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Evaluating Chain-of-Command Self-Efficacy Through High Fidelity, Student-Directed, Obstetrical Simulation

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Evaluating Chain-of-Command Self-Efficacy Through High Fidelity, Student-Directed, Obstetrical Simulation

by

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Abstract

The purpose of this quasi-experimental capstone project was to evaluate the impact of high fidelity, student-directed, obstetrical simulation upon chain-of-command self-efficacy of baccalaureate nursing students. The convenience sample, composed of 48 junior nursing students, was randomly divided into four simulation groups, and then further randomly divided into active or observational status. Active participants planned interventions and participated in high fidelity obstetrical simulations related to patient safety and chain-of-command initiation. Active and observational students participated in a combined debriefing session. A pretest posttest design utilizing the General Self-Efficacy Scale (GSES) was utilized to measure chain-of-command self-efficacy in relation to both active and observational roles. Study results indicated active and observational roles are equivocal regarding chain-of-command self-efficacy in high fidelity, student-directed, obstetrical simulation.

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Hebrews 12:

[1]Therefore, since we are surrounded by such a great cloud of witnesses, let us throw off everything that hinders and the sin that so easily entangles. And let us run with perseverance the race marked out for us, fixing our eyes on Jesus, the pioneer and perfector of faith (NIV).

TABLE OF CONTENTS

CHAPTER I: INTRODUCTION

Problem Statement 7

Justification of Project 8

Purpose 9

Project Questions 10

Definition of Terms 11

Summary 12

CHAPTER II: RESEARCH BASED EVIDENCE

Review of Literature 14

Strengths and Limitations of Literature 24

Theoretical/Conceptual Framework 25

Summary 28

CHAPTER III: PROJECT DESCRIPTION

Project Implementation 29

Setting 30

Sample 30

Project Design 31

Protection of Human Subjects 32

Instruments 32

Data Collection 34

Data Analysis 34

Timeline 35

Budget 35

Limitations 35

Summary 36

CHAPTER IV: RESULTS

Sample Characteristics 37

Major Findings 40

Summary 45

CHAPTER V: DISCUSSION

Implication of Findings on Nursing Education 46

Application to Theoretical/Conceptual Framework 49

Limitations 49

Recommendations 50

Conclusion 52

REFERENCES 53

APPENDICES

A: Informed Consent Form 66

B: General Self-Efficacy Scale 70

C: Permission for Use of Tool 72

D: Demographic Survey 74

E: Chain-of-Command Informational Session 76

List of Tables

Table 1: Operational Definitions 11

Table 2: Demographic Data of Sample Population 39

Table 3: Pretest Posttest Comparison of Student's GSES Scores.....42

Table 4: *C*omparison of GSES Means of Participants and Observers.....44

List of Figures

Figure 1: Reciprocality of Self-Efficacy.....23

Figure 2: Conceptual-Theoretical-Empirical Diagram: Framework for the study, "Evaluating Chain-of-Command Self-Efficacy through High Fidelity, Student-Directed Obstetrical Simulation" 27

Figure 3: Design Outline 31

Figure 4: Students' Reported Estimation of Final Grades and Actual Final Grades for Maternity Child Course.....41

CHAPTER I

Introduction

Since the Institute of Medicine (IOM), (2000) identified human error as a contributing factor in the deaths or permanent injury of potentially 98,000 patients each year, public concern and professional responsibility have grown tremendously. Within this national safety movement, nurses have been identified as the "first and last line of defense in a confusing and complex health care system" (Joy, 2009, p. 1135). Nurses are not only responsible for delivering safe and competent care; they are also called to create an environment, which supports other professionals to deliver safe care (Ulrich & Kear, 2014). The National Patient Safety Foundation (NPSF), (2015) recognizes nursing education as having a significant impact upon both individuals and systems to promote a culture of patient safety. Accordingly, Quality and Safety Education for Nurses (QSEN) competencies now guide nursing curricula to better prepare graduates to deliver safe, high quality patient care (Dolansky & Moore, 2013).

Promoting patient safety requires nurses to be knowledgeable about safety practices and potential threats to patient safety; furthermore, nurses must be willing to intervene in an appropriate and timely manner to prevent harm. Self-efficacy, identified as an essential element in nursing practice (Kuiper, Murdock, & Grant, 2010; Manojlovich, 2003), which affects patient outcomes, (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002; Chang, 2011) is a critical link between a nurse's knowledge of appropriate protocols and the actual implementation of those protocols. Bandura (1986) defined self-efficacy as an individual's judgement of their capacity to perform a task or behavior. According to Berarducci and Lengacher (1998), self-efficacy is "the mediator

between knowledge and action, and it influences the selection of behavior, the environment in which the behavior occurs, and the amount of effort and perseverance expended on performing the behavior" (para 1). Vigilant, efficacious nursing care includes speaking up when patient safety is jeopardized; otherwise, failing to respond perpetuates a culture of silence which negatively impacts patient safety (Henrisksen & Dayton, 2006). Simpson and Lyndon (2009) assert that nurses must overcome hierarchy within the medical community, as well as fear and intimidation, to confidently resolve disagreements with physicians to promote patient health. When unable to resolve such issues in a safe and timely manner, nurses have a duty to enact chain-of-command protocol to engage supervisors to intervene and help promote patient safety (Simpson & Lyndon, 2009).

Nursing students have almost nonexistent experience with application of chain-of-command protocols. Due to the fundamental nature of nursing education, nursing students are perceived as inexperienced or observational learners with no authority in the clinical setting. Simulation is one opportunity for students to practice chain-of-command protocol in preparation for professional practice.

According to Benner, Stuphen, Leonard, and Day (2010), low self-efficacy continues as nursing graduates enter the workforce. Until nursing graduates overcome doubt and fear to reach their personal level of self-efficacy, and to challenge a provider's professional decision, the potential remains for adverse patient outcomes. Safety, however, cannot be compromised. The health care system expects nurses to advocate for patient safety upon entrance to the professional setting, but practical application of chain-of-command protocols is a professional expectation with which most new nursing

graduates are uncomfortable, contributing to "reality shock" (Hensel, 2014, p. 131). Etheridge (2007) found that new graduates do not feel prepared as beginning practitioners even though they graduate from accredited schools of nursing and pass the national licensing examination. During this period of transition into the professional role, low nursing self-efficacy has the potential to negatively impact patient outcomes.

Historically, nursing has been publically perceived as a profession with caring (Como, 2007) and somewhat submissive (Ojo, Wambui, Mutea, & Chelagat, 2002) characteristics. In addition to compassion, holistic nursing care also demands dedication to patient advocacy, promotion of health, and protection from harm. According to the Institute of Medicine (2010), safe patient outcomes are related to the quality of the nursing care provided (Kane, Shamliyan, Muller, Duval & Wilt 2007; Lacey & Cox, 2009; Landon et al., 2006). According to The Joint Commission, "the future state of nursing is inextricably linked to the strides in patient care, quality and safety that are critical to the success of American's health care system, today and tomorrow" (IOM, 2010, p. 1-6). Increasingly, many quality measures are focused on how well nurses do their job (Kurtzman & Buerhaus, 2008). To promote patient safety, nurses must utilize evidence-based practice, critical thinking, effective interprofessional communication, and assertive advocacy skills to promote patient safety rather than simply implementing orders without careful forethought regarding potential implications in patient outcomes. Because nursing self-efficacy is a characteristic directly related to patient outcomes (Ngo & Murphy, 2005), nurses with high strong self-efficacy scores have "more of a control on their environment and can overcome obstacles, deal with problems and so do not hesitate to try new things (Orgun & Karaoz, 2013, p. e37). Professionally, nurses today are

expected to respond confidently and persistently with high self-efficacy to promote healthy patient outcomes, even when their assessment of patient safety differs from that of the provider.

Novice nurses traditionally demonstrate low self-efficacy scores (Ohmart, 2010), which can negatively impact patient safety. Specifically, in intrapartal settings, nurses' clinical judgment and interprofessional communication skills have a profound effect upon both maternal and fetal outcomes. New nursing graduates entering this practice must be confidently prepared to initiate chain-of-command when they believe maternal/fetal health is endangered. Even subtle changes in maternal/fetal status may demand prompt and efficacious nursing interventions to prevent harm. Intrapartal nurses play a pivotal role in patient safety by "recognizing and reporting abnormal labor findings early so that the physician or certified nurse midwife can modify the plan of care" (Murray & Huelsmann, 2009, p. 47). Furthermore, Ugwumadu (2013) states that failure to intervene in a timely manner may result in avoidable adverse events such as fetal brain damage and cerebral palsy, leading to exorbitantly expensive litigation.

Although some apprehension is common among new graduate nurses, nursing programs should explore innovative strategies to enhance students' self-efficacy in relation to the expectation of nurses to act as safety agents. According to the Interprofessional Education Collaborative Expert Panel (2011), nursing students must be provided clear opportunities to demonstrate competency in interprofessional communication and collaboration in preparation for independent nursing practice following graduation. When these techniques fail to achieve a plan of care, which is considered safe, the nurse must demonstrate self-efficacy to initiate chain-of-command

protocol to promote patient safety. Schunk (2008) asserts self-efficacy is best assessed when learners have opportunities to perform a given task, as opposed to learning through didactic instruction or observation alone. Nursing schools must utilize innovative teaching strategies to promote self-efficacy of nursing students, allowing opportunities for students to practice and demonstrate chain-of-command initiation as a means to promote health patient outcomes.

Simulation has been established as an effective pedagogy to enhance student learning (McGarry, Cashin, & Fowler, 2014) and self-efficacy (Kameg, Howard, Clochesy, Mitchell, & Suresky, 2010). Specifically, high fidelity simulation "creates a perception of reality through the physiologic responses of a computerized, full-body manikin" (Cannon-Diehl, 2009, para 1) and provides a learning environment, which fosters "self-confidence, problem solving, and critical thinking" (Fong, 2013, p. 1). An emerging theme in simulation is student directed or "self-regulatory learning" (Brydges, Nair, Ma, Shanks, & Hatala, 2012, p. 649) in which medical students developed and enacted simulation scenarios within given parameters, enhancing long-term retention of skills, compared to simulation scenarios completely directed by faculty. Because nursing self-efficacy is a significant variable associated with healthy patient outcomes (Roberts et al., 2014), nursing programs should provide educational experiences, which assess and promote student self-efficacy as a means to promote patient safety.

A comprehensive review of literature identified established and emerging foci related to the subtopics in this doctoral capstone project: Simulation as an effective pedagogy, the effect of nursing self-efficacy upon patient care, and the utilization of chain-of-command as a means to promote patient safety. While these capstone subtopics

are all well documented, the project investigator identified a critical gap related to nursing self-efficacy and education of chain-of-command: A dearth of information exists in regards to practical application of chain-of-command within nursing schools. Undergraduate nursing programs must be dedicated to building self-efficacy in nursing students so they are equipped to communicate and advocate for patient safety through chain-of-command upon graduation. Nursing graduates must be confident, competent, and efficacious as they enter the workforce to serve as a link between patients and their safe outcomes.

This doctoral capstone project focused on measuring junior level baccalaureate nursing students' self-efficacy to implement chain-of-command protocol in an obstetrical simulation when patient safety becomes threatened. This teaching strategy was selected because of the success simulation has had upon nursing students' self-efficacy in other concepts and skills in nursing. Gaberson and Oermann, (2010) specifically addressed the need for nursing to further study students' self-efficacy, especially related to simulation and patient safety. Students in an obstetrical clinical rotation were selected due to the relative high-risk liability in that specialty of nursing, especially for new graduates. Additionally, the timing of the intervention in relation to the nursing school curriculum allowed faculty members enough time to identify learning needs of nursing students in the junior year and then address these needs before graduation. The ultimate intent was to enhance self-efficacy of nursing students and better equip them with skills and confidence to protect patient safety through chain-of-command protocols as they graduate and transition into their professional nursing roles. To accomplish this goal, students

must be provided learning opportunities to practice their responses to patient safety concerns and to potentially enhance their self-efficacy.

Problem Statement

In the past decade, an increased national focus has been placed upon the nursing profession as an indicator of quality of care (Kane et al., 2007; Lacey & Cox, 2009; Landon et al., 2006) and as a vital link to promotion of patient outcomes (Glenn, Stocker-Schnieder, McCuene, McClelland, & King 2014). New nursing graduates, often doubting their knowledge base and capabilities, are vulnerable to succumbing to orders prescribed by a provider with more perceived authority, such as a physician or midwife, when they actually are concerned those orders will harm a patient.

Schools of nursing have a duty to address self-efficacy of nursing students so that transition into professional practice will be safe. Nursing schools must provide specific learning environments in which students can enhance their confidence to initiate chain-of-command protocols. In order to truly learn communication skills such as chain-of-command, nursing students must be provided opportunities to practice the skills (Schunk, 2008). To meet increasing demands in health care, new graduate nurses are being hired directly into specialty units such as labor and delivery. Instead of initially working on a medical or surgical unit to enhance critical thinking skills, prioritization, and confidence, these novice nurses are faced with highly challenging and stressful patient situations (Simpson-Cosimano, 2010). Without supportive mentorship, new graduates working in specialty areas are associated with decreased patient care quality and adverse patient outcomes (Race & Skees, 2010). Chain-of-command implementation requires not only knowledge of the process, but also the confidence which is built with practice. Patient

safety demands that nurses act as a safety net, to protect patients from harm. A nurse must be prepared to respond appropriately to prevent an adverse outcome without regard to length of professional practice. Nursing educational programs should prepare our future nurses to act boldly and confidently to protect patients starting on day one of their nursing careers.

Justification of Project

The IOM (2000) estimates as many as 98,000 patients in the United States sustain preventable injuries or even death each year as a result of human errors in health care. In 2011, the IOM report, *The Future of Nursing: Leading Change, Advancing Health,* identified the nursing profession as having the chief role in preventing adverse events and maintaining a safe health care environment.

Nurses, composing the largest health care profession in the United States (Health Resources and Services Administration, 2010), are routinely named in medical malpractice cases involving patient injuries or even death (Watson, 2014). When presented with orders from a provider, the nurse must use critical thinking skills to determine if the orders are safe. Primary nurses must advocate for patient safety, consult with their charge nurse, and initiate chain-of-command protocol if necessary. Having a physician's order does not remove a nurse from liability. In fact, nurses most likely will be held liable for their actions if a patient is harmed. The Association of Women's Health , Obstetric and Neonatal Nurses (AWHONN) (2009) issued a call to action regarding quality patient care in labor units, emphasizing the significance of nurses as members of interdisciplinary teams in the delivery of safe care. Nurses are accountable not only for providing safe patient care, but also for identifying and preventing

interventions which could lead to adverse patient outcomes. Nurses are in critical, pivotal positions which directly impact patient health.

From 2006 to 2010, over $83 million was paid in legal judgments against nurses with obstetrics being identified as having one of the highest average settlements in the United States (Casualty of North America Health Pro and Nursing Services Organization, 2011). When errors occur in an intrapartal unit, the health of the mother, as well as that of the fetus, is in jeopardy. According to the United States Department of Health and Human Services, maternal deaths were 13.3 per 100,000 live births in the United States in 2006, exceeding the Healthy People 2020 target of no more than 11.4 maternal deaths per 100,000 live births. Safe intrapartal nursing care involves persistence and the ability to continually assess for, detect, and respond to conditions which threaten patient safety (Lyndon, Zlatnik, & Wachter 2011). Nurses must openly, confidently, and effectively communicate with various members of the health care team, especially providers, so that a plan of care can be developed and implemented to promote optimal patient outcomes. Often, situations arise in which maternal or fetal health is in jeopardy and interdisciplinary communication fails to produce the desired plan of care as perceived by the primary nurse. At that point, the nurse's self-efficacy to appropriately initiate chain-of-command protocol could be the determining factor between life and death for a laboring mother and her unborn fetus.

Purpose

The purpose of this doctoral capstone project was to identify the impact of a high fidelity, student-directed, obstetrical simulation exercise on undergraduate nursing students' self-efficacy to implement chain-of-command. This project proposed that the

simulation will enhance the students' self-efficacy to speak up and obtain appropriate leadership intervention when they feel patient health is jeopardized. This process included measurements of student self-efficacy prior to the intervention and following the intervention as well as a brief demographic questionnaire. The goal of this project was to determine if the high fidelity, student-directed, obstetrical simulation would improve self-efficacy of nursing students with anticipation that students' learning needs can be identified and addressed prior to graduation. Nationally, other schools of nursing could adopt this instructional pedagogy to better equip nursing graduates as they advocate for healthy outcomes during their transition into professional practice.

Project Questions

This capstone project sought to answer the following questions:

1) What level of self-efficacy do junior undergraduate nursing students have regarding their ability to initiate chain-of-command protocol in an obstetrical setting?
2) Will students' self-efficacy to initiate chain-of-command in an obstetrical setting significantly increase following an informational session and student-directed obstetrical simulation?
3) Will self-efficacy to initiate chain-of-command in an obstetrical setting differ between students who participate in simulation versus those who observe the simulation?

Definition of Terms

For the purposes of this project, the use of an educational session followed by high fidelity, student-directed, obstetrical stimulation was the independent variable, with students' General Self-Efficacy Scale (GSES) scores as the dependent variable. Operational terms utilized in this study are defined below. (Table 1)

Table 1

Operational Definitions

Term	Definition
Late decelerations	Fetal heart rate pattern indicating uteroplacental insufficiency
Tachysystole	Contraction pattern indicating hyperstimulation of the uterus, associated with fetal oxygen desaturation (Simpson & James, 2008)
Variability	Variations in fetal heart rate pattern which indicate fetal well-being

Summary

Patient safety is a national focus and serves as an impetus for development of innovative pedagogies in nursing curricula. Nurses must be prepared with the appropriate knowledge and self-efficacy to advocate for patient safety through chain-of-command initiation, regardless of the length of their nursing career. Because nursing students do not have the authority to initiate chain-of-command in actual clinical settings, but are expected to protect patient safety upon entry to practice, schools of nursing should consider augmentation of high fidelity simulation exercises to provide students the opportunity to practice this protocol.

The purpose of this capstone project was to measure self-efficacy of undergraduate nursing students in regards to initiation of obstetrical chain-of-command protocol in a high fidelity, student-directed obstetrical simulation. Ultimately, the overriding goal was to determine if nursing student participation in an educational intervention including an informational session and a student-directed, high fidelity simulation (or observation of the simulation) will enhance self-efficacy of nursing students in regards to the practice of chain-of-command, and ultimately contribute to the culture of safety as supported by the IOM.

CHAPTER II

Research Based Evidence

This doctoral capstone project was guided by a comprehensive literature search to support the need to study chain-of-command self-efficacy in undergraduate nursing education. A review of the literature revealed that self-efficacy has been studied extensively within the nursing profession.

Simulation has been established as an effective teaching strategy for nursing students to enhance clinical judgment (Bambini, Washburn, & Perkins, 2009; Wane & Lotz, 2013), communication skills (Bambini et al., 2009) and confidence (Brenmer, Bennett, & Van Geest, 2006; Nehring & Lashley, 2010). Furthermore, simulation is recognized as positive learning experience, which enhances self-efficacy and decreases anxiety for students in the clinical setting (Fabro, Schaffer, & Scharton, 2014). Nurse-provider communication directly influences patient care and outcomes (Manojlovich, Antonakos, & Ronis, 2009). In labor and delivery units, direct and clear communication is vital to the health and safety both the laboring mother and her unborn fetus.

Chain-of-command is one communication method which is utilized when nurses perceive their patient's safety is endangered, yet, alone, they are unable to obtain the desired provider action. Nurses must speak up to advocate for the health and safety of patients; yet, many nurses, are uncomfortable with conflict (Lyndon et al., 2011). Nursing students and novice nurses also have tendencies to demonstrate low self-efficacy (Benner et al., 2010). This doctoral capstone project combined these professional issues to examine a previously unexplored topic: "Evaluating Chain-of-Command Self-Efficacy through High Fidelity, Student-Directed, and Obstetrical Simulation".

Review of Literature

A comprehensive literature search was completed utilizing the Cumulative Index to Nursing and Allied Health Literature (CINAHL), ProQuest, PsycARTICLES, and the search engine, Google Scholar. This literature review included relevant peer-reviewed journal articles between 2004 and 2014 as well as earlier seminal research. Key words include: Association of Women's Health, Obstetric and Neonatal Nurses (AWOHNN), self-efficacy, Institute of Medicine, simulation, student-directed simulation, high fidelity simulation, QSEN, safety, nursing, patient outcomes, graduate nurse, chain-of-command, culture of safety, intrapartal, nursing education, and obstetrics.

Culture of Patient Safety

As a means to promote patient safety, organizations have begun implementing measures to change culture in relation to safety improvement initiatives. Over two years, Szymczak (2014) examined practices in a large pediatric hospital in the United States related to infection prevention. This qualitative, ethnographic-based study utilized a purposive sampling of 103 staff members and included direct observations and interviews. Emerging themes included identification of inconsistencies between stated organizational cultural beliefs and practices.

The relationship between team training and safety culture was the focus of a study by Jones, Skinner, High, and Palmon (2013). Two quasi-experimental designs were utilized, comparing hospital survey on patient safety culture **(**HSOPS) results between the interventional group of 24 hospitals and the static group of 13 hospitals over one year. A pretest-posttest comparison of HSOPS result was also completed. Significant findings

indicated that team training in the intervention group of hospitals contributed to an enhanced culture of patient safety.

Ulrich and Kear (2014) conducted a national mixed-method study exploring patient safety culture in nephrology nurse practice settings, utilizing an online Likert scale survey composed of items from the Hospital Survey on Patient Safety Culture and the Medical Office Survey on Patient Safety Culture. American Nephrology Nurses' Association members were recruited through email communications. Fifty percent of 979 respondents were eligible for the study. Safety issues identified include infection control, communication, prioritization, and medication errors; however, staff education was noted to be ongoing related to safety protocols.

Smits, et al. (2012) examined patient safety across three specialties: emergency medicine, internal medicine, and surgery. This study was conducted in 28 units of 20 hospitals in the Netherlands. Measurements of safety culture were obtained with the Dutch version of the Hospital Survey on Patient Safety Culture. Unintended events were collected through staff reports. Although this study failed to support safety culture as a significant factor affecting patient safety, it identified staff willingness to report adverse events as a key factor in establishment of a patient safety culture.

Safety During Childbirth

In a quantitative, quasi-experimental study, Pettker, et al. (2011) evaluated the effect of a comprehensive obstetrical safety program, implemented from 2004-2009 at Yale-New Haven Hospital. Researchers hypothesized that multiple safety interventions would positively impact the culture of safety and decrease adverse patient outcomes. The program focused on electronic fetal monitoring certification for nurses, midwives, and

physicians, as well as enhanced safety protocols, an obstetrics patient safety nurse, team training, and an anonymous adverse event reporting system. The Safety Attitude Questionnaire, a Likert scale survey, was administered four times to Labor and Delivery nursing staff, including midwives, medical providers, and various interprofessional health care team members. The median number of responses was 191 with a range from 183-198. Pretest measurements reflected low perceptions of safety and teamwork culture. Posttest responses, although below the authors' goal of 80%, did indicate enhanced perceptions of safety, teamwork and job satisfaction.

Simpson, James, and Knox (2006) addressed the relationship between nurse-physician communication and safety in labor. A qualitative study was conducted in four Midwestern community hospitals to describe interdisciplinary interactions during labor. The convenience sample included 54 labor nurses and 38 obstetricians. Focus groups and interviews were conducted using open-ended questions. Inductive coding methods were used to analyze data. Results indicated that nurses and physicians frequently disagreed regarding fetal assessment and oxytocin administration, resulting in frustration and decreased teamwork. This study highlighted areas of interdisciplinary communication which can be improved to promote maternal/fetal safety in labor. The majority of nurses in this study had only worked in one hospital during their nursing career, so they were only familiar with the culture of safety and communication within that particular facility, so that is a weakness regarding ability to generalize to other facilities. However, four sites were utilized. After interviews were completed at the first site, saturation of data occurred, in that no new themes emerged. This lends credibility to the data collected.

Registered nurses' lived experiences and perceptions of communication within a labor and delivery unit were the topic of Goldsztejn's (2009) qualitative study, specifically as they relate to preventable adverse events. Data retrieved through semi-structured interviews were analyzed with a phenomenological method. Themes which emerged included some physicians having a lack of urgency related to a nurse's stated concerns, complex and unpredictable healthcare environment, the development of nurses' communication skills, shared plan of care, and chain-of-command. Results of this study are not generalizable to other populations due to a small, homogeneous sample; however, the findings may be helpful to similar labor and delivery units aiming to improve communication.

Disagreements often occur between labor nurses and physicians regarding discrepancies in clinical judgments, affecting patient safety and outcomes. Simpson and Lyndon (2009) investigated differences between established evidence-based practice and actual practice among 704 obstetric nurses in a metropolitan area in the United States. This qualitative study included electronic case study scenarios with open-ended questions regarding promotion of communication between physicians and nurses. One hundred thirty-three nurses responded. Nurse characteristics in this sample included high percentages of baccalaureate nursing education, membership into the Association of Women's Health, Obstetric and Neonatal Nurses, and certifications in electronic fetal monitoring and inpatient obstetrics. Although significant numbers of participants demonstrated knowledge of best practices in obstetrics, a wide discrepancy was identified compared to actual clinical practices. This study identified a critical component of patient safety in labor: Knowledge of evidence-based practice (EBP) does not

necessarily correlate with implementation of EBP. Medical hierarchy, fear, and intimidation were identified as significant barriers to conflict resolution with providers. Confidence in administrative support, however, was influential in empowering nurses in their pursuit of resolution.

A qualitative study conducted by Glenn et al. (2013) employed a hermeneutic phenomenological approach to evaluate caring nurse practice in relation to safety practices with in a labor and delivery. The authors found that use of electronic health records led to interruptions in workflow, negatively impacted the concept of caring, and appeared inconsistent with the culture of safety. Although the sample was small (n=13), this study elucidates nurses' experiences with electronic health records as being inconsistent with the goals of caring and safety.

Simulation in Nursing Education

Simulation is an established pedagogy for development of critical thinking acquisition (Rome, 2012). In comparative experimental project, a convenience sample of 45 second year nursing students enrolled in an associate degree maternal-child course was utilized. The experimental group participated in an eight-hour simulation learning experience compared to the control group which participated in traditional clinical placement. A pretest posttest design utilized the Health Science Reasoning Test to measure critical thinking related to this experience. Results revealed students' critical thinking acquisition were equivocal between control and experimental groups.

Simulation has been established as an effective means to enhance student learning regarding the Quality and Safety Education for Nurses (QSEN) competencies (Piscotty, Grobbel, & Tzeng, 2011). This study utilized a quasi-experimental pretest posttest

design to determine if a student-led stimulation increased students' quality and safety knowledge, skills, and attitudes. Participants included a convenience sample of 97 students in a traditional, face-to-face bachelor of science (BSN) nursing program and 44 students in the accelerated, online 12-month second-degree BSN program. Both cohorts were enrolled in a baccalaureate nursing program in the Midwestern United States. Instrumentation included a Likert-type scale and an 18-statement inventory of students' self-rated knowledge, skills, and attitudes regarding safety competencies. Paired-samples *t*-test findings included a significant increase in traditional students' scores in regard to knowledge, skills, attitudes and the six QSEN competencies: Patient-centered care, teamwork and collaboration, evidence-based knowledge, quality improvement, safety, and informatics. The accelerated BSN students also demonstrated significant increases in the above safety topics. Limitations of the study included the lack of a control group and the inability to generalize findings because participants attended the same university. Also, internal consistency is questioned because the reliability coefficients of the knowledge tests were below 0.70. This study highlighted the effective use of simulation to enhance student self-confidence and self-efficacy regarding clinical safety issues, especially when utilized in conjunction with lecture.

Roh (2014) evaluated the differences in resuscitation-specific self-efficacy scores between nursing students who participated in high fidelity simulation versus those who participated in medium fidelity simulation. A nonequivalent control group was utilized in this pretest-posttest design. Convenience sampling included 163 second-year nursing students at a university in Korea. Posttest self-efficacy scores were higher in both medium and high fidelity groups, but students in the high fidelity group achieved

significantly higher overall scores compared to those in the medium fidelity simulations. This study is significant because it validates nursing student self-efficacy enhancement through simulation and supports the effectiveness of high fidelity versus medium fidelity simulation.

An emerging theme in nursing education is student-led nursing simulation. A mixed-method, longitudinal study employed a purposive sample of 24 second-year students in a university nursing school in the United Kingdom (Valler-Jones, 2014). The study purpose was to determine the impact of student-led simulation. Perceived confidence and competence levels were measured by an eight-item Likert scale questionnaire. A paired *t*-test was used to compare pretest and posttest scores. A statistically significant increase was noted ($p=0.001$) in received confidence and competence after the simulation activity. Themes which emerged from the qualitative data included positive responses from students and requests for similar learning activities in future courses.

Self-efficacy of Nursing Students and Novice Nurses

The challenges associated with transitioning into professional nursing practice was evaluated by Olsen (2009), specifically related to the experiences of millennial-born (born 1980-1999) novice nurses who are recognized as being technologically proficient. This qualitative, longitudinal study utilized phenomenology to illuminate experiences and perceptions of millennial novice nurses. A purposive sample of six Associate Degree-prepared nurses (ADN) and six Baccalaureate-prepared nurses was employed to determine common and differing themes. Audio-taped interviews, conducted at three months, six months, and one year, revealed concerns of novice nurses who worry about

job performance, anxiety regarding job expectations and direct patient care, and lack of desired feedback from nursing management during the first year. These study findings identified a "preparation-practice gap" for millennial-born novice nurses and impact clinical practice orientation policies.

Benner's novice to expert model guided Ginter's (2014) mixed-methodology study which evaluated the impact of a nursing preceptor program for recently employed staff within a hospital setting. A questionnaire was administered to newly hired nurses during week-long facility orientation to determine levels of job satisfaction and areas of needed growth. Descriptive data revealed the need to enhance novice nurse transition into the professional practice setting, with emphasis on collaboration, nurse engagement and critical thinking. Limitations of this study included a small sample size with return of only ten completed questionnaires.

Gloudemans, Schalk, & Reynaert (2013) investigated the relationship between self-efficacy and critical thinking in mental health nurses in the Netherlands. The hypothesis was that nurses with baccalaureate degrees have higher critical thinking skills than diploma nurses do. The investigators also wanted to determine if there is a positive relationship between higher critical thinking skills and self-efficacy beliefs. This study was needed due to unclear role distinctions between these two preparation levels in nursing. A convenience sample of 95 mental health nurses was used. The Watson Glaser Critical Thinking Appraisal (WGCTA) was administered to measure critical thinking skills. Self-efficacy was measured with a GSES and a perceived performance scale. Reliability of the perceived performance scale (Cronbach's Alpha 0.730) was somewhat higher than that of the self-efficacy scale (Cronbach's Alpha 0.605). The study provided

evidence that BSN-prepared nurses have higher critical thinking abilities compared to diploma-prepared nurses. This study did not, however, provide evidence that critical thinking skills are positively related to self-efficacy beliefs. The significance of this study was that BSN-prepared nurses can be more efficiently utilized when patient assignments are made. They have the ability to identify various options to a problem, rather than depending on being assigned a role to fulfill. Strengths of this study included use of ANOVA to confirm the two groups had comparable work experience and use of a power analysis to confirm an adequate sample size.

Self-efficacy levels in obstetric nursing students were evaluated by Kim, Lee and Chae (2012) in relation to the use of simulation. A non-equivalent control group design was used. The sample consisted of 171 junior nursing students (103 in the experimental group, 68 in control group). Simulation practice included intrapartal nursing assessment, nursing assessment for normal and high-risk mothers, nursing education for mother and family during labor and open lab. The experimental group's simulations lasted two days and the control group's participation in the delivery room lasted two weeks. This study supported obstetrical simulation as an effective strategy to enhance nursing students' self-efficacy ($p=.043$), practice satisfaction ($p<.001$) and practice stress compared to the control group. Clinically, this information is significant because it supports the use of simulation as an effective learning tool in obstetrics, but it also indicated the need for appropriate means to address student stress, as in debriefing.

Theoretical Model

The review of literature included an examination of studies which employed Bandura's Social Cognitive Learning Theory. Bandura asserts triadic reciprocality, in

which one's behavior, characteristics, and environment in which the behavior is performed, are interdependent (Bandura, 1986). See Figure 1.

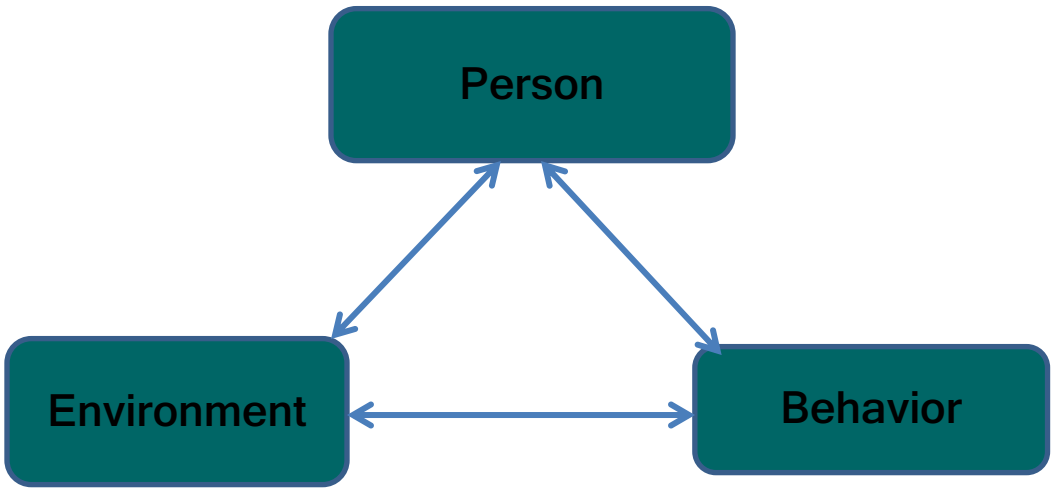

Figure 1. Reciprocality of Social Cognitive Theory

Chang and Levin (2014) utilized social cognitive theory to evaluate strategies to improve self-efficacy in post-graduate students in regards to their ability to retrieve and evaluate evidence-based practice (EBP) evidence. A convenience sample of 60 students (mainly registered nurses) was introduced to four research review appraisal tools. Faculty demonstrated utilization of the Critical Appraisal Skill Programme (CASP) and then provided verbal feedback and encouragement during an in-class exercise. Afterward, students were required to complete a systematic review assignment individually outside of class. Although pretest posttest values indicated an improvement in EBP, paired *t*-tests could only be evaluated with 13 completed student responses. The

findings are significantly limited due to the small sample size, but recognized the impact of verbal persuasion upon self-efficacy.

Self-efficacy was utilized as a theoretical framework by Oetker-Black, Kreye, Underwood, Price, & DeMetro (2014) to psychometrically evaluate the author's Clinical Self-Efficacy Scales (CSES). The instrument was administered to 191 nursing students from sophomore to senior levels in Ohio. Following instrument revision and re-evaluation, the tool will provide feedback regarding the extent, if any; self-efficacy has on student transfer of skills from the lab to the clinical setting.

The relationship between peer-assisted learning in nursing and student self-efficacy was evaluated by McKenna and French (2010). The Clinical Teaching Preference Questionnaire (CTPQ) was administered to a convenience sample of 105 third year and 112 first year students in a nursing program in Australia. This study's quantitative findings indicated students' enhanced self-efficacy related to teaching within the role of a nurse as a result of peer-teaching. Qualitative data included student responses such as "I was extremely nervous, however, afterwards I felt a sense of achievement and confidence" (McKenna & French, 2011, p. 143). Study limitations included a homogeneous sample (91.4% female) on one Australian campus so findings cannot be generalized to other nursing programs.

Strengths and Limitations of the Literature

Strengths of the literature included well-documented evidence-based research to support the use high fidelity simulation as an effective method to teach and evaluate student learning. The literature also is inundated with studies, which provided sustenance for Bandura's Theory of Self-Efficacy in various disciplines, including

nursing and education. The emphasis on safety in labor has also been well documented, especially in response to the Institute of Medicine's promotion of patient safety on a national level. A review of literature failed to identify comprehensive studies exploring student-directed, high fidelity simulation as a potential means to enhance self-efficacy in chain-of-command initiation by undergraduate nursing students.

While the review of literature adequately addressed the subtopics of safety culture, self-efficacy, simulation, and safety in labor, a scarcity of available information exists in regards to student-directed simulation. An identifiable gap was noted in regards to evaluation of the self-efficacy of nursing students in relation to chain-of-command initiation.

Theoretical/Conceptual Framework

The theoretical framework guiding this capstone project was based on Bandura's Social Cognitive Theory (1986). Self-efficacy is the key construct within this theory, in which Bandura postulates that one's beliefs about personal capabilities to perform specific tasks impact the amount of effort the individual will exert to achieve that task (Bandura, 1982, as cited in Schunk, p 79). Social cognitive theory proposed that highly efficacious people are more likely to attempt and succeed in a given task compared to those with low self-efficacy (Murphy & Kraft, 1993). Bandura (1977) posits that personal self-efficacy as a psychological process can affect behavior. Specifically, Bandura (1977) asserts that self-efficacy levels determine if coping behaviors will be utilized as well as the degree of effort expended and low long the effort will be sustained in the presence of obstacles. Persistence and mastery in challenging circumstances result in enhanced self-efficacy (Bandura, 1977). Social cognitive theory included the

following assumptions about learning and behavior (Bandura, as cited in Murphy & Kraft, 1993):

- Accomplishments: Self-efficacy is fostered when multiple attempts at a given task are successful. Conversely, failures diminish self-efficacy. This source of self-efficacy is most effective.
- Vicarious experiences: Learning and self-efficacy can be enhanced when a trusted, identifiable model is witnessed performing the specific task. Building self-efficacy is less effective through vicarious experiences compared to accomplishments.
- Verbal persuasion: Encouragement supports the development of self-efficacy but in a weaker manner than accomplishments and vicarious experiences. Verbal persuasion should also be presented with opportunities to succeed.
- Physiological states: Physical responses recognized as an outward expression of anxiety can be interpreted as lack of self-efficacy and lead to failure. An alternative view is that these physiological states can be expected and will subside as the task is being accomplished. This source of self-efficacy information is considered the weakest method.

Bandura's assertions regarding accomplishments (enactive involvement) and vicarious experiences were specifically addressed in this capstone project. Both active participants and observers were evaluated for changes in self-efficacy following the informational session and simulation. See Figure 2.

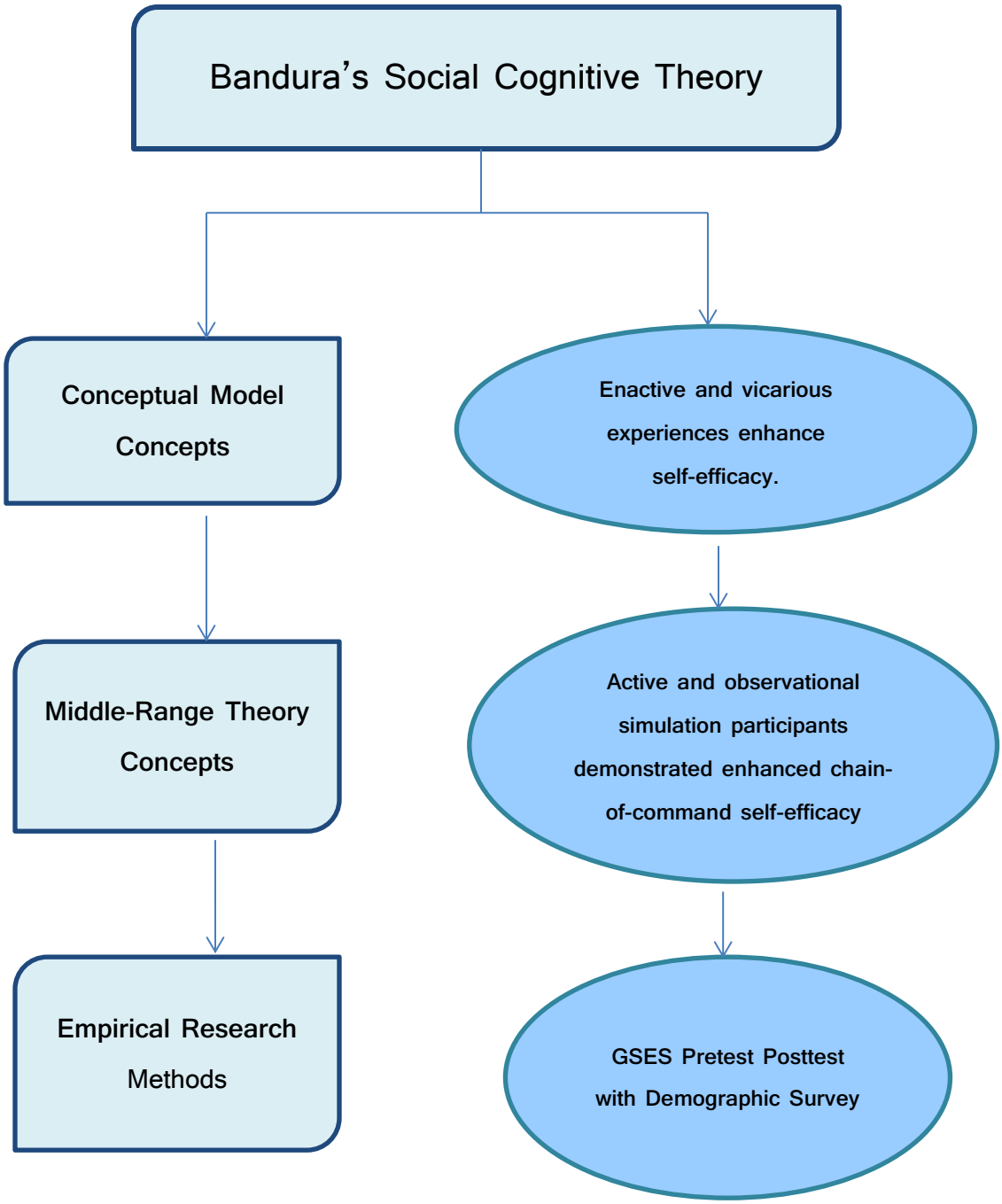

Figure 2: Conceptual-Theoretical-Empirical Diagram: Framework for the study, "Evaluating Chain-of-Command Self-Efficacy through High Fidelity, Student-Directed Obstetrical Simulation"

Bandura's concept of self-efficacy has been thoroughly evaluated in many disciplines, including nursing and nursing education (Robb, 2012; Schunk, 2008). High fidelity simulation is a growing area of research related to student learning and self-efficacy in nursing and interdisciplinary education. Relatively few studies have reported the effectiveness of student-directed simulation. No studies were identified combining the topics of high fidelity, self-efficacy of nursing students (or graduate nurses) and chain-of-command as they relate to promotion of patient health and safety. This project evaluated self-efficacy of junior level baccalaureate nursing students to initiate chain-of-command in student-directed, high fidelity, obstetrical simulation.

Summary

This review of literature served as evidence based support for the need to explore simulation as a means to evaluate nursing students' self-efficacy. Bandura's Social Cognitive Theory guided this project to evaluate nursing students' self-efficacy to initiate chain-of-command in high fidelity, student-directed, obstetrical simulation.

CHAPTER III

Project Description

A chronological lag exists between graduation and the development of self-efficacy in new nursing graduates. With undergraduate nursing education, students are not typically given any clinical-decision authority; therefore, their transition to professional practice often becomes overwhelming when they are expected to utilize clinical judgment and assertive behaviors to protect patient safety (Benner et al., 2010).

This doctoral capstone project was designed to assess nursing student chain-of-command self-efficacy, before and after an educational intervention and student-directed, high fidelity, obstetrical simulation. Pretest posttest design was utilized measuring self-efficacy with the GSES, ranging from 1-4 per item for a total possible score of 40. An informational session was held regarding chain-of-command and safety issues related to a nurse's decision to implement this protocol.

Project Implementation

A convenience sample of 48 junior level undergraduate nursing students was anticipated and realized. The project was implemented during a scheduled course meeting time at the end of the obstetrical clinical rotation. The project administrator administered the pretest, General Self-Efficacy Scale (GSES) survey tool, with instructions for all participants to answer the GSES as if each one was a primary nurse caring for a labor patient experiencing fetal distress with inability to convince the provider to come assess a labor patient in a timely manner. The pretest was followed by an educational session regarding nursing chain-of-command as a means to protect patient health. Active participants were self-assigned to the roles of primary nurse, charge nurse,

facility nursing supervisor, and additional staff nurses. The project administrator enacted the physician role, via phone, for consistency between groups. Participants were provided with basic details about "Rachel Reyes", gravida 2, para 1 at 41 weeks gestation who had been admitted for induction of labor with oxytocin. Information provided to participants included vital signs, oxytocin dosage, as well as graphic examples of electronic fetal monitoring tracings at admission, (fetal heart rate baseline 140s with moderate variability and accelerations with no decelerations, mild and irregular contractions) and at the beginning of the simulation (fetal heart rate 165 with no accelerations, minimal to absent variability, late decelerations and contractions lasting 120 seconds every 2.5-3 minutes). Active participants were given 30 minutes to review above details and plan a simulation scenario in which chain-of-command is utilized to promote maternal/fetal safety. After debriefing, both active and observational participants completed the posttest.

Setting

This capstone project was conducted in a publicly funded university in the Southeastern United States. Specifically, the event was held in the nursing simulation learning center with an observation room. The simulation area included the high fidelity mannequin, an electronic fetal monitor, monitor screen revealing real-time contraction and fetal heart rate patterns, and a telephone.

Sample

A convenience sample of 48 junior students in an undergraduate nursing program was utilized. The majority of participants were female (n=46), consistent with the

program's usual cohort demographics. Specific criteria included completion of the obstetric clinical rotation and agreement to participate in this study.

Project Design

This research project employed two group, quasi-experimental quantitative pretest posttest design, utilizing convenience sampling with random assignment to groups. See Figure 3 for outline of design.

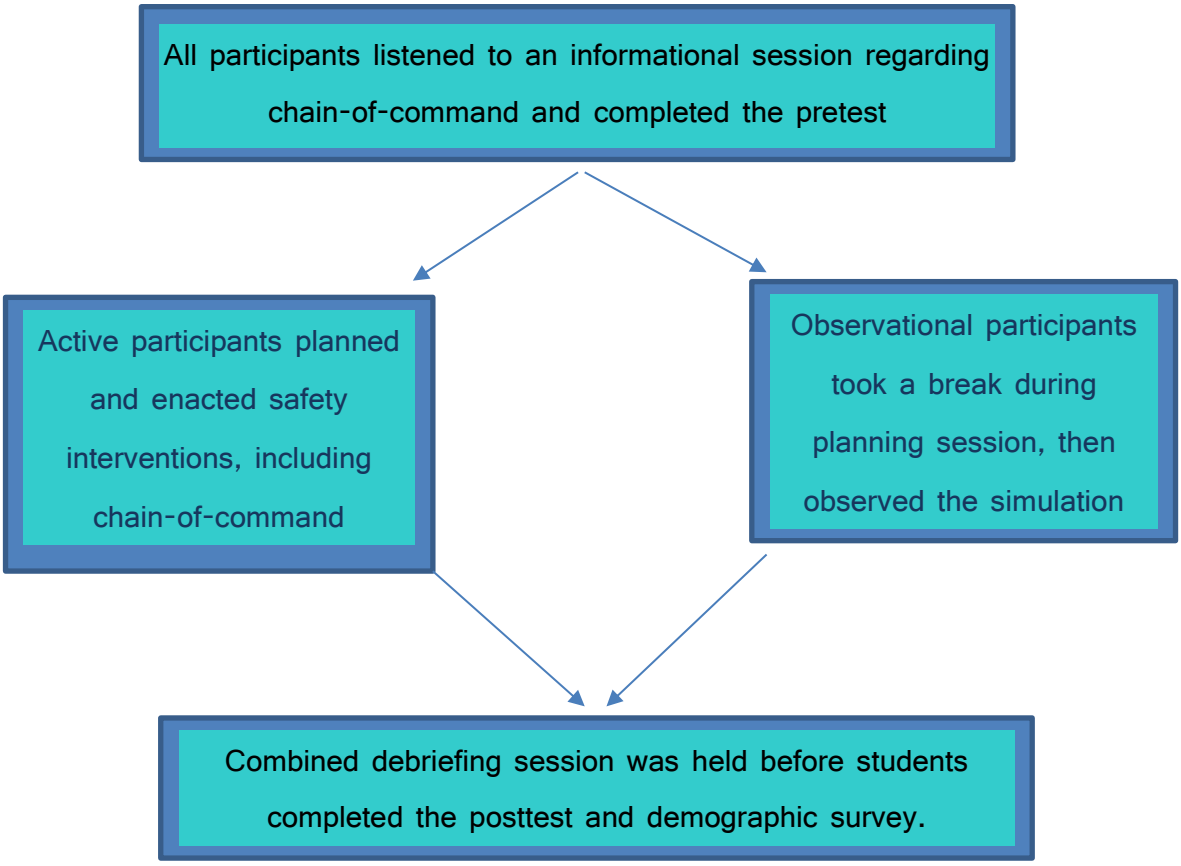

Figure 3. Design Outline

Protection of Human Subjects

The project administrator obtained written permission to conduct this study from the Institutional Review Board (IRB) of the University and the IRB of the school of nursing in which the research was conducted. Participants' informed consent was obtained and documented with use of an informed consent statement. (Appendix A) Participants were informed through verbal instruction and written statement that their participation in the study was completely voluntary with no impact upon their grade for the course. Eight of the 48 students were assigned to the project administrator's clinical group for the first half of fall semester in 2014; however, the clinical rotation was completed and clinical grades were submitted to the course coordinator in October 2014. The project administrator has no further anticipated faculty role with participants throughout their remaining undergraduate education. Participants were also informed that they could withdraw from the study at any time without repercussion. Confidentiality was insured with participants being identified by randomly assigned numbers. This information remains in a confidential, locked, and secure location at the University in North Carolina for 10 years. The course coordinator did not have access to participants' responses or randomly assigned numbers. No risks to participants were identified. Potential benefits include enhanced nursing self-efficacy which may help empower students and future nursing graduates to utilize chain-of-command when appropriate to advocate for patient health and safety.

Instruments

The GSES is a self-administered questionnaire which is available online, free of charge, dependent upon acknowledgement of authors. The GSES is a ten-item

questionnaire which asks participants to rate their responses from four choices, ranging from “Not at all true” with a score of 1 to “Exactly true” with a score of 4 . The sum of a participant’s item scores indicated the total strength of his/her generalized self-efficacy to initiate chain-of-command as an intervention to promote patient health and safety. The maximal score on the GSES is 40 (Appendix B). The GSES is well-established as a valid and reliable research tool internationally for over two decades (Schwarzer & Jerusalem, 1995). Cronbach’s alpha varies depending upon settings, with ranges from 0.76 to 0.90, with the majority in the upper 0.80s. Permission to utilize the GSES was obtained through email correspondence with Dr. Schwarzer, co-author of GSES, who referred the project administrator to the online permission form (Appendix C). A brief demographic survey was completed at posttest (Appendix D). A p-value of 0.05 was considered statistically significant.

The pretest GSES was completed by students before the Chain-of-Command informational session (pretest), in response to the following scenario:

> You are the nurse. Your labor patient is experiencing fetal distress (repetitive late decelerations). You initiate several intrauterine resuscitative measures with no improvement. You call Dr. Logan, report your findings, and expect him to come assess the patient very quickly because you are concerned; however, he states he will be on the unit in approximately one hour.

Following the chain-of-command informational session, simulation, and debriefing, all participants completed the posttest GSES and a brief demographic survey. (Appendix E). The sum of a participant’s scores indicated the general strength of his/her generalized self-efficacy to initiate chain-of-command as an intervention to promote patient health and safety. Scores are relative, as no specific score indicates the presence or absence of self-efficacy.

Data Collection

The project administrator collected all data over two days in December, 2014, during the students' scheduled end of semester simulation experience. The project administrator explained the purpose of the study, read aloud the informed consent, and invited students to participate. Students signed two copies of the consent, with one retained by each student and one returned to the project administrator. Participation was 100%. The GSES was administered prior to the intervention. After completion of the intervention, the GSES was administered again, in addition to a brief demographic survey, which addressed issues such as age, previous employment experience in health care, second degree status and expected letter grade anticipated for the course, and role in the simulation (active or observational). The project administrator sought to determine any significant relationships between the demographic data and students' GSES scores.

Data Analysis

Statistical Package for the Social Sciences (SPSS), version 22, was utilized to analyze data. Paired *t*-tests were used to due to the need to evaluate the statistical significance of the difference in means between two groups (Salkind, 2004). In this case, the two groups were active participants and observational participants. The difference in self-efficacy scores between these groups was analyzed to determine if active participants achieved significantly higher self-efficacy scores, compared to observational participants, after the intervention. Use of the one-way analysis of variance (ANOVA) was based on the need to analyze the effect that one factor has upon the dependent variable (Mertler & Vannatta, 2010). The project administrator sought to determine if factors, such as age, health care work experience, history of witnessing nursing chain-of-command, or

previous college degree significantly impacted self-efficacy scores.

Timeline

Capstone Project implementation occurred over two days in December, 2014. Data analyses were completed in March 2015.

Budget

Expenditures for this project were related to printing costs. The project budget was approximately $50.00.

Limitations

One potential project limitations was related to limited availability of the convenience sample. Due to limited exposure to participants, the project had to be implemented within a prescheduled time when students were assigned to participate in end of semester simulations for the obstetrical course. This factor caused the project administrator to administer the pretest and posttest in the same day. Ideally, participants would have been tested again in 4-6 weeks and three months to determine sustainability of findings.

Another limitation concern was having 100% participation among the students. This fact could possibly suggest students were coerced or felt their maternal child course grade would be affected if they declined; however, both the project administrator and course coordinator announced students could decline at any time without impact to their grade. Students heard the informed consent read aloud, read the consent silently, and then signed two copies (one which they personally retained). Also, the course coordinator never had access to participant responses.

Summary

This Capstone Project utilized a quasi-experimental research design. Following an informational session, active participants planned safety interventions, including chain-of-command initiation, and then joined observational participants for a combined debriefing session. Posttests were completed following debriefing.

CHAPTER IV

Results

The purpose of this capstone project, titled "Evaluating Chain-of-Command Self-Efficacy through High Fidelity, Student-Directed, Obstetrical Simulation" was to determine (1) self-efficacy levels of junior level baccalaureate nursing students, (2) the change, if any, the simulation had upon self-efficacy levels, and (3) the difference in self-efficacy scores between active and observational participants.

Sample Characteristics

The population in this capstone project was second semester, junior level nursing students participating in end-of-semester simulation in the maternal-child course at a university in Southeastern United States. Sample selection by the project administrator occurred due to access to a high fidelity simulation laboratory, current enrollment of nursing students in a maternal-child course, and no previous didactic instruction regarding chain-of-command to this cohort. The possible sample size was 48 with 100% eligible for participation. All 48 students volunteered and fully participated in the project.

A demographic survey provided insightful information about the cohort (n=48). The majority were female (n=46). Ages ranged from 19 to 45 years of age, with the largest group noted to be 21 to 25 years of age (n=27, m=24, 56.3%). Age and sex demographic data were consistent with the school of nursing's usual student statistics. Almost half of the participants (n=45.8, 47.9%) reported previous health care work experience. Among those students with health care work experience, most reported experience in a long-term care setting (n=11, 20.9%) with 12.5% of participants (n=6)

reporting experience within a hospital setting. Interestingly, 54.2% (n=26) indicated they had previously witnessed a nurse initiate chain-of-command protocol. Approximately 25% (n=12) held a degree outside of nursing, including Biology, Journalism, and Criminal Justice. An unanticipated finding was that most students (75%, n=36) indicated they expected to achieve a final grade of "C" for the obstetrical course; however, the course coordinator reported the majority of students achieved final grades of B- to B+ (n=37, 77%) with 17% (n=8) achieving a grade of A- to A and 6% (n=3) achieving grades in the C to C+ range (Table 2). The course coordinator also reported these grades are lower compared to those for previous cohorts over the last five years.

Table 2

Demographic Data of Sample Population (n=48)

Variable	Frequency	Percentage
Age:		
19-20 years	5	10.4
21-25 years	27	56.3
26-30 years	10	20.9
31 and older	6	12.6
Expected Course Grade:		
A	8	16.7
B	38	79.2
C	2	4.2
Actual Course Grade:		
A	10	20.8
B	33	68.8
C	5	10.4
Previous Health Care Experience:		
Yes	23	47.9
No	25	52.1
Areas of Health Care Experience:		
Hospital	6	12.5
Long-term Care	11	23.0
Other	6	12.5
Previously Witnessed Nursing Chain-of-Command:		
Yes	26	54.2
No	22	45.8
College Degree Outside of Nursing:		
Yes	13	27.1
No	35	72.9
Participation Level:		
Active Participant	25	52.1
Observer	23	47.5

Major Findings

Research Question Findings

The project administrator reviewed assumptions for statistical testing prior to analysis of the data collected in this capstone project. The major assumption with the *t*-test is the homogeneity of variance, which assumes "the amount of variability in each of the two groups is equal" (Salkind, 2004). Random assignment to simulation groups, as well as random division of participant status in this study contributed to homogeneity between the active and observational participants. This study appropriately utilized the *t*-test because the independent variable contains two categorical levels and the dependent variable is quantitative (Mertler & Vannatta, 2010). The project administrator chose active participant versus observational participant status for the independent variable with the GSES score as the dependent variable.

Research question 1. What level of self-efficacy do junior undergraduate nursing students have regarding their ability to initiate chain-of-command protocol in an obstetrical setting?

The mean score for the GSES (total scores range 1-40) was 33.2 (SD 3.7). The GSES does not establish definitive scores which equate to efficacious behavior; rather, it is used as a general scale to identify changes or compare scores. Findings regarding changes in GSES scores will be addressed later in this section.

Estimation of individual final class grades was compared to actual final class grades. Students had knowledge of all class grades, except the final exam, at the time of the project. No direct correlation can be made between final class grades and the project intervention; however, this information is provided to indicate the cohort's self-estimated

and actual final course grades. (Figure 4) Discussion of this topic will continue in the next chapter.

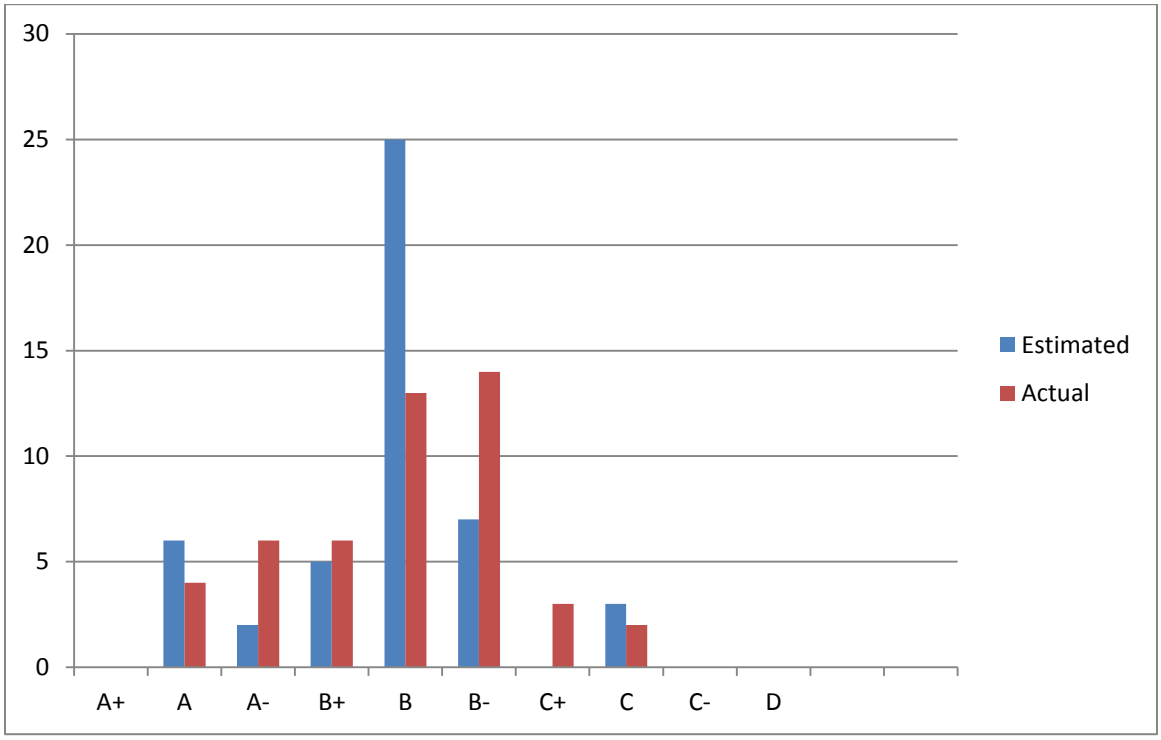

Figure 4. Students' Reported Estimation of Final Grades and Actual Final Grades for Maternal Child Course

Research question 2. Will students' self-efficacy to initiate chain-of-command in an obstetrical setting significantly increase following an educational session and student-directed obstetrical simulation?

A paired *t*-test showed a significant difference between the pretest and posttest sum scores on the GSES. The sum scores at posttest (m=35.6, SD 3.5) ($p<.001$) were significantly higher than at pretest (m=33.2, SD 3.7).

Seven items reached a level of significance (1-5, 8 and 9). Only three items failed to reach a level of significance: 1) 'I can solve most problems if I invest the necessary effort', ($p < .096$), 2) 'I can remain calm when facing difficulties because I can rely on

my coping solutions', (p, .083), and 3) 'No matter what comes my way, I'm usually able to handle it', (p < .133). Comprehensive *t*-test findings are available in Table 3.

Table 3

Pretest Posttest Comparison of Student's General Self-Efficacy Scores (n=48)

	Variable	Pretest	Posttest	p
1.	I can always manage to solve difficult problems if I try hard enough.	3.23	3.56	.001**
2.	If someone opposes me, I can find means and ways to get what I want.	2.92	3.40	.001**
3.	It is easy for me to stick to my aims and accomplish my goals.	3.46	3.63	.019*
4.	I am confident that I could deal efficiently with unexpected events.	3.25	3.46	.011*
5.	Thanks to my resourcefulness, I know how to handle unforeseen situations.	3.08	3.58	.001**
6.	I can solve most problems if I invest the necessary effort.	3.69	3.79	.096
7.	I can remain calm when facing difficulties because I can rely on my coping abilities.	3.35	3.48	.083
8.	When I am confronted with a problem, I can usually find several solutions.	3.29	3.54	.001**
9.	If I am in a bind, I can usually think of something to do.	3.46	3.6	.019*
10.	No matter what comes my way, I'm usually able to handle it.	3.46	3.56	.133

*p < .05; ** p< .001

Research question 3. Will self-efficacy to initiate chain-of-command in an obstetrical setting differ between students who participate in simulation versus those who observe the simulation?

Paired *t*-test was conducted to determine if statistical significance exists between active participant status and observational status in a high fidelity, student-directed, obstetrical simulation. No significance was found. See Table 4.

Table 4

Comparison of Self-Efficacy Means of Participants(n=25)and Observers(n=23)

	Variable	Participants	Observers	p
1.	I can always manage to solve difficult problems if I try hard enough.	3.28	3.17	.514*
2.	If someone opposes me, I can find means and ways to get what I want.	2.96	2.87	.444*
3.	It is easy for me to stick to my aims and accomplish my goals.	3.44	3.48	.811*
4.	I am confident that I could deal efficiently with unexpected events.	3.20	3.30	.528*
5.	Thanks to my resourcefulness, I know how to handle unforeseen situations.	3.08	3.09	.969*
6.	I can solve most problems if I invest the necessary effort.	3.76	3.61	.268*
7.	I can remain calm when facing difficulties because I can rely on my coping abilities.	3.40	3.30	.563*
8.	When I am confronted with a problem, I can usually find several solutions.	3.20	3.39	.288*
9.	If I am in a bind, I can usually think of something to do.	3.32	3.61	.086*
10.	No matter what comes my way, I'm usually able to handle it.	3.44	3.48	.823*

*Non-significant

One-way analysis of variance (ANOVA) was conducted to compare pretest and posttest mean scores on the GSES for demographic qualities, such as previous college degree, previously witnessing nursing chain-of-command, or work experience in a health care facility. No significance was found between pretest and posttest scores for participants with a previous college degree or those who had previously witnessed nursing chain-of-command. There was no significance at pretest for participants who had health care work experience; however, a statistical significance was noted at posttest [F (1, 46)= 1.872, p,017].

Summary

The data analysis methods used for this capstone project included paired *t*-tests and one-way ANOVA. The mean self-efficacy score for all participants was 33.2 (SD 3.7). The informational session and simulation did significantly improve self-efficacy scores for all participants at posttest; however, the participants and observers did not score significantly differently from each other.

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CHAPTER V

Discussion

This study investigated the impact of an informational session and student-directed, high fidelity, obstetrical simulation upon junior baccalaureate nursing students' self-efficacy related to chain-of-command initiation. The impact of active and observational roles upon GSES scores was also examined. Project implementation included a chain-of-command informational session, followed by a simulation in which some students actively planned and enacted safety measures, including chain-of-command, while others observed. Tools included GSES at pretest and posttest, as well as a demographic survey at posttest.

Implications of Findings on Nursing Education

This doctoral capstone project supported the use of high fidelity, student-directed, obstetrical simulation as an effective pedagogy to enhance chain-of-command initiation self-efficacy of junior level baccalaureate nursing students. Because active and observational participants scored higher self-efficacy scores at posttest, but did not differ significantly from each other, nursing educators can incorporate this finding into their current methods of instruction. This project finding supported the use of simulation observation as an effective pedagogy, as opposed to having all students enact the same scenarios in simulation exercises. In fact, Schunk (2008) asserts that vicarious experiences accelerate learning compared to traditional teaching in which all students have had to physically enact a given behavior or task. This finding is a tremendous asset for educators who struggle to teach a multitude of skills and concepts, yet often have limited access to clinical simulation laboratories.

Locally, this project has impacted undergraduate nursing simulation education within the school of nursing where the project was implemented. With finite simulation equipment and technology specialists, course coordinators are challenged to arrange appropriate time and resources in the Simulation Learning Center. This study, however, could potentially decrease the amount of time spent on instruction regarding one skill or concept; thereby allowing for expansion of instruction regarding various safety concepts, such as chain-of-command or interprofessional communication. The course coordinator for the maternal child course has added the educational intervention into end-of-semester simulations to enhance students' self-efficacy to initiate chain-of-command. As opposed to having each student actively participate in a specific simulation, half of the students will observe the simulation. Afterward, observational students will participate (while others observe) in another simulation to potentially broaden the simulation experience and increase the amount of concepts explored. Based on student feedback and requests for similar simulation experiences, the curriculum committee is exploring implementation throughout all clinical courses.

Research question 1. The first research question explored the level of self-efficacy perceived by the nursing students. The total mean score for the GSES for all participants was 33.2 (SD 3.7) of out a possible 40 points. The GSES does not establish definitive scores which equate to efficacious behavior; however, this equal to the 83rd percentile.

Clearly, this scoring represents a great opportunity for educators to close the self-efficacy gap for students, especially those who graduate and enter the workforce in specialty, high-risk units, such as labor and delivery. Not only do nurses need to possess

a tremendous amount of skill and knowledge, they also need to be adequately prepared to meet quality and safety measures (Benner et al., 2010; Lutz & Root, 2007). Simulation is a proven pedagogy to help students "take ownership" (Benner et al., 2010, p. 157) while enhancing clinical competence. Transition into professional practice could potentially become less stressful for the new graduate, and safer for patients.

Research question 2. The second research question investigated if students' self-efficacy to initiate chain-of-command in an obstetrical setting significantly increased following an informational session and student-directed simulation. The results of a paired-samples *t*-test of the General Self Efficacy Scale pretest and posttest revealed a significant increase in student's self-efficacy following the intervention.

Based on these findings, student-directed, high fidelity simulation, combined with didactic instruction regarding nursing chain-of-command, is an effective pedagogy to enhance students' chain-of-command initiation self-efficacy. This study demonstrated that opportunities exist for nursing educators to proactively enhance self-efficacy of nursing students to advocate for the safety of their patients through chain-of-command. As the national patient safety movement continues to focus on measures to promote patient safety within health care settings, schools of nursing should further explore measures to prepare graduates to enter the workforce with enhanced awareness and self-efficacy related to patient safety.

Research question 3. The third research question evaluated the difference in self-efficacy scores between students who actively participated in simulation versus those who observed the simulation. Paired t-test was performed to determine if any significant

difference existed between self-efficacy scores of those who were active in the simulation versus those who only observed. No significant difference was noted.

Application to Theoretical/Conceptual Framework

The theoretical and conceptual framework of Bandura's Social Cognitive Learning Theory was an appropriate guide for measuring self-efficacy in this project. The pretest posttest GSES and posttest demographic survey were consistent with the framework to measure students' self-efficacy to initiate chain-of-command as a means to promote patient safety. As discussed in the previous chapter, both active and observational students demonstrated significant increases in self-efficacy at posttest. This finding is consistent with Bandura's (1986) concept that doing a task, as well as observing a task, can enhance one's self-efficacy related to accomplishing the same task.

Limitations

These results cannot be generalized to the majority of nursing students due to the limited sample of 48 participants within one school of nursing; however, these findings may inform schools of nursing with a similar size and population characteristics.

Delimitations

Due to time constraints and limited access to participants, the project administrator allowed the some delimitations. The sample size was small with only baccalaureate junior level students, so this study is not generalizable to all nursing student populations. Holding four individual simulations, as opposed to one simulation experience, was another planned delimitation so that more students would have the opportunity to actively participate in the chain-of-command process. Although much effort was made to keep simulation guidelines identical, the possibility remains that

variations between simulations affected the results. Obtaining posttests immediately after the intervention was necessary, but no evidence remains that results are sustainable. Eight participants had been in the project administrator's clinical group during the previous eight weeks. Although final clinical grades were posted prior to the study and students were informed in writing and verbally regarding their ability to decline participation in the study, the possibility remains that some students participated due to fear of retribution or desire to please the project administrator. Also, the educational session could have verbally encouraged the students in regards to anticipated results; however, these students had never been formally instructed regarding nursing chain-of-command. Instruction was necessary so that the students would understand and be prepared to implement. Finally, students were allowed to self-select in the active participation groups due to the nature of the student-directed simulation. Students with more self-efficacy could have taken the leadership positions, and thus, affected the outcome.

Recommendations

This doctoral capstone project supported the use of student-directed, high fidelity simulation as an effective pedagogy to enhance chain-of-command initiation self-efficacy of junior level baccalaureate nursing students. Because active and observational participants scored higher self-efficacy scores at posttest, but did not differ significantly from each other, nursing educators can incorporate this finding into their current methods of instruction. This project finding supported the use of simulation observation as an effective pedagogy, as opposed to having all students enact the same scenarios in simulation exercises.

For future similar studies, one recommendation is to increase generalizability by utilizing students from multiple schools. This study could be replicated in associate degree nursing (ADN) programs to determine similarities and differences between baccalaureate and ADN nursing students in relation to chain-of-command self-efficacy. Also, studies with mixed methods could further explore qualitative data associated with student's self-efficacy. Robb (2012) upheld that further studies are needed to identify the generalizability of self-efficacy perceptions, as well as students' and faculty's expectation regarding learning outcomes of simulation exercises such as the one presented here. This project should also be repeated (without the educational session) with the same cohort in the senior year of their nursing program to determine if the findings of enhanced self-efficacy to initiate chain-of-command are sustained. A broad-range, generalizable, longitudinal study is suggested to investigate the impact, if any, participation in a high fidelity, student-directed, obstetrical simulation with didactic component as presented here, would have upon patient outcomes and nursing practice following graduation.

Contingent upon further supportive research, chain-of-command initiation in simulation could become a core safety competency within schools of nursing. This transformational simulation component would promote self-efficacy so that students can confidently initiate chain-of-command while still in nursing school, instead of first applying this concept as new graduates caring for patients.

Conclusion

Appropriate and timely implementation of nursing chain-of-command is essential to the promotion of patient safety, yet new graduates are often hesitant to speak up and advocate for patients. Schools of nursing teach chain-of-command conceptually, but students have little authority and almost nonexistent opportunities to actually implement this protocol. Babenko-Mould (2010) asserts nursing students need opportunities to develop "a sense of empowerment" (para. 1) and "to be prepared to practice with confidence (self-efficacy)" (para. 1). High fidelity, student-directed, obstetrical simulation was identified as a means to provide students with an opportunity to practice chain-of-command initiation and to enhance their self-efficacy to promote patient safety.

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Appendix A

Informed Consent Form

Evaluating Chain-of-Command Self-Efficacy in Nursing Students Through Obstetrical Simulation

Informed Consent Form

You have been asked to participate in a research study conducted by Michelle McEwen-Campbell, MSN, RNC-OB, CNE, FNP, LNC, Lecturer, School of Nursing, at and Doctor of Nursing Practice (DNP) student at Gardner-Webb University. This research involves the study of self-efficacy (your perceived ability) in relation to the initiation of chain-of-command in student-directed high fidelity simulation. Data will be collected twice using a brief demographic data sheet and one standardized paper and pencil survey, *The General Self-Efficacy Scale (GSES).* The total time involved for participation will be approximately 20 minutes.

All information obtained in this study is strictly confidential unless disclosure is required by law. Informed consent forms and other identifying information will be kept separate from the data. A study identification number will be assigned to each set of actual data in order to protect the confidentiality of the participants. Your name will not be associated with the research findings in any way. Therefore, information will be collected in such a way that subjects cannot be identified directly (by names, images or other identifiers) or indirectly (by a chart linking responses to subjects). All responses will be kept in a locked cabinet in a confidential location at Gardner-Webb University for 10 years. The results of this research may be published in subsequent journals or books. Only aggregate data will be reported. You may request a copy of the summary of the final results by indicating your interest at the end of this form.

As a result of your participation in this research, you may develop greater personal awareness of your self-efficacy in relation to chain-of-command initiation. Results of this study may lead to a better understanding of factors associated with enhanced self-efficacy among undergraduate nursing students. This understanding may inform policies and practices designed to promote learning activities which enhance students' understanding and application of self-efficacy in clinical settings, potentially contributing to safer patient outcomes following

graduation. Ultimately the findings may set standards for nursing education in relation to chain-of-command, improve self-efficacy of new graduates, decrease adverse patient outcomes and promote safe, patient-centered nursing care in the United States. There are no foreseeable risks to participants in this study. However, if you experience distress while participating in this study, or if you have any concerns about your rights or how you are being treated, please contact Dr. Candace Rome at Gardner-Webb University (crome@gardner-webb.edu or 910.704.4365) or Dr. Candace Gauthier at gauthierc@.edu. Questions about this project or your benefits or risks associated with being in this study can be answered by Michelle McEwen-Campbell, who may be contacted at mcewenm@ .edu.

Participation in this study is strictly voluntary. Participation is not associated with your course grades or your status as a nursing student at . If you have any questions about any aspect of this study or your involvement, please tell the researcher before signing this form. If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you. You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state. No compensation will be provided for participation.

By signing this consent form, you are agreeing that you read and fully understand the contents of this document and are openly willing consent to take part in this study. All of your questions concerning this study have been answered. By signing this form, you are agreeing that you are 18 years of age or older and are agreeing to participate, or have the individual specified above as a participant participate, in this study described to you by Michelle McEwen-Campbell. Two copies of this informed consent form have been provided. Please sign both, return one copy to the researcher, and keep the other for your files.

_____
NAME OF PARTICIPANT (please print)

_____
SIGNATURE OF PARTICIPANT DATE _____

_____
SIGNATURE OF RESEARCHER DATE _____

_____ Check here to receive a summary of research results.

Appendix B

General Self-Efficacy Scale

General Self-Efficacy Scale

		Not true at all	Barely true	Moderately true	Exactly true
1.	I can always manage to solve difficult problems if I try hard enough.	1	2	3	4
2.	If someone opposes me, I can find means and ways to get what I want.	1	2	3	4
3.	It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4
4.	I am confident that I could deal efficiently with unexpected events.	1	2	3	4
5.	Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4
6.	I can solve most problems if I invest the necessary effort.	1	2	3	4
7.	I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4
8.	When I am confronted with a problem, I can usually find several solutions.	1	2	3	4
9.	If I am in a bind, I can usually think of something to do.	1	2	3	4
10.	No matter what comes my way, I'm usually able to handle it.	1	2	3	4

Appendix C

Permission for Use of Tool

General Self-Efficacy Scale

Everything you wanted to know about the
General Self-Efficacy Scale
but were afraid to ask

by Ralf Schwarzer, January 5, 2009

The purpose of this FAQ is to assist the users of the scales published at the author's web pages http://www.ralfschwarzer.de/

DOWNLOAD of PDFs: http://userpage.fu-berlin.de/~health/self/selfeff_public.htm

Before attending to the questions below you might want to study our web pages. You might not have any questions after reading the web pages.

Do I need permission to use the general perceived self-efficacy (GSE) scale?

You do not need our explicit permission to utilize the scale in your research studies. We hereby grant you permission to use and reproduce the General Self-Efficacy Scale for your study, given that appropriate recognition of the source of the scale is made in the write-up of your study.

The international source is:
Schwarzer, R., & Jerusalem, M. **(1995)**. Generalized Self-Efficacy scale. In J. Weinman, S. Wright, & M. Johnston, *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35-37). Windsor, England: NFER-NELSON.

The source for the German version is:
Schwarzer, R., & Jerusalem, M. (Eds.). (1999). *Skalen zur Erfassung von Lehrer- und Schülermerkmalen: Dokumentation der psychometrischen Verfahren im Rahmen der Wissenschaftlichen Begleitung des Modellversuchs Selbstwirksame Schulen*. Berlin: Freie Universität Berlin.

I am not sure whether I want to measure general perceived self-efficacy (GSE) or specific health-related self-efficacy.

You have to decide which one fits your research question. If you intend to predict a particular behavior you are better off with a specific scale. You might be best off by designing your own items, tailored to your study, such as:
"I am certain that I can do ...xy..., even if ...zz ..." (1 2 3 4).

Health-specific self-efficacy scales can be found at:
http://userpage.fu-berlin.de/~health/healself.pdf

For the English version of the teacher self-efficacy scale, see Schwarzer & Hallum (2008).

If you are interested in other health behavior constructs, consult the NCI Health Behavior Constructs Website:

Appendix D

Demographic Survey

Demographic Survey

1. How old are you? _____
2. What grade do you expect to achieve in this course? _____
3. Have you ever worked in a health care setting? _____
    a. If so, what type of facility was it (hospital, long-term care, office)?

        _____
4. Have you ever witnessed a nurse use chain-of-command? _____
5. Do you have a college degree in a field outside of nursing? _____
    a. If so, what is that degree? _____
6. Please indicate your level of participation for this simulation exercise by checking only **ONE** answer below:

    _____I was an active participant in the simulation.

    _____I only observed the simulation.

Comments

Thank you for your contributions to this research project.

Appendix E

Chain-of-Command Informational Session

Chain-of-Command

BE THE LINK

Michelle McEwen-Campbell,
DNP(c), MSN, RNC-OB, CNE, FNP, LNC

Aviation Scenerio

- January 13, 1982
- Air Florida Flight 90 from Washington, D.C. to Tampa, Florida
- Pilot Larry Wheaton (8,300 flight hours logged)
- Copilot Roger Pettit (3,353 total flight hours)
- Unusual snow/ice conditions
- Conflict between captain and copilot regarding safety
- Pilot had the ultimate decision

YOU ARE THE NURSE...

Consider this patient scenerio and respond to the written survey:

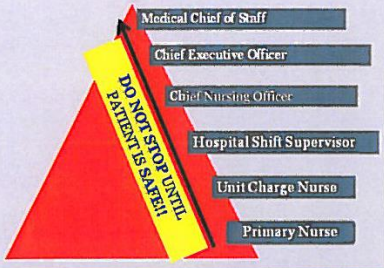
Your labor patient is experiencing fetal distress (repetitive late decelerations). You initiate several intrauterine resuscitative measures, such as position changes and oxygen administration, with no improvement. You call Dr. Logan, report your findings, and expect him to come assess the patient very quickly because you are concerned; however, he states he will be on the unit in approximately one hour.

Results

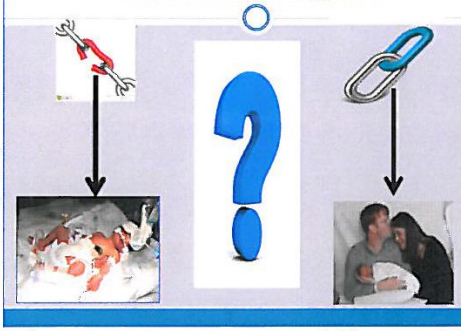
THE PLANE CRASHES INTO THE BRIDGE AND THE POTOMAC RIVER, AND KILLS 80 PEOPLE.

What is the relation to nursing?

Chain-of-Command
Seahawk Labor Unit



Which link are you??



Don't be afraid to CUS

CUS Communication

- You are obligated to address safety issues
- Stop the care process when safety is questioned.
- State:
  - "I have a **C**oncern." (State what concerns you)
  - "I am **U**ncomfortable." (Why are you uncomfortable?)

(If not resolved...)

- "There is a **S**afety issue-Please **STOP**!"

DANGER!

Simulation Participants

- Roles:
  - Primary nurse
  - Second labor and delivery nurse
  - Unit charge nurse
  - Hospital shift supervisor
  - Unlicensed personnel
  - Nurse to document
  - Dr. Wall (portrayed by faculty member via phone)
- Care for Rachel Reyes and respond appropriately when maternal/fetal status becomes compromised.
- When provider is notified of primary nurse's concerns regarding patient safety, the obstetrician, Dr. Logan, states he will come back to the unit when he finishes making rounds on another floor (approximately 1 hour).
- Plan and simulate how you will implement COC to promote maternal/fetal safety now.

Document

- All interventions
- Patient responses
- Communication with provider (including your specific recommendations and provider response)
- Interactions with nursing leadership

QUESTIONS??