information on specific courses in nursing programs, because each program develops their own curriculum. The literature review focused on nursing education curriculum, topics for clinical simulation, clinical simulation implementation, and clinical simulation evaluation.

**Nursing Education Curriculum**

Nursing programs are responsible for creating their own curriculum for each course. At the local college in Florida, nursing faculty have created curricula for nursing courses and included clinical simulation. This project will serve as a guide in adding additional simulation in the program. The Florida Nurse Practice Act (2016) stated that each program must have theoretical and clinical instruction in surgical, medical, obstetrics, pediatrics, and geriatric nursing. Each program must also have theoretical and clinical instruction in acute and long-term care, in addition to topics such as community health. Additionally, the Florida Nurse Practice Act (2016) regulates how many hours of clinical experiences nursing students must have. A bill was passed in 2014 that allows nursing programs in the State of Florida to increase their use of clinical simulation in lieu of actual clinical time from 25% to 50% (Florida Department of Education, 2014). Nursing programs' courses consist of theory and clinical/laboratory objectives. Clinical and laboratory objectives for the two courses that were used for this study are discussed.

At the local college where the study was conducted, the BMS course curricula has focused on basic nursing skills. According to the course outline, 35 hours are in the laboratory, and there are 100 clinical hours required. Clinical and laboratory activities include taking care of patients with pneumonia, diabetes, parental medication administration, and bladder catheter insertion and nasogastric tube insertion. The AMS course also requires of 35 laboratory hours and 100 clinical hours. Activities include taking care of patients with myocardial infarction, congestive heart failure, pulmonary embolism, and deep vein thrombosis. In AMS, nursing students must also perform naso-

tracheal suction, tracheostomy care, dressing changes for central lines, blood administration, chest tubes, and electrocardiograms. Although the program already incorporates simulations in both courses, I will present a 10-week curriculum plan for the AMS course. The AMS course consists of additional skills students must successfully complete. Some skills can be combined into one simulation and conducted on the same patient. Specific topics that are suitable for clinical simulation are discussed in the following section.

**Topics for Clinical Simulation**

Clinical simulation in nursing programs has increased over the years due to an increase in need of clinical experiences for nursing students (Cook, 2015). Nursing schools have the ability to use everything from basic task trainers to high fidelity simulators to train and prepare their students. The project curriculum plan will incorporate the use of high fidelity simulators to aid in making the experience more realistic for students. Many organizations such as Society for Simulation in Healthcare, International Nursing Association for Clinical Simulation & Learning, and the NLN give their support for nursing programs to use clinical simulation (Cook, 2015). Nursing programs must decide what curriculum will be taught using clinical simulation.

According to Hyland, Weeks, Ficorelli, and Vanderbeek-Warren (2012), "Simulation is an ideal teaching strategy for high risk/low-volume events in a safe environment" (p. 108). When students attend their clinical rotations, they encounter patients who are already admitted to the hospital. Nursing faculty assign patients to their students, but they have no control over the reasons these patients have been hospitalized

or the specific patients to whom their students will be assigned. Simulation allows nursing faculty to expose students to situations that do not occur often but for which optimal performance is vital (Kane, Pye, & Jones, 2011). When working with student nurses, patient safety is a top concern.

According to Makary and Daniel (2016), medical errors are the leading cause of death in the United States. When placing students in clinical rotations, nursing faculty must look at important factors such as patient safety. Clinical simulation allows students to participate in experiences that occur infrequently but are critical, especially when patient safety is a concern (Park et al., 2013). According to Cooper et al., (2012) emergency obstetric training was frequently reported as a topic requiring practice in a simulated environment. During deliveries, there are two patients where lives are at risk. Practicing in a simulated environment allows nursing students to learn needed skills without any patient risk.

Other topics that may be better suited for simulation are end of life care and simulated death experience. People are living longer and developing more chronic conditions in the United States. Nursing students need to know how to care for these patients, especially at the end of their life (Fabro, Schaffer, & Scharton, 2014). Training nursing students in a simulated environment for chronic conditions and end of life care bridges the gap between the unknown, (i.e., how to care for these patients) and performing the skills necessary. End of life care can be difficult to teach nursing students due to the availability of these patients, and preceptors and nursing faculty's experience of taking care of these patients and their experience teaching end of life care (Kopka,

Aschenbrenner, & Reynolds, 2016). Implementing patient scenarios such as these into curricula can be a challenge. Other fields besides nursing are also using clinical simulation for various situations.

Clinical simulation is used in other education programs such as medical schools and paramedicine. Daglius Dias and Scalabrini Neto (2016) researched clinical simulation as to whether it provided a sufficiently stressful environment for medical residents in emergency care. Results showed no difference in stress levels in real environment versus clinical environment. The simulated environment showed to be realistic enough for students working in emergency care. Paramedic programs use clinical simulation for a number of skills. Their scope of practice ranges from prehospital clinical procedures to assisting other disciplines (Donaghy, 2016). Clinical simulation can be used for various disciplines and various topics. Clinical simulation implementation is discussed further in the following section.

**Clinical Simulation Implementation**

When nursing programs increase their use of clinical simulation, a key step to implementation is having a team that can provide guidance and aid in the process of simulation implementation (Jefferies, 2012). Clinical simulation requires faculty who have been trained; the simulation learning objectives may not be met if the learning process varies (Coffman, Doolen, & Llasus, 2015). Standards were developed by the Commission on Collegiate Nursing Education (2013), NCSBN (2012), and the Accreditation Commission for Education in Nursing (2013) to ensure that faculty who are

training students with clinical simulation are academically and clinically qualified to do so.

There are training programs available to help ensure that faculty members are trained. Two of the major manufactures of simulators are Gaumard and Laerdal. Gaumard Scientific Company has developed simulators for healthcare training for over 60 years (Gaumard Scientific, 2016). Since the early 2000s, Laerdal Medical has produced products to aid in prehospital, hospital, and military simulations (Laerdal Medical, 2016). Both of these companies provide training that is included in the purchase of the simulators. There are also organizations for healthcare simulation such as the Society for Simulation in Healthcare. The Society for Simulation in Healthcare is a member-based organization that allows individuals interested in simulation to network and attend workshops and trainings to better educate themselves on healthcare simulation (Society for Simulation in Healthcare, 2016). Anyone can join this organization to learn more about simulation in health care. Nursing faculty members also have access to opportunities such as the Institute for Simulation Educators at the University of Maryland School of Nursing. The Institute has collaborated with the National League for Nursing to offer a three and one-half day forum that provides nursing faculty members with skills and knowledge on how to use simulation (Institute for Simulation Educators, 2016). Having faculty who are trained in simulation is important, although there are additional concerns when implementing clinical simulation.

Nursing faculty are challenged to integrate and facilitate clinical simulation in a way that it can meet the objectives of the course (Masters, 2014). Clinical simulation

should be a part of the curriculum, not considered an additional teaching method. According to Jefferies (2012), having a well-thought-out plan for simulation implementation including faculty, objectives, and evaluation tools will help overcome many of the challenges nursing programs face. Clinical simulation evaluation is discussed in the following section.

**Clinical Simulation Evaluation**

Evaluating clinical simulation occurs at different levels. The nursing program evaluates clinical simulation at the course level and at the student level. According to Jefferies (2012) in order to properly determine the success of the simulation integration, an evaluation plan must be put in place. Nursing faculty may find it difficult to properly measure and evaluate simulation outcomes (Lancaster, Anderson, Jambunathan, Elertson, & Schmitt, 2015).

According to Schlairet (2011) there is a deficit of clinical simulation evaluation at the curriculum level. There are tools available, however, for proper evaluation of clinical simulation. Jefferies (2012) developed the Simulation Design Scale and the Educational Practices Simulation Scale. Moery and Gabel (2015) used both tools to evaluate the success of their educational plan in educating about post open-heart surgery patients. Basak, Unver, Moss, Watts, and Gaioso (2016) used the Simulation Design Scale to measure differences between low and high fidelity simulation on student outcomes. Sharpnack and Madigan (2012) also used the Education Practice Scale for Simulation to evaluate simulation strategies in their study of low fidelity simulation with nursing

students. For the purpose of this project, the Simulation Design Scale will be used to evaluate the clinical simulation.

Student evaluation of simulation can be achieved in different ways. Nursing educators can choose from tools such as observations of students conducting clinical simulations, questionnaires, attitude scales, and anecdotal notes (Jefferies, 2012). These different tools can measure different variables. The study that was conducted for this project used the National League for Nursing Student Satisfaction and Self-Confidence Survey to measure satisfaction and self-confidence. This survey is a 13-item survey using a Likert scale to measure student satisfaction and self-confidence (National League for Nursing, 2016a). The NLN survey of student satisfaction and self-confidence was also used in a study to measure concept mapping and simulation in nursing students (Zepure, Miller, & Haras, 2014). Curtis et al. (2016) used portions of the Nursing Student Satisfaction and Self-Confidence Survey in addition to other instruments to measure student satisfaction and self-confidence. The 10-week curriculum plan for this project also uses the National League for Nursing Student Satisfaction and Self-Confidence Survey. The description of the project is discussed in the next section.

## Project Description

This curriculum plan will help nursing students apply skills in a simulated environment that may not be available to students in a real nursing environment. Throughout the 10 weeks, students will be introduced to the simulator, learn the necessary skills, practice the skills with a peer in a simulated environment, complete the

checkoff for each skill, and demonstrate all skills with a full patient scenario at the end of the semester for a grade.

Resources needed for this project are nursing faculty members, simulation laboratory with high fidelity simulators, and laboratory equipment. A potential barrier for this project is the amount of time needed due to the amount of theory and laboratory curriculum. Also, an increase in faculty members are needed to teach students. A well-defined schedule will help keep the project on track. Nursing students will not only be completing the scenarios; they will also be peer evaluating their classmates during the 10-week plan. Nursing faculty will teach the skills, observe and guide during student practice, and evaluate students at the end of the 10 weeks for a grade.

## Project Evaluation Plan

To evaluate the project, students will complete the simulation design scale survey and a reflection paper. The simulation design scale is divided into five sections, objectives and information, support, problem solving, feedback/guided reflection, and fidelity (National League for Nursing, 2016a). It was validated by 10 content experts, and Cronbach's alpha was used to test the reliability, which was 0.92 for the features of the survey and 0.96 for the importance (National League for Nursing, 2016a). The survey feedback will determine if students believe the objectives were met, if they were supported during the learning process, if they were encouraged to problem solve while completing the simulation, if feedback was provided to them, and if the simulation was realistic. By students completing this survey, faculty can better understand if the project implementation met all intended objectives. This type of evaluation is best because the

feedback is coming directly from the students who are involved in the 10-week plan. Student feedback will help guide faculty members and program directors in curriculum development.

Each student will also submit a reflection paper after the 10 weeks. Each student will write a minimum of 1000 words on their thoughts before and after completing the 10 weeks, what they learned that will benefit them in their clinical practice, if they felt all objectives were met for each skill, and if they would like to see anything done differently in the future in the course. This paper will allow students to express how they feel and give feedback to faculty members.

## Project Implications

The purpose of this project study was to determine if there was a difference in student perceptions of satisfaction, self-confidence, and critical thinking between nursing students with different amounts of clinical simulation time. Though the mixed method study was underpowered due to the small participation size of the sample, there was still a possibility of providing social change with the results. As previously stated, the number of nursing programs is increasing, and hospital availability is decreasing. Nursing programs are using more simulation to educate and prepare their students. Even with the small number of students who participated in this mixed methods study, the results showed no significant difference between the students' satisfaction, self-confidence, and critical thinking. The local stakeholders, including nursing faculty, deans of nursing, program managers, and other administrators, can use this information to adjust curricula and provide an enriched learning environment for their students. Providing nursing

students with an education that will better prepare them, not only helps the students, but also all nursing students' future patients.

Section 4: Reflections and Conclusions

## Introduction

The purpose of this project study was to determine if there was a difference in nursing student perceptions for satisfaction, self-confidence, and critical thinking between two groups of students with either 15 or 30 hours of clinical simulation. Implementation of the project was intended to allow more clinical simulation to be present in the nursing program, specifically in the AMS course. The project's strengths and limitations are reviewed in this section along with recommendations to alternative approaches. Reflections on the importance of the work in addition to the implications, applications, and directions for future research are also discussed.

## Project Strengths and Limitations

The project includes a 10-week curriculum plan to better implement clinical simulation in a nursing course. The strengths of this project include the objectives of each lesson with detailed assessments to be completed for all students and their skill competencies. The first 9 weeks are dedicated to preparing students to complete a full simulation scenario and care for a patient who requires multiple skills at the end of the 10 weeks. The project also focuses on skills that students might not get the opportunity to complete in the clinical setting. Simulation is a valuable teaching tool for high risk/low-volume events (Hyland et al., 2012). The first 9 weeks allow plenty of time for students to practice their skills in a simulated environment prior to being graded at the end. Another strength is the evaluation process not only for the students, but also for the simulation itself. Students will complete the Simulation Design Scale at the end of the 10

weeks. This information will provide faculty with data on students' perceptions about the simulation that will enable them to make necessary adjustments to the scenarios.

Limitations to the project are time and laboratory space. This project does require an abundant amount of laboratory time, requiring more nursing faculty to be present. It also requires time for nursing faculty to be familiar with simulators and how they operate. The Accreditation Commission for Education in Nursing (2013) requires that faculty are trained and clinically qualified to teach clinical simulation. Training on the simulators can take days to complete, encompassing simulator setup, scenario building, setting the stage, and debriefing techniques. Laboratory space is also a limitation of this project. To implement this 10-week curriculum plan, the laboratory will need to be booked for the actual laboratory days with sufficient time prior for set-up. Many nursing programs lack laboratory space in general, so the increase in time presents a limitation.

## Recommendations for Alternative Approaches

The problem that prompted this research and project study was the lack of clinical space availability to a local nursing program and the increasing use of clinical simulation to supplement that clinical time. The NCSBN determined that clinical simulation could replace 50% of clinical time (Hayden et al., 2014). With an increase in clinical simulation time in lieu of actual hospital time, nursing faculty wanted to ensure that students were satisfied with simulation, competent in their skills, and could critically think in clinical settings. There are limited alternative approaches to the lack of clinical space. Students need to be trained appropriately, whether in a hospital setting or a clinical simulation setting.

One alternative approach at the local level would be to admit fewer students per year into the nursing program. This would open more clinical spots for existing students. Another alternative approach would require the nursing board to have stricter guidelines regarding the regulation of nursing programs. This would require a reversal of the 2009 legislature that deregulated nursing programs. Since 2009, the State of Florida has seen an increase by 151% in nursing programs (OPPAGA, 2015). The problem of insufficient clinical space and not having sites to train students will not be addressed adequately by any online program or lecture. Students need the hands-on training that clinical simulation provides.

**Scholarship, Project Development and Evaluation, and Leadership and Change**

As this project evolved, I have learned much through the process of writing a proposal, researching, reviewing the literature, analyzing the data, conducting interviews, engaging in content analysis, and finally creating a 10-week curriculum plan for the project. The knowledge I have gained has been invaluable. As a scholar, I learned in my doctoral courses about adult learning theories, researching, and statistical analysis; however, nothing compares to creating this entire project study from its inception to completion. I had a few obstacles in my process including restructuring my proposal and adding a qualitative portion to my study, but I would not have learned valuable lessons if those situations had not arisen. All those steps were part of a learning process.

As an educator, this process has helped me tremendously in my teaching. I have learned more about clinical simulation and have been able to implement it in my curriculum as a professor of respiratory therapy. This has afforded me the opportunity to

provide my students with knowledge and learning experiences they may not have had otherwise. In developing this project, I was able to learn more about the assessments available for simulation that students can complete that help faculty get valuable feedback from their students. Currently, I develop syllabi for my courses, but developing a full 10-week plan was rewarding and will help me in the future.

## Reflection on Importance of the Work

The importance of this work was apparent in every step I completed. Nursing professors are tasked with educating up to 100 students in one course. They have challenges with clinical space, overloaded curriculum, and ensuring that all students are sufficiently competent in their skills to be great nurses. In speaking with the dean of nursing and program faculty, I learned more about not only the nursing profession, but also the nurse educator profession. This project study gave me the opportunity to develop a curriculum plan to help students in their future careers and nurse educators in their profession. I would never have had the opportunity to learn so much from these stakeholders and realize the roles they play without this project study.

## Implications, Applications, and Directions for Future Research

The purpose of this project has always been to provide social change. Nurses play a pivotal role in our healthcare system. Patients rely on nurses to be compassionate and treat them as needed. Doctors rely on nurses to execute their orders, and family members rely on them to treat their loved ones every day. The purpose of this study was to determine if there were differences in nursing students' perceptions of satisfaction, self-confidence, and critical thinking who had different amounts of clinical simulation. Data

analysis showed no difference in students' perceptions, and this finding prompted the creation of a 10-week curriculum plan to educate student nurses using more clinical simulation. The hope is that this study and project will help nursing faculty members in making decisions about how to adjust their curriculum to better educate nursing students.

More research is needed on clinical simulation. Though most nursing programs are completed over five semesters, this study focused on only two semesters of nursing courses. The topic of simulation can be researched on many levels, from task trainers to high fidelity simulators to standardized patients. This project study is only the beginning. Clinical simulation has evolved tremendously over the years, and it will continue to do so, and so will the research.

## Conclusion

The purpose of this project was to investigate two different groups of nursing students who had different amounts of clinical simulation time to determine if there were differences in their perceptions of satisfaction, self-confidence, and critical thinking. Extensive research on the problem of lack of clinical space and increased use of clinical simulation prompted this study. Data analysis showed no difference in student perceptions of clinical simulation. The majority of students enjoyed clinical simulation and found it to be a useful educational tool. This study supported the use of additional clinical simulation in nursing programs to better prepare student nurses for their future careers.

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# Appendix A: The Project

## Simulation Curriculum Plan

**Designer**: Jaime Magnetico, MA, RRT-NPS

**Implementation**: In conjunction with Advanced Concepts of Medical Surgical Nursing Course

**Student Assessment**: Grading rubric/check off sheets

**Simulation Assessment**: Simulation Design Scale, National League for Nursing Student Satisfaction and Self-Confidence Survey, and reflection paper

**Description**: This curriculum plan will help nursing students apply skills in a simulated environment that may not be available for students to complete in a real nursing environment. Throughout the 10 weeks, students will first get an introduction to the simulator, learn the necessary skills, practice the skills with a peer in a simulated environment, complete the check off for each skill and then demonstrate all skills at the end of the semester with a full patient scenario for a grade.

**Required Textbook**: Perry, A., & Potter, P. (2014). *Clinical Nursing Skills & Techniques* (8th ed.). St. Louis, Missouri: Elsevier.

**Objectives**: At the completion of the 10 weeks, students will be able to

1. Apply steps in caring for patients with advanced medical and surgical conditions
2. Demonstrate clinical decision-making skills
3. Communicate with patients and other members of the healthcare team
4. Demonstrate clinical competence of tracheostomy care in simulation lab
5. Demonstrate clinical competence of chest tube care in simulation lab
6. Demonstrate clinical competence of 12 lead electrocardiogram in simulation lab
7. Demonstrate clinical competence of blood administration in simulation lab
8. Adhere to professional standards defined by the Nurse Practice Act

**Grading Scale/Rubric**: Simulation grade will make up 30% of the overall course grade. Each competency is worth five points for a total of 20 points. Final simulation is worth ten points. That grading rubric is provided in the final scenario section.

| Point Value | Scale |
|---|---|
| 5 | Satisfactory performance of skill with no errors |
| 4 | Satisfactory performance of skill with one error |
| 3 | Unsatisfactory performance of skill with two errors |
| 2 | Unsatisfactory performance of skill with three errors |
| 1 | Unsatisfactory performance of skill with more than three errors |
| 0 | Did not perform competency |

**Outline**:

| Week | Activity | Assessment |
|---|---|---|
| 1 | Introduction to simulator | Student check off sheet |
| 2 | Learn trach care & practice with peer | Peer check off |
| 3 | Trach care competency | Trach care competency check off |
| 4 | Learn chest tube & practice with peer | Peer check off |
| 5 | Chest tube competency | Chest tube competency Check off |
| 6 | Learn EKG & practice with peer | Peer check off |
| 7 | EKG competency | EKG competency check off |
| 8 | Learn blood administration & practice with peer | Peer check off |
| 9 | Blood administration competency | Blood administration competency check off |
| 10 | Final Simulation | 1. Simulation Design Scale<br>2. National League for Nursing Student Satisfaction and Self-Confidence Survey<br>3.Grading Scale |

**Introduction to Simulator Week 1**

**Description**: Each student will complete the skills below to get an introduction to the simulator.

**Equipment needed**: Patient simulator, blood pressure cuff, stethoscope

**Objectives:** At the completion of week 1 students will be able to

1. Evaluate the simulator as a real patient

2. Recognize changes to simulator vitals

3. Understand how the simulator operates

4. Apply skills necessary to care for the simulator

| Skills | Student Completed |
|---|---|
| Look at pupils, ears, mouth, nose, neck | |
| Auscultate all breath sounds, heart sounds, bowl sounds | |
| Palpate all pulses (carotid, brachial, radial, femoral, and pedal) | |
| Take blood pressure | |
| Ask simulator questions to get responses | |
| Review special features of simulator (cyanosis, seizures, monitor, etc.) | |
| Change vitals on simulator and have students recognize breath sound changes, heart rate changes, presence of bowl sounds. | |

**Competencies**:

All competency material is from, Perry, A., & Potter, P. (2014). *Clinical Nursing Skills & Techniques* (8th ed.). St. Louis, Missouri: Elsevier. The students' peer and faculty evaluator will use the checkoff sheet to evaluate. The grading scale will be used for the final faculty checkoff to determine appropriate points.

**Tracheostomy Care Week 2 and 3**

**Description**: Each student will take care of a patient with a tracheostomy tube. The student will practice tracheostomy care with a peer, and then will be checked off with a faculty member.

**Equipment needed**: Personal Protective Equipment and tracheostomy care kit

**Objective:** At the completion of week 2 and 3, students will be able to

1. Demonstrate clinical competence of tracheostomy care in simulation lab

| Skill | Peer Checkoff | Competency Checkoff |
|---|---|---|
| Identify patient with two patient identifiers | | |
| Perform hand hygiene and don PPE | | |
| Apply pulse oximeter | | |
| Suction tracheostomy and remove soiled dressing | | |
| Remove gloves, hand hygiene, prepare equipment | | |
| Hyperoxygenate the patient | | |
| Apply sterile gloves and keep dominate hand sterile throughout | | |
| Remove inner cannula, clean or replace with disposable cannula, replace | | |
| Using normal saline saturated cotton tipped swabs and 4x4 gauze clean stoma site in circular motion outward from stoma using dominant hand to hold sterile supplies | | |
| Pat area dry with sterile gauze | | |
| Secure tracheostomy and remove old trach ties | | |
| Replace trach ties and replace trach dressing around tracheostomy | | |
| Verify trach ties are secure and not too tight (should be able to fit two fingers under the tie) | | |
| Ensure patient is comfortable and assess respiratory status | | |
| Be sure that oxygen or humidification delivery sources are correct | | |
| Remove PPE and perform hand hygiene | | |

**Chest Tube Week 4 and 5**

**Description**: Each student will take care of a patient that needs a chest tube. The student will practice chest tube insertion with a peer, and then will be checked off by faculty.

**Equipment needed**: Personal protective equipment, chest tube insertion kit, and drainage system

**Objective:** At the completion of week 4 and 5, students will be able to

1. Demonstrate clinical competence of chest tubes in simulation lab

| Skill | Peer Checkoff | Competency Checkoff |
|---|---|---|
| Identify patient using two identifiers | | |
| Check informed consent policy | | |
| Review order for chest tube placement | | |
| Set up water seal system or waterless system (see manufacturer guidelines) | | |
| Secure all tubing connections with tape or zip ties | | |
| Turn off suction source and unclamp drainage tubing before connecting to patient | | |
| Administer premedication | | |
| Explain procedure to patient | | |
| Perform hand hygiene and apply PPE | | |
| Help heath care provider with tube insertion and set up drainage system | | |
| Ensure all connections are secure and system is functioning | | |
| Use appropriate patient position for pneumothorax or hemothorax | | |
| Check patency of air vents in system | | |
| Position tubing appropriately and secure next to patient on mattress | | |
| Dispose of sharps | | |
| Dispose PPE, wash hands, and reapply clean gloves | | |
| Reassess patient and insertion site | | |
| Remove PPE and perform hand hygiene | | |

**EKG Week 6 and 7**

**Description**: Each student will take care of a patient that needs an EKG. The student will practice EKG's with a peer, and then will be checked off with a faculty member.

**Equipment needed**: Personal protective equipment, 12 lead EKG machine, and electrodes

**Objective:** At the completion of week 6 and 7, students will be able to

1. Demonstrate clinical competence of 12 lead electrocardiogram in simulation lab

| Skill | Peer Check off | Competency Check off |
|---|---|---|
| Identify patient using two identifiers | | |
| Perform hand hygiene and apply PPE | | |
| Remove or reposition patients clothing to expose patient's chest and arms | | |
| Place patient in supine position | | |
| Instruct patient to lie still, no talking, and uncross legs | | |
| Clean and prepare skin (wipe with alcohol, shave hair if needed) | | |
| Apply self-sticking electrodes in appropriate areas | | |
| Turn on ECG machine and enter patient demographics and obtain a 12 lead ECG tracing | | |
| Disconnect leads and wipe patients skin clean | | |
| Document and provide reading to health care provider | | |

**Blood Administration Week 8 and 9**

**Description**: Each student will take care of a patient that needs a blood transfusion. The student will practice blood transfusion with a peer, and then will be checked off with a faculty member.

**Equipment needed:** Personal protective equipment, simulated blood product, 0.9% normal saline, Y tubing

**Objective:** At the completion of week 8 and 9, students will be able to
1. Demonstrate clinical competence of blood administration in simulation lab

| Skill | Peer Check off | Competency Check off |
|---|---|---|
| **Preadministration Skills:** | | |
| Obtain blood component from blood bank following protocols. | | |
| Check blood for any signs of contamination and presence of leaks | | |
| Verbally compare and correctly verify patient, blood product, and type with another qualified person before initiating transfusion | | |
| Review purpose of transfusion and ask patient to report any changes they may feel during the transfusion | | |
| Empty urine drainage container or have patient void | | |
| **Administration skills:** | | |
| Perform hand hygiene and apply PPE | | |
| Open Y tubing and set all clamps to off | | |
| Spike 0.9% normal saline IV bag with one of the Y tubing spikes, hang bag and prime tubing. Close all clamps when primed and maintain sterile caps. | | |
| Prepare blood for administration by gently turning bag upside down. Remove protective cover port from bag and spike with Y tubing connector, then prime tubing with blood. | | |
| Ensure all residual air is out | | |
| Maintain asepsis, attach primed tubing to patients VAD. Open tubing clamp and regulate blood infusion to 2 mL/min. | | |
| Remain with patient for 15 minutes during transfusion and monitor vitals every five minutes | | |
| If not reaction then regulate transfusion rate to ordered | | |
| After transfusion is complete, clear IV with normal saline and discard blood bag according to policy. | | |
| Appropriately discard all supplies, remove gloves, and perform hand hygiene. | | |

**Final Simulation Week 10**

**Description**: Each students will be given a detailed patient scenario of a patient that needs a 12 lead electrocardiogram done, tracheostomy care, chest tube insertion, and a blood transfusion.

**Objectives**: At the completion of the final simulation, students will be able to

1. Apply steps in caring for patients with advanced medical and surgical conditions
2. Demonstrate clinical decision-making skills
3. Communicate with patients and other members of the healthcare team
4. Demonstrate clinical competence of tracheostomy care in simulation lab
5. Demonstrate clinical competence of chest tube care in simulation lab
6. Demonstrate clinical competence of 12 lead electrocardiogram in simulation lab
7. Demonstrate clinical competence of blood administration in simulation lab
8. Adhere to professional standards defined by the Nurse Practice Act

**Final Scenario**

**Equipment Needed:**

Personal protective equipment

Simulator with a 6.0 Shiley tracheostomy tube in place and is connected to a mechanical ventilator

Chest tube tray with drainage system

12 lead EKG machine with electrotrodes

Simulated blood products, 0.9% normal saline bad, Y tubing

Additional members of healthcare team (Physician and nurse)

Trach care kit

**Case information:**

**Patient name:** Robert Smith

**Age:** 65 year old

**Gender:** Male

**Past Medical History:** Laryngectomy five years ago, due to cancer.

**Social History:** Lives with wife of 30 years, retired factory worker

**Current situation:** Patient was in a motor vehicle accident. Suffered multiple fractures including broken ribs, which caused a pneumothorax. Patient is currently mechanically ventilated via the tracheostomy tube. He needs a chest tube in left lung to drain excess air from the pleural space, a 12 lead electrocardiogram, and needs a blood transfusion to due to low platelets and red blood cells.

**Scenario:**

Student is given case information and needs to demonstrate all skills necessary. The student must prioritize what needs to be completed first and complete all skills without error.

**Grading Rubric:**

| **Skills** | **Completed with no error<br>2 points** | **Completed with minor error<br>1 point** | **Completed with multiple errors<br>0 points** |
|---|---|---|---|
| Prioritize care of patient | | | |
| Chest tube insertion | | | |
| Blood transfusion | | | |
| Trach care | | | |
| 12 lead EKG | | | |
| Total points: | | | |

**Evaluation**: All student evaluation will take place with the checkoff sheets listed under each week and the grading scale/rubric. Student evaluation will be conducted by student's peers and nursing faculty. At the conclusion of the 10 weeks all students will be given two surveys. The National League for Nursing Student Satisfaction and Self-Confidence Survey to measure satisfaction and self-confidence and the Simulation Design Scale to evaluate design features of the simulation. Both surveys are listed below and are from the National League for Nursing (2016a). Each student will also write a reflection paper on the 10 weeks, the directions for the paper are also listed below.

**Student Satisfaction and Self-Confidence in Learning**

Instructions: This questionnaire is a series of statements about your personal attitudes about the instruction you receive during your simulation activity. Each item represents a statement about your attitude toward your satisfaction with learning and self-confidence in obtaining the instruction you need. There are no right or wrong answers. You will probably agree with some of the statements and disagree with others. Please indicate your own personal feelings about each statement below by marking the numbers that best describe your attitude or beliefs. Please be truthful and describe your attitude as it really is, not what you would like for it to be. This is anonymous with the results being compiled as a group, not individually.

Mark:
1 = STRONGLY DISAGREE with the statement
2 = DISAGREE with the statement
3 = UNDECIDED - you neither agree or disagree with the statement
4 = AGREE with the statement
5 = STRONGLY AGREE with the statement

| **Satisfaction with Current Learning** | **SD** | **D** | **UN** | **A** | **SA** |
|---|---|---|---|---|---|
| 1. The teaching methods used in this simulation were helpful and effective. | 1 | 2 | 3 | 4 | 5 |
| 2. The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum. | 1 | 2 | 3 | 4 | 5 |
| 3. I enjoyed how my instructor taught the simulation. | 1 | 2 | 3 | 4 | 5 |
| 4. The teaching materials used in this simulation were motivating and helped me to learn. | 1 | 2 | 3 | 4 | 5 |
| 5. The way my instructor(s) taught the simulation was suitable to the way I learn. | 1 | 2 | 3 | 4 | 5 |
| **Self-confidence in Learning** | **SD** | **D** | **UN** | **A** | **SA** |
| 6. I am confident that I am mastering the content of the simulation activity that my instructors presented to me. | 1 | 2 | 3 | 4 | 5 |
| 7. I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum. | 1 | 2 | 3 | 4 | 5 |
| 8. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical | 1 | 2 | 3 | 4 | 5 |
| 9. My instructors used helpful resources to teach the simulation. | 1 | 2 | 3 | 4 | 5 |
| 10. It is my responsibility as the student to learn what I need to know from this simulation activity. | 1 | 2 | 3 | 4 | 5 |
| 11. I know how to get help when I do not understand the concepts covered in the simulation. | 1 | 2 | 3 | 4 | 5 |
| 12. I know how to use simulation activities to learn critical aspects of these skills. | 1 | 2 | 3 | 4 | 5 |
| 13. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time. | 1 | 2 | 3 | 4 | 5 |

## Simulation Design Scale (Student Version)

In order to measure if the best simulation design elements were implemented in your simulation , please complete the survey below as you perceive it. There are no right or wrong answers, only your perceived amount of agreement or disagreement. Please use the following code to answer the questions.

| Use the following rating system when assessing the simulation design elements: | Rate each item based upon how important that item is **to you.** |
|---|---|
| 1 - Strongly Disagree with the statement<br>2 - Disagree with the statement<br>3 - Undecided - you neither agree or disagree with the statement<br>4 - Agree with the statement<br>5 - Strongly Agree with the statement<br>NA - Not Applicable; the statement does not pertain to the simulation activity performed | 1 - Not Important<br>2 - Somewhat Important<br>3 - Neutral<br>4 - Important<br>5 - Very Important |

| Item | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Objectives and Information** | | | | | | | | | | | |
| 1. There was enough information provided at the beginning of the simulation to provide direction and | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| 2. I clearly understood the purpose and objectives of the simulation. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| 3. The simulation provided enough information in a clear matter for me to problem-solve the situation. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| 4. There was enough information provided to me during the simulation. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5. The cues were appropriate and geared to promote my understanding. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| **Support** | | | | | | | | | | | |
| 6. Support was offered in a timely manner. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| 7. My need for help was recognized. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| 8. I felt supported by the teacher's assistance during the simulation. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| 9. I was supported in the learning process. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| **Item** | **1** | **2** | **3** | **4** | **5** | **NA** | **1** | **2** | **3** | **4** | **5** |
| **Problem Solving** | | | | | | | | | | | |
| 10. Independent problem-solving was facilitated. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| 11. I was encouraged to explore all possibilities of the simulation. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| 12. The simulation was designed for my specific level of knowledge and skills. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| 13. The simulation allowed me the opportunity to prioritize nursing assessments and care. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14. .The simulation provided me an opportunity to goal set for my patient. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| **Feedback/Guided Reflection** | | | | | | | | | | | |
| 15.Feedback provided was constructive. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| 16. Feedback was provided in a timely manner. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| 17. The simulation allowed me to analyze my own behavior and actions. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| 18. There was an opportunity after the simulation to obtain guidance/feedback from the teacher in order to build knowledge to another level. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| **Fidelity (Realism)** | | | | | | | | | | | |
| 19. The scenario resembled a real-life situation. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |
| 20. Real life factors, situations, and variables were built into the simulation scenario. | 1 | 2 | 3 | 4 | 5 | NA | 1 | 2 | 3 | 4 | 5 |

# Reflection Paper

Write a reflection paper on your experience over the last 10 weeks in this course. The paper must include the following:

1. 1000 word minimum.
2. Your thoughts prior to starting this 10 week module and your thoughts now.
3. How did you meet the objectives for each skill in the final simulation?
4. What you learned that will be beneficial in your clinical practice?
5. Would like to see anything done differently in the future for this course?
6. Any additional feedback you would like to share.

Appendix B: Student Satisfaction and Self-Confidence in Learning

**Student Satisfaction and Self-Confidence in Learning**

Instructions: This questionnaire is a series of statements about your personal attitudes about the instruction you receive during your simulation activity. Each item represents a statement about your attitude toward your satisfaction with learning and self-confidence in obtaining the instruction you need. There are no right or wrong answers. You will probably agree with some of the statements and disagree with others. Please indicate your own personal feelings about each statement below by marking the numbers that best describe your attitude or beliefs. Please be truthful and describe your attitude as it really is, not what you would like for it to be. This is anonymous with the results being compiled as a group, not individually.

Mark:
1 = STRONGLY DISAGREE with the statement
2 = DISAGREE with the statement
3 = UNDECIDED - you neither agree or disagree with the statement
4 = AGREE with the statement
5 = STRONGLY AGREE with the statement

| **Satisfaction with Current Learning** | **SD** | **D** | **UN** | **A** | **SA** |
|---|---|---|---|---|---|
| 1. The teaching methods used in this simulation were helpful and effective. | 1 | 2 | 3 | 4 | 5 |
| 2. The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum. | 1 | 2 | 3 | 4 | 5 |
| 3. I enjoyed how my instructor taught the simulation. | 1 | 2 | 3 | 4 | 5 |
| 4. The teaching materials used in this simulation were motivating and helped me to learn. | 1 | 2 | 3 | 4 | 5 |
| 5. The way my instructor(s) taught the simulation was suitable to the way I learn. | 1 | 2 | 3 | 4 | 5 |
| **Self-confidence in Learning** | **SD** | **D** | **UN** | **A** | **SA** |
| 6. I am confident that I am mastering the content of the simulation activity that my instructors presented to me. | 1 | 2 | 3 | 4 | 5 |
| 7. I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum. | 1 | 2 | 3 | 4 | 5 |
| 8. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical | 1 | 2 | 3 | 4 | 5 |
| 9. My instructors used helpful resources to teach the simulation. | 1 | 2 | 3 | 4 | 5 |
| 10. It is my responsibility as the student to learn what I need to know from this simulation activity. | 1 | 2 | 3 | 4 | 5 |
| 11. I know how to get help when I do not understand the concepts covered in the simulation. | 1 | 2 | 3 | 4 | 5 |
| 12. I know how to use simulation activities to learn critical aspects of these skills. | 1 | 2 | 3 | 4 | 5 |
| 13. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time. | 1 | 2 | 3 | 4 | 5 |

# Appendix C: Interview Protocol

Project Study: Clinical Simulation with Nursing Student Perceptions of Satisfaction, Self Confidence, and Critical Thinking
Date _____
Time _____
Location _____
Interviewer: Jaime Magnetico
Interviewee _____
Consent form signed? _____

Note to Interviewee: Thank you for your participation in the study. I appreciate your time to conduct this interview. Your responses will remain confidential.
Approximate length of time: 30 minutes
Purpose of Research: The purpose of this study is to explore differences in nursing students' perceptions of satisfaction, self-confidence, and critical thinking scores of two groups of students who have experienced different amounts of clinical simulation experience.

Interview Questions:
1) How are simulations helpful and effective in your course?
Response from Interviewee:

- Examples?

2) What are some comments or feedback that you have heard in regards to their satisfaction with the simulation?
Response from Interviewee:

3) How is simulation suitable to the way your students learn?
Response from Interviewee:

4) What are some concerns that students have expressed about self-confidence in your course?

Response from Interviewee:

5) How do you feel simulation experiences effect student's self-confidence?
Response from Interviewee:

6) What are some comments or feedback that you have heard in regards to self-confidence with simulation
Response from Interviewee:

7) How would you describe your students critical thinking abilities in your course?
Response from Interviewee:

8) How do you feel that simulations effect a student's critical thinking ability?
Response from Interviewee:

9) Thank you for your time, do you have any comments to add about clinical simulation and your nursing student's satisfaction, self-confidence, and critical thinking?

Closure: Thank you for your time to conduct this interview. I greatly appreciate your help. After I review the interviews and write transcripts, I will e-mail the transcripts to you for your review to check of any errors.

# Appendix D: Reflection Summary

Prepare a reflection summary on your simulated clinical day.

Reflection must include the following:

- Minimum of 500 words
- Your thoughts/feelings about the day
- How did you meet the objectives for this simulated clinical day?
- What personal clinical performance opportunities for improvement can you identify?
- What is your take away from this experience that will help you in your clinical performance?