

Evaluation Of A Simulation-enhanced Obstetric Clinical Experience On Learning Outcomes For Knowledge, Self-efficacy, And Transfer

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EVALUATION OF A SIMULATION-ENHANCED OBSTETRIC
CLINICAL EXPERIENCE ON LEARNING OUTCOMES FOR
KNOWLEDGE, SELF-EFFICACY, AND TRANSFER
by

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A dissertation submitted in partial fulfillment of the requirements
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ABSTRACT

Simulation using computerized patient mannequins may be a useful mechanism to teach safe and effective nursing care, thus improving the quality of education for nurses. As nursing program enrollments grow, clinical placement is becoming more difficult and may not offer consistent learning opportunities that reinforce safe and effective nursing practice. This study applied Ford, Smith, Weissbein, Gully, and Salas' (1998) model of learning transfer as the theoretical framework to design a simulated obstetric clinical learning experience to augment the current clinical practice model, an approach that may lead to an improved educational experience. The purpose of this study was to compare learning outcomes of two clinical teaching strategies for obstetric clinical content for undergraduate nursing students: standard clinical instruction and a simulation-enhanced clinical experience.

A mixed-method approach was used. A randomized cluster design was chosen to compare the learning outcomes for students participating in a simulation-enhanced clinical experience versus students participating in a traditional clinical rotation. From the study population of 124 students, 40 participated in the simulation-enhanced clinical group, with the remainder of students serving as controls. Four instruments (Obstetric Nursing Self-Efficacy instrument, Goal Orientation Scale, Proxy Measure, and examination knowledge items) were used to measure student characteristics or achievement of outcomes. Learning outcomes for self-efficacy, knowledge, skills, and transfer were compared between the groups using ANCOVA, independent sample *t*-test,

and chi-square analyses. A qualitative descriptive analysis of clinical evaluations for all students was also conducted.

Demographic characteristics between the groups were not statistically different. The analysis of covariance (ANCOVA) revealed no difference in ONSE posttest scores between the groups after adjusting for goal orientation and ONSE pretest scores. An alternative ANCOVA for sequence (time in semester when the simulation occurred) and group was not significant. However, after adjustment for the covariate of ONSE pretest scores, ONSE posttest scores varied with sequencing ($p < .05$); students who had the simulated experience during the first half of the semester ($M=67.27$) scored higher than those in the second half ($M=60.89$) when pretest scores were used as a covariate. No differences were found between the experimental and control groups for knowledge or skills. The narrative analysis revealed broad variation in comments on the clinical evaluation form among clinical instructors. Attitude, knowledge attainment, skill acquisition, helpfulness, and professional role attributes were common themes related to student clinical performance.

The findings from the study contribute to a growing body of literature evaluating the efficacy of simulation to augment clinical nursing practice experience. Data suggest there is little difference in learning outcomes for students participating in a simulation-enhanced clinical group versus the traditional clinical rotation. This finding supports that at least 15% of clinical hours could occur in a simulated clinical environment. A model driven method of simulation design and delivery could support learning in a way that will allow for efficient and effective use of simulation to support safe and effective obstetric nursing care.

For my father, I miss you Daddy.

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CHAPTER 1: INTRODUCTION

Simulation is a teaching and learning strategy that allows educators to customize learning experiences to meet the needs of the learner. For undergraduate nursing instructors, simulated experiences can be used to bridge the gaps from classroom learning to the bedside so that clinical hours are used efficiently. If simulations are well designed and implemented, simulated learning experiences can be tailored to meet the course-specific learning objectives.

The National Council of State Boards of Nursing outlined the Council's vision for the use of simulation in prelicensure nursing education; according to Li (2007), the Council's position was that simulation of all forms is a complementary teaching strategy to be used to augment clinical practice by undergraduate students. This position is shared by the American Association of Colleges of Nursing (AACN), as stated in *The Essentials of Baccalaureate Education for Professional Nursing Practice* (AACN, 2008).

According to the AACN, the use of simulation in nursing programs is believed to (a) improve safety outcomes, (b) better prepare new nurses, (c) promote innovative teaching strategies, and (d) provide a solution to mitigate clinical and faculty shortage problems (Li, 2007). Although simulation in nursing education is innovative, questions regarding the outcomes of simulation combined with clinical practice to improve safety outcomes and preparation of new nurses have been raised. Most importantly, if the efficacy of simulation can be established, it may be possible to enhance the current model of clinical preparation and restructure the use of available practice hours to create a clinical learning

experience that provides consistent experiences that are matched to course objectives and program outcomes.

Challenges in access to clinical sites occur as nursing education programs expand capacity to increase the number of nurses. As a result, clinical sites are becoming overburdened; some sites are unable to accommodate the growing number of students. Competition for sites is increasingly common, especially for obstetric and pediatric rotations (Kuehn, 2007). For example, in a survey conducted by the Florida Center for Nursing, 68.2% of associate degree in nursing programs and 58.3% of bachelor of science in nursing programs reported having had some or great difficulty finding clinical placements for their students (Edwards & Woodard, 2008). For programs that reported having some degree of difficulty, the most challenging placement was for obstetric and pediatric clinical sites (Edwards & Woodard, 2008). Given these limitations on space and time, it is impossible to predict the quality of the clinical experience gained by these students. Effective use of simulation may provide a mechanism to replace and/or augment traditional clinical practice for students so that the experience reinforces the objectives of the curriculum.

Research suggests simulated experiences may be as effective as traditional clinical experiences in terms of outcomes. A pilot study performed by Hicks, Coke, and Li (2009) explored differences in knowledge, clinical performance, and confidence levels among nursing students who participated in traditional clinical rotations, a traditional rotation combined with simulation, and a completely simulated experience. The sample size was small ($N = 58$) but the findings were noteworthy: no significant differences were found in knowledge acquisition or performance. However, both groups participating in

simulation (100% simulated clinical experience and the combination groups) demonstrated statistically significant increases in self-confidence (i.e. self-efficacy) scores measured at the completion of the clinical rotation, as compared to the traditional clinical group (Hicks et al., 2009). These findings indicate simulation warrants further exploration as a mechanism to foster confidence in nursing students.

Problem Statement

Transfer of training is evidenced by the ability of a student to successfully apply what has been learned to a more complex environment (Ford et al., 1998). Traditional clinical practice as part of prelicensure nursing education programs has been an effective strategy for facilitating transfer of training when nursing students are evaluated for knowledge according to their success on a multiple-choice examination administered by the National Council of State Boards of National Council Licensing Examination (NCLEX). The relative novelty of simulation training to undergraduate nursing education means its impact in large-scale programs has yet to undergo evaluation. Implementation of simulation-enhanced clinical experiences to demonstrate transfer of training for patient safety might be shown to improve safety outcomes, but such evidence must be collected through research.

Few studies have examined transfer of training from the classroom to the clinical setting. This fact is worrisome because many state boards of nursing are considering the use of the simulation experience as a substitute for direct patient care experience, and some have adopted policies on the use of simulation in lieu of traditional clinical rotations (Nehring, 2008). Such tacit approval of simulation experiences as a valid

substitute for clinical practice makes it imperative that optimal use of the strategy be explored and outcomes evaluated.

Purpose

The purpose of this study was to compare the learning outcomes from two teaching strategies for clinical experiences in obstetrics: a standard hospital-based clinical experience and a simulation-enhanced clinical experience. A model of learning transfer, as proposed by Ford et al. (1998), was used to guide the study. The learning outcomes, knowledge, skills, and self-efficacy between students participating in a standard clinical experience were compared to the scores for those participating in a simulation-enhanced clinical experience. A qualitative descriptive analysis was used to examine clinical course evaluations for all students' clinical performance.

Questions

The following research questions were addressed:

1. After adjusting for individual differences and pretest scores, is there a difference in the self-efficacy scores of students who participated in a simulation-enhanced clinical experience when compared to students who participated in the standard clinical experience?
2. Is there a difference in knowledge scores on a posttest, multiple-choice examination for students who participated in a simulation-enhanced clinical experience when compared to students who participated in the standard clinical experience?
3. Is there a difference in the clinical accuracy and completion of situation-background-assessment-recommendation (SBAR) form scores between

students who participated in a simulation-enhanced clinical experience and students who participated in the standard clinical experience?

4. What are the comments made by clinical instructors in obstetrics when evaluating clinical performance of undergraduate nursing students?

Definition of Terms

Definitions of terms used in this study are presented in Table 1.

Table 1
Conceptual and Operational Definitions

Term	Conceptual	Operational
Simulation	Simulation is a strategy used to (a) teach and demonstrate skills/procedures, and (b) support decision making. Simulated activities may be complex or simple, and involve any of the following to support the psychological fidelity of the scenario: role play, videos, or mannequin (Jeffries, 2005).	Two simulations using computerized patient mannequins as surrogate patients were used to facilitate learning of safe nursing care for obstetric patients by students participating in a 6-hour simulation-enhanced clinical experience.
Student	Student enrolled in an undergraduate baccalaureate nursing program.	Undergraduate nursing students enrolled in NUR 3445 during the 2010 spring semester at the University of Central Florida.
Knowledge	Level of attainment for verbal knowledge (factual and declarative).	Number of items answered correctly for 10 exam questions related to obstetric content on a final exam in NUR 3445.
Skills	Competence in performing a task or series of tasks.	Competence when communicating important patient information represented by accuracy and completion score on the SBAR rubric for SBAR reports presented on the final exam as a proxy measure for transfer.
Self-efficacy	The belief that one can perform behaviors or tasks in a given situation (Bandura, 1980).	Student perception of self-efficacy when caring for the obstetric patient as measured by the obstetric nursing self-efficacy tool.
Transfer of training	The ability of the student to successfully apply what has been learned to a more complex environment (Ford et al., 1998)	Evaluations completed by clinical instructors for both groups of students relative to themes of transfer.

Term	Conceptual	Operational
Computerized patient simulator	A lifelike, computerized mannequin that has the capacity to be programmed to generate physiologic feedback to be interpreted by and acted upon by learners.	<p>Gaumard Scientific Company's Noelle® is a female mannequin that can be programmed to generate physiologic responses of a woman experiencing a postpartum hemorrhage.</p> <p>Laerdal Medical Inc.'s SimMan® is a gender-neutral mannequin that can be programmed to generate physiologic responses and made up to represent a woman experiencing an augmentation of labor complicated by Group B <i>streptococcus</i>.</p>

Relevance

Nursing education content is traditionally delivered as lecture followed by clinical practice in a related setting, such as a hospital. Clinical practice time requirements vary by nursing program and content area, but the average undergraduate nursing program to prepare registered nurses requires approximately 750 hours of clinical practice (Li & Kenward, 2006). Clinical performance is usually assessed as pass or fail, using relatively subjective evaluations completed by the clinical instructor. Achieved measures of self-efficacy are not a requirement for the completion of a nursing program.

Despite demonstration of minimal competency by passing the NCLEX licensure exam, recent graduates have difficulty *thinking like a nurse*. Qualitative interviews with new graduates revealed their belief that thinking like a nurse was a result of a variety of clinical experiences, discussions with peers, and input from faculty (Etheridge, 2007). In addition, between 20% and 50% of new graduates reported not believing their clinical experience prepared them to (a) provide care for groups of patient, (b) delegate to other nurses, or (c) recognize when or how to call a physician (Li & Kenward, 2006). Well-planned and -developed simulation experiences are structured to facilitate these activities.

Although traditional clinical practice is filled with myriad clinical problems to be solved, most students cannot fully appreciate how to go about solving the problems presented or, because of lack of experience, they may not recognize a problem exists to be solved. It is the task of the clinical instructor to facilitate this process, but clinical supervision is often limited to one student at a time and clinical problem variety is limited by patient census. To this end, the addition of a well-designed simulated experience in

conjunction with traditional clinical practice may present an improved model for clinical practice.

Obstetric content in particular tends to be allotted limited clinical time because the subject matter represents less content on the licensing examination for nurses as compared to medical surgical nursing practice. Nonetheless, nursing graduates are expected to have a general knowledge of safe and effective nursing care of the obstetric patient. It is important to develop strategies that take optimum advantage of available clinical time. If the use of simulation to augment clinical practice experience can facilitate more effective use of clinical time and result in transfer of behaviors equivalent to or superior than the current model, a more efficient model of obstetric clinical practice could be developed.

Summary

There is limited evidence to support the use of simulated clinical experience as a substitute for the current clinical practice model. If the efficacy of simulation as a clinical substitute can be established, the strategy may be adopted to improve the transfer of safe and effective nursing practice skills in obstetrics and to address problems related to limited clinical availability in certain specialty areas. This study was an evaluation of outcomes related to the transfer of skills between students participating in a simulation-enhanced clinical experience and those participating in a standard clinical experience.

CHAPTER 2: REVIEW OF THE LITERATURE AND THEORETICAL FRAMEWORK

Background & Significance

General Background

The introduction of sophisticated computerized mannequins has contributed interactivity to the use of simulation in healthcare education. Mannequins can be programmed to produce physiologic responses to nursing interventions and treatments. This functionality affords the opportunity to challenge learners and to present problems in ways that were not possible using equipment designed only to train a task, such as nasogastric insertion. The first computerized interactive patient mannequin, Sierra Engineering Company's Sim One, was developed in the late 1960s but proved to be too expensive and difficult to maintain. As a result of its limitations, the project to assess its suitability for training did not occur (Bradley, 2006; Cooper & Taqueti, 2004). The second generation of computerized patient mannequins was designed explicitly for training airway management and other medical skills, which made them attractive to medical educators. When computerized mannequins became relatively affordable in the 1980s, medical schools with departments of anesthesia began to investigate with greater interest the usefulness of simulation to train students (Gaba & DeAnda, 1988, 1989).

Background in Medical Education

Once simulation mannequins became relatively affordable, medical educators were able to more easily integrate them into their curriculum (Cooper & Taqueti, 2004).

As the variety of medical simulation programs has increased, so has the research devoted to error prevention by incorporating team training and human factors into individual simulation scenarios (Alonso et al., 2006; Baker, Beaubien, & Holtzman, 2006; Baker, Beaubien, Holtzman, Salas, & Barach, 2004; Baker, Salas, King, Battles, & Barach, 2005; Morey et al., 2002; VanGeest & Cummins, 2003). This integration of simulators and resultant research has led to the foundational literature that supports the use of simulation in health care.

Two systematic reviews of relevant research have been published. Issenberg, McGaghie, Petrusa, Gordon, and Scalese (2005) conducted a review of the literature spanning 34 years in response to a request by the Best Evidence Medical Education Collaboration. The review sought to identify features of high-fidelity medical simulations that led to the most effective learning. Issenberg et al. identified 10 such features: (a) feedback, (b) repetitive practice, (c) curriculum integration, (d) range of difficulty level, (e) multiple learning strategies, (f) capture of clinical variation, (g) controlled environment, (h) individualized learning, (i) defined outcomes, and (j) simulator validity. They stated validity, particularly as it applies to transfer of skills learned in simulation to clinical practice, was an area on which more research should be conducted.

A second review of the literature by Lynagh, Burton, and Sanson-Fisher (2007) concentrated on the effectiveness of laboratory skills or simulator training with a focus on transfer to clinical performance. The researchers identified 12 trials that assessed transfer of skills. Although 11 of the 12 trials favored the use of simulation over standard or no training, there were not sufficient numbers of studies with methodological rigor for the authors to make conclusions beyond what they termed *preliminary*. The authors

concluded that demonstration of transfer of skills from the simulated environment to the clinical realm should continue to be an area of ongoing investigation.

Background in Nursing Education

Recommendations to use simulation by the Institute of Medicine report, *To Err is Human* (Kohn, Corrigan, & Donaldson, 2000), and the AACN (2008) have made rationalization of the purchase of computerized mannequins relatively easy. These national educational policy recommendations have contributed to a general perception that the use of computerized mannequins may improve safety outcomes.

Innovative nursing educators were quick to identify the potential benefits of using computerized mannequins with simulation. They recognized that a mannequin capable of producing dynamic physiologic states might be a useful tool for educating nursing students. These pioneers adopted computerized mannequins, using them most frequently for practicing management of cardiac arrest or critical-care patient scenarios (Feingold, Calaluce, & Kallen, 2004; Rauen, 2001; Spunt, Foster, & Adams, 2004).

In the early 2000s, a body of research focusing on the applicability of computerized mannequins to nursing education was established. The potential for application of simulations using computerized mannequins beyond critical care was recognized because, through appropriate use of this tool, students can be exposed to a range of detailed clinical situations that are high risk/low occurring, and students are able to experience disease states using the full range of their assessment skills. In contrast to traditional clinical in which students are assumed to learn through observation, simulation allows the student to actively participate in high-risk clinical scenarios. Nursing

researchers began investigating outcomes that could provide evidence of the merits of simulation in nursing education and validate the perceived benefits of the technology.

Much of the literature related to simulation and the use of computerized mannequins consists of reports about the process of initiating the use of simulators in individual programs (Bearnson & Wiker, 2005; Morton & Rauen, 2004; Rauen, 2001). For example, Henneman and Cunningham (2005) described their experience of initiating the use of their simulator from opening the box through conducting their first simulation. Tuoriniemi and Schott-Baer (2008) documented the process from purchase of the mannequin to simulation program development. Still others have explored ways to use computerized mannequins as a remediation tool or faculty development instrument to support the use of simulation (Haskvitz & Koop, 2004; Kardong-Edgren, Starkweather, & Ward, 2008). Ongoing research in nursing education exemplifies the common desire to understand simulation in nursing education but does not provide data to support the efficacy of simulation as compared to traditional clinical practice.

The first nursing conceptual model specific to simulation was developed by Dr. Pamela Jeffries (2005) in attempt to answer three questions: “(a) what is the role of the teacher, (b) how does simulation design contribute to the overall teaching and learning experience, and (c) what teaching and learning practices with simulation contribute to positive outcomes” (p. 94). She was later able to implement and test her model through a large multisite, multimethod trial using computerized patient simulators. Sponsored by the National League for Nursing and Laerdal, Inc., manufacturer of one of the first simulator models, Jeffries and Rizzolo’s (2007) 3-year study yielded four survey tools to

evaluate different aspects of simulation and provided initial insight into the impact of a theoretically based simulation design.

Specific findings of Jeffries and Rizzolo's (2007) study were mixed; the researchers were unable to demonstrate significant differences in knowledge as tested by NCLEX-style questions among students who participated in a pen-and-paper case study versus students whose experiences were augmented with either a static mannequin or high-fidelity mannequins. The researchers developed the Student Satisfaction and Self-confidence in Learning questionnaire to measure satisfaction and confidence in students participating in simulated experiences with patient simulators. Students who were exposed to learning experiences using the high-fidelity mannequins reported significantly higher satisfaction scores and greater confidence scores than peers who were not exposed to computerized-patient simulated learning experiences (Jeffries & Rizzolo, 2007). This project was essential to defining how simulation using computerized mannequins could be applied as a teaching strategy in nursing education.

Evaluation of Simulation in Undergraduate Nursing Education

Knowledge

Simulation has been used in nursing education as a teaching and learning tool with promising results. For example, Jeffries and Rizzolo (2007) compared knowledge scores on NCLEX-style test questions of students who received lecture-only instruction to students who received lectures augmented by pen-and-paper case studies or computerized-patient simulation experiences. Because the findings were equivocal, the researchers concluded the knowledge test scores were measures of knowledge attained prior to the simulation and therefore would be unaffected by the intervention.

Some researchers were able to demonstrate improvements in cognitive test scores following simulation experiences. Brannan, White, and Bezanson's (2008) human patient simulator method comparison combined the use of case studies with patient simulators and teacher-student discussion. The researchers demonstrated improvement in cognitive test scores for students who participated in an interactive instructional experience using patient simulators when compared to those exposed to a traditional classroom lecture. Bruce et al. (2009) documented improved knowledge test scores for students who participated in a simulated clinical event for a code scenario; the researchers concluded the use of computerized patient simulators to teach nursing care for infrequent, critical patient events is an ideal use of the strategy.

Skills

Simulation in Laboratory

Those observing simulation experiences often comment that the learners are able to hone their critical thinking skills, but there is little in the nursing literature to support the assertion. What is available is a growing interest in the evaluation of clinical judgment. Lasater's (2007) work applied Tanner's (2006) clinical judgment model as a conceptual framework. The framework has four phases: noticing, interpreting, responding, and reflecting. Lasater used the model to develop the Lasater Clinical Judgment Rubric after observing students participating in a simulated experience. The initial pilot validation work for the tool included a very small population and no conclusions could be made.

Dillard et al. (2009) incorporated faculty training into the Lasater Clinical Judgment Rubric and deployed the rubric for use in evaluating simulations in the

laboratory setting. Their conclusions were limited because faculty who were trained had been assigned only one student to evaluate; the sample size was too small to draw conclusions. Despite the inconclusiveness of the study, something worthwhile can be noted about the tool: the language of the rubric can easily be applied to evaluation of the simulation and to the clinical arena. Lasater's intent was that the rubric would eventually be used to demonstrate transfer of skills from the simulated environment to the clinical environment (K. Lasater, personal communication, May 25, 2008).

Observation as a technique for evaluating skill acquisition was used by Radhakrishnan, Roche, and Cunningham (2007) and Alinier, Hunt, Gordon, and Harwood (2006) to demonstrate the value of simulation experiences. In contrast to Lasater's (2007) work, which focused on the mastery of clinical judgment skills rather than specific nursing skills, these researchers used an objective, structured clinical examination technique to evaluate clinical practices, skills, and/or competence. Alinier et al. were able to demonstrate that students participating in a simulated pre- and postoperative experience earned significantly higher performance scores than those students who did not undergo training with the simulator.

Clinical. Efforts are underway to provide support for effective use of simulation training as an augmentation resource in clinical practice. Lambton, O'Neill, and Dudum (2008) designed a pediatric experience representing 25% of clinical time for students participating in a pediatric clinical rotation. The researchers used a time series design to explore student and faculty perception of a simulated clinical experience for collaboration and communication.

Of the constructs measured, Lambton et al. (2008) found a statistically significant increase in student confidence on recognition of medical errors over time. In addition, content analysis of answers to the open-ended questions revealed students believed they were more confident, able to demonstrate improved communication, and had learned skills that would transfer to the clinical environment. The study by Lambton et al. was reported to be a preliminary work that would serve as foundation for a larger future study that attempted to validate the efficacy of a 25% solution for clinical placement issues.

Licensure. Reports from the literature have chronicled the development of simulation throughout the last several decades. The purpose of the articles was to present findings from the nursing literature in an effort to promote the use of simulation as a mechanism to evaluate competencies for nursing licensure. Decker, Sportsman, Puetz, and Billings (2008) and Nehring and Lashley (2009) agreed transfer of skills from simulation to the clinical environment and faculty development have not been fully evaluated. These same authors commented additional research must be conducted before competency testing for certification and licensure using simulation can be implemented.

Affective Outcomes

Simulation affects students and faculty. Evidence exists to support self-efficacy is an important element in the ability of students to transfer those skills learned in the classroom or laboratory to performance in the clinical environment (Bambini, Washburn, & Perkins, 2009). Therefore, self-efficacy is an indicator of the effectiveness of simulation. Bambini et al. (2009) demonstrated undergraduate students' self-efficacy scores were improved following participation with a simulation of postpartum experience. Sinclair and Ferguson (2009) reported a statistically significant change in

mean self-efficacy scores for all but one scenario involving students exposed to a combination of lecture and simulated learning versus those exposed to lecture alone.

Bremner, Aduddell, and Amason (2008) used the State-trait Anxiety Inventory to demonstrate a simulation experience could decrease scores on the inventory for students prior to the first week of clinical instruction when compared to those who did not receive the simulation experience. The theme of improved self-efficacy or confidence was evident in the reports of researchers' findings from content analysis (Bearnson & Wiker, 2005; Bremner et al., 2008; Schoening, Sittner, & Todd, 2006). It seems important to move towards testing the relationship of self-efficacy and transfer to the clinical environment.

There is consensus in the literature indicating students and faculty have positive feelings about using simulation experiences (Bearnson & Wiker, 2005; Gobbi et al., 2004; McCausland, Curran, & Cataldi, 2004; Parr & Sweeney, 2006; Rhodes & Curran, 2005). Interestingly, faculty's and students' perception of transfer were not always in agreement. Feingold et al. (2004) surveyed faculty with regard to transferability of the skills used in the simulated environment. Faculty believed 100% of the time that the skills were transferable, whereas students only agreed with that statement 50% of the time (Feingold et al., 2004). Conversely, a study by Abdo and Ravert (2006) based on a students' satisfaction survey reported students believed experiences were realistic and there was 100% agreeability to items related to transfer to the clinical environment.

Gaps

Survey data dominated the literature, with perception surveys by students serving as the most frequent tool for gathering data. Few instruments have been validated,

although the notable exceptions were the four tools developed for use in the project by Jeffries and Rizzolo (2007). Kardong-Edgren et al. (2008) used three of these tools: the Educational Practices questionnaire, the Simulation Design scale, and the Student Satisfaction and Self-confidence in Learning questionnaire. These instruments were used to evaluate student perception following implementation of the program's first simulation experience. Kardong-Edgren et al. reported the mean score on the Simulation Design scale for one of the three simulations showed a statistically significant difference as compared to the others, and the researchers were able to use that data to address the problems experienced in that particular scenario.

Research related to the use of simulation in undergraduate education is an active area of inquiry. The research challenges have been related to the methodological difficulties of educational research in general, sampling, and control. Much has been learned but further research related to instrumentation, variable identification, best practices, evaluation procedures, and faculty development is needed to fully realize all of the benefits.

Demonstrating and/or defining effectiveness in terms of transfer of safe and effective nursing care from simulated environment to clinical practice is a critical step toward integrating simulation into undergraduate nursing education. Making connections to clinical practice is critical to the ability of students to improve patient safety outcomes in the clinical environment and after graduation. Recommendations in a report sponsored by the Institute of Medicine stated simulation should be used as often as possible to increase patient safety outcomes through crew resource management, problem solving, and crisis management (Kohn et al., 2000). It seems important to demonstrate the transfer

of safe and effective nursing behaviors in these scenarios from simulation to clinical practice.

Safe Outcomes in Obstetrics

Leape and Berwick (2005) noted that although there have been some improvements in patient safety outcomes, the larger impact of efforts to improve safety outcomes has not been realized. Several initiatives have been enacted with the goal of improving patient safety; the Joint Commission (2010) identified patient safety goals and the Agency for Healthcare Research and Quality (2007) specified indicators of quality. At least three of these indicators—failure to rescue, neonatal injury, and obstetric trauma—are the indicators for obstetric safety. *Failure to rescue* is defined as a death or severe impairment resulting from failure to prevent or intervene in a timely manner or failing to do so altogether when risk for an adverse event becomes evident, while *neonatal injury* and *obstetric trauma* primarily relate to injuries occurring at the time of delivery (Agency for Healthcare Research and Quality, 2007). More recently, Beaulieu (2009) reported perinatal teams were able to adequately monitor high-risk electronic fetal heart tracings but were not consistently able to identify problems in a timely manner, initiate appropriate interventions, and activate a team response in a timely manner.

Several factors contribute to poor safety outcomes in obstetrics. Forster et al. (2006) examined the incidence of adverse events among obstetric patients ($n = 425$). They noted 5% of the population experienced either a serious adverse event or potential for one. Based on their analysis, Forster et al. concluded teamwork and communication skills seemed to be more important than proficiency and decision making. A retrospective analysis of litigation revealed 78% of adverse events had multiple contributing factors. In

contrast to the conclusions drawn by Forster et al., analysis found communication and clinical performance were equally responsible, each with 31% of the distribution of causes (White, Pichert, Bledsoe, Irwin, & Entman, 2005). Given the unlikelihood of multiple contributing factors, it seems worthwhile to direct any intervention to the improvement of outcomes to address several issues.

Nurses who work in obstetrics enjoy a high level of autonomy, which carries with it a large burden for maintaining the safety of both mother and fetus. Obstetricians rely on the skills of the obstetric nurse to accurately assess, intervene, and communicate changes in the patient's condition to provide medical management for the patients. Physicians and nurses do not always communicate well or agree on care issues, particularly with regard to fetal assessment and oxytocin administration. Because these two areas are major safety risks for obstetric care, strategies to improve collaboration should be implemented (Guise & Segel, 2008; Simpson, James, & Knox, 2006).

In addition to the need for improved collaboration, because a hierarchical structure related to physician-nurse communication can affect outcomes for the fetus, it is critical to overcome the traditional method of "indirect communication" with physicians commonly applied by nurses. Direct, open communication practices allowing the free flow of information fully incorporate the skill and expertise of both physician and nurse, thus resulting in improved patient outcomes (Simpson & Knox, 2009). Nursing executives have stated perinatal safety could be improved if strategies aimed at improving communication, standardization of terminology, certification of competency in electronic fetal monitoring, and the use of simulation were implemented (Thorman et al.,

2006). This opinion is particularly timely and important: The standards for fetal heart rate monitoring were significantly revised and published in 2008 (Ross, 2009).

Errors in communication occur when information is being transferred from one provider to the next during *handoffs*. A handoff is defined as passing the responsibility of care of a patient to another individual. When information is being passed, key information is often omitted, creating the possibility of a negative patient outcome (Simpson & Knox, 2009). High-stakes industries, those in which mistakes can cause loss of human life, and the military have implemented measures to overcome barriers to and problems associated with clear and concise information communication. The Department of Defense developed strategies aimed at improving patient safety. The resulting program, Team Strategies and Tools to Enhance Performance and Patient Safety, incorporates crew resource management strategies from aviation to address safety issues stemming from both hierarchical structures and inconsistent practices when relaying important patient information (Alonso et al., 2006).

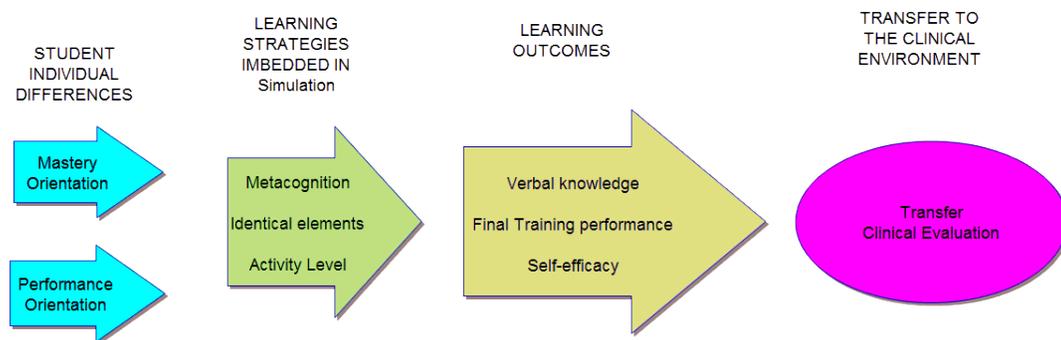
The Situation, Background, Assessment, and Recommendations (SBAR) tool was developed to improve patient safety by providing a structure for high-quality, specific patient handoff reports (Haig, Sutton, & Whittington, 2006). For example, when calling a health care provider, the nurse using an SBAR tool would begin the call with a brief outline of the problem and provide supporting background and assessment data, followed by a specific recommendation or request. This direct and concise structure is an efficient mechanism for communication, resulting in fewer opportunities for misunderstanding.

To date, few nursing researchers have focused on assessment of the development of safety skills, communication, and collaboration for undergraduate nursing students.

Krautscheid (2008) focused on purposeful medical-surgical simulations to develop student performance when communicating with a physician in an emergency situation. Bruce et al. (2009) evaluated the ability of graduate students to manage a team of undergraduate students during a cardiac arrest scenario. Given the importance of the topic, there is great need to identify effective methods to teach and evaluate the transfer of effective collaboration and communication skills to the clinical obstetric environment.

Theoretical Framework: Model of Learning Transfer

The model of learning transfer was designed to test the linkages of multiple factors on training outcomes. The model hypothesized individual differences, learning strategies, and learning outcomes are linked to transfer. Testing of the model provided support that the learning outcomes of knowledge, self-efficacy, and training performance were significant factors in the prediction of transfer performance (Ford et al., 1998). A diagram depicting the relationships identified by Ford et al. (1998) is presented in Appendix A. A simplified diagram based on these relationships is presented in Figure 1.



Note. Adapted from “Relationships of Goal Orientation, Metacognitive Activity and Practice Strategies with Learning Outcomes on Transfer,” by J. K. Ford, E. M. Smith, D. A. Weissbein, S. M. Gully, & E. Salas, 1998, *Journal of Applied Psychology*, 83, p. 228. Copyright 1998, American Psychological Association.

Figure 1: Model Components for Learning Transfer

This research applied components from the model of learning transfer (Ford et al., 1998) to compare learning outcomes and transfer performance of students participating in a standard clinical experience and a simulation-enhanced clinical experience (i.e., a clinical experience augmented with a 7-hour simulated clinical day).

Individual Differences

Individual differences represent the goal orientation of the learner. Mastery-oriented learners are self-regulated in achievement of their learning goals. The focus of the mastery-oriented learner is to understand and to hone new skills. In contrast to mastery-oriented learners, performance-oriented learners are those who define their learning ability by outperforming others.

Goal orientation may have an impact on the achievement of learning outcomes. For example, Ford et al. (1998) found that when relationships were tested for the model, performance orientation had a negative relationship with self-efficacy. Coincidentally, mastery orientation was related positively to self-efficacy. The researchers suggested objects that encourage mastery goals (i.e., those which facilitate decision-making performance in a changing environment), be included in the training design.

Learning Strategies

Metacognition

Metacognition is the learner's understanding of his or her own level of knowledge and subsequent ability to modify the learner's own learning as needed. Said another way, it is the individual's ability to know what he or she knows and adjust as needed for a given circumstance (Ford et al., 1998). For this study, metacognitive abilities were

fostered through simulation and the debriefing period. The simulation experience was intended to facilitate individual and group reflection time to encourage the development of metacognition.

Identical Elements

Identical elements are those components of training that must be identical to produce transfer. It is the likeness of information processing—psychological fidelity—rather than physical fidelity (perfect representation of reality) that is most important. For this study, identical elements were presented in the simulation as were presented in the clinical experience.

Activity Level

Time spent practicing a task and repetition are important to task performance. Learners must be provided with a training environment that allows them to consider the information presented, develop a plan of action, and implement those actions. The activity level in the model was found to be related to final training performance and knowledge (Ford et al., 1998).

Because simulation offers greater control over the learning strategies than does traditional clinical exposure, there is theoretical support for using simulation as a mechanism for improving transfer of safety and communication skills as compared to traditional clinical practice. However, this theory has yet to be clearly demonstrated in the nursing literature. Based on the findings of Ford et al. (1998), this study was designed to compare the standard clinic practice with a simulation-enhanced clinical experience on measures of three learning outcomes: knowledge, self-efficacy, and transfer. It was hypothesized that students experiencing a simulation-enhanced clinical experience would

demonstrate better scores on measures of the learning outcomes and therefore be better equipped to transfer those skills to the clinical environment.

Learning Outcomes

Knowledge

Kraiger, Ford, and Salas (1993) identified three classifications of learning outcomes for cognitive knowledge: verbal knowledge, knowledge strategies, and cognitive strategies. The distinctions are related to the progressive nature of knowledge attainment. As learners progress to higher cognitive levels, learning should be evaluated on more than traditional posttesting strategies. All three outcomes can be used in evaluation of trainees but the level of the trainee should be considered in the selection of the evaluation method. Because nursing students are novice learners, the most sensitive measure of skill acquisition is verbal knowledge.

Skills/Behaviors

Declarative knowledge (information about what) learned in the classroom must first be translated to procedural knowledge (information about how). Learners acquire the knowledge to perform a task and then, through practice, are able to compile the skills to produce the desired training behavioral outcomes. Practice ultimately leads to more automated performance or *compilation*. The novice learner is slower in performance of training behaviors and more reliant on memory and rehearsal. Compilation is assumed to be achieved when learners are able to modify and generalize learned behaviors in a new task setting (Kraiger et al., 1993).

Self-efficacy

Kraiger et al. (1993) expanded on Gagné's (1985) definition of *attitude* as a learning outcome to include affective and motivational outcomes. They theorized affective outcomes can be changed as a result of training experiences. Consistent with the model of learning transfer, affective outcomes (attitudinal and motivational) are believed to be indicators that learning has occurred, not just prerequisites (representative of individual differences) for learning. In addition, they stated evaluations of learner reaction are indicators of the quality of the training's delivery, not a direct measure of individual learning. Thus, the argument "if they like it, they will learn" is not sufficient evidence to support training effectiveness.

For this study, self-efficacy was selected as the outcome for measurement.

Perceived self-efficacy is the judgment of the likelihood of success when presented with a possible scenario. Perception of self-efficacy has an impact on the behavior of students in that they will avoid behavior or skills they do not believe they can accomplish; if they do not believe they can be successful, they likely will not be successful. Those who do not believe in their own abilities doubt their competence, which can have an impact on performance. Students who have higher self-efficacy are more likely to demonstrate resolve in achieving success for a given skill or behavior (Bandura, 1980).

Changes in self-efficacy scores are believed to be an indicator of training effectiveness rather than a measure of an individual difference. Therefore, it should be measured pre- and posttraining. Kraiger et al. (1993) argued self-efficacy is a critical posttraining indicator that should be measured regardless of the formality of the outcome because perceptions of self-efficacy may be a factor in determining whether a student

applies acquired skills and posttraining measures of self-efficacy may predict long-term transfer.

Summary

This chapter presented a review of the literature for simulation use in nursing education and introduced the model of training transfer. The model was proposed as a mechanism to design, deliver, and evaluate the simulation-enhanced clinical experiences. Chapter 3 presents in detail the methodology, procedures, and instrumentation used for this study.

CHAPTER 3: METHODS

Design

A mixed-method approach was chosen for this study featuring a randomized cluster design to compare the differences between two groups of students: those who participated in a standard 45-hour clinical experience in obstetrics and those who participated in a simulation-enhanced clinical experience, on selected measures of knowledge and self-efficacy. A qualitative descriptive analysis of clinical evaluations for all students was conducted to explore common themes from the comments made by clinical instructors when evaluating students completing their obstetric clinical rotation. The study tested the effect of the intervention in field conditions. A diagrammatic overview of the study processes is presented in Figure 2.

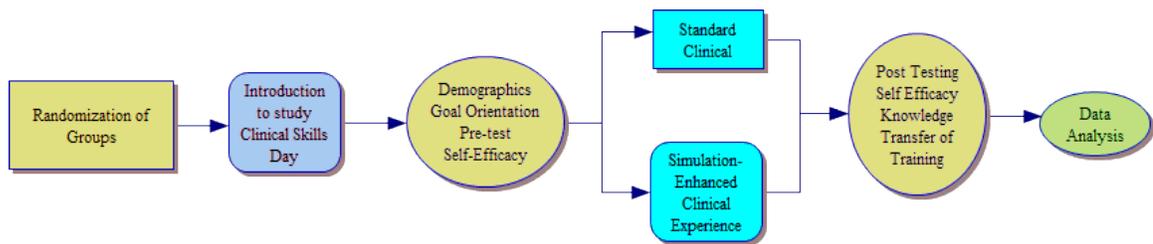


Figure 2: Diagrammatic Overview of Study Processes

Possible Extraneous Variables

Extraneous variables were controlled to the greatest extent possible. The simulation-enhanced clinical experience was a scripted activity and the same instructor facilitated the activity for all study participants. The study was conducted under field conditions within the context of the obstetric curriculum. It was possible that factors such

as clinical rotation week, other clinical experiences in adult health and/or pediatrics, and clinical instructor may have had an impact on student self-efficacy and transfer. As such, certain variables were considered for their effect on the main outcomes for the study.

Description of the Population and Sample

The Nursing Care of the Family course, NUR 3445, was used to derive the sample for this study. The demographic composition for the group is similar to what is seen nationally for students enrolled in traditional baccalaureate nursing programs (AACN, 2009). The mean age for the junior-level undergraduate nursing students was 21 years of age, 64% were Caucasian, and 10% were men (K. Scott, personal communication, October 13, 2009).

Inclusion/Exclusion Criteria

Planned Exclusions

Inclusion criteria for participants was delineated by their enrollment in NUR 3445 (N=123). All students were offered the opportunity to participate during their obstetric clinical skills day. Those who did not consent ($n = 2$) to participate were excluded. Additional exclusion criteria included those students assigned to the principal investigator (PI)'s clinical group ($n = 10$). These groups were not included in the sample to minimize contamination.

Unplanned Exclusions

Three individual students were excluded; one withdrew from the course and two failed prior to completing course requirements. Additional exclusions were based on clinical group membership. For example, one of the clinical groups began its obstetric

rotation late in the term and was assigned to a second clinical instructor so that the students' clinical hours could be completed. The second clinical instructor did not administer the posttest Obstetric Nursing Self-efficacy (ONSE) scale or complete clinical evaluations for this group ($n = 10$). Although an electronic version of the ONSE was made available to the students, only three students completed the electronic version. The seven students who did not complete the ONSE were excluded from analysis of posttest ONSE scores. Another clinical group was excluded because they were unable to complete the requisite clinical hours during the semester. The total sample for the study was $N=110$.

For the narrative analysis, 110 student evaluations were available. Evaluations were excluded if the instructor had made the identical comment for each member of the clinical group or the students were members of the group that was unable to complete clinical hours during the semester ($n = 37$). In addition, one faculty member did not complete the clinical evaluations ($n = 8$). See Figure 3.

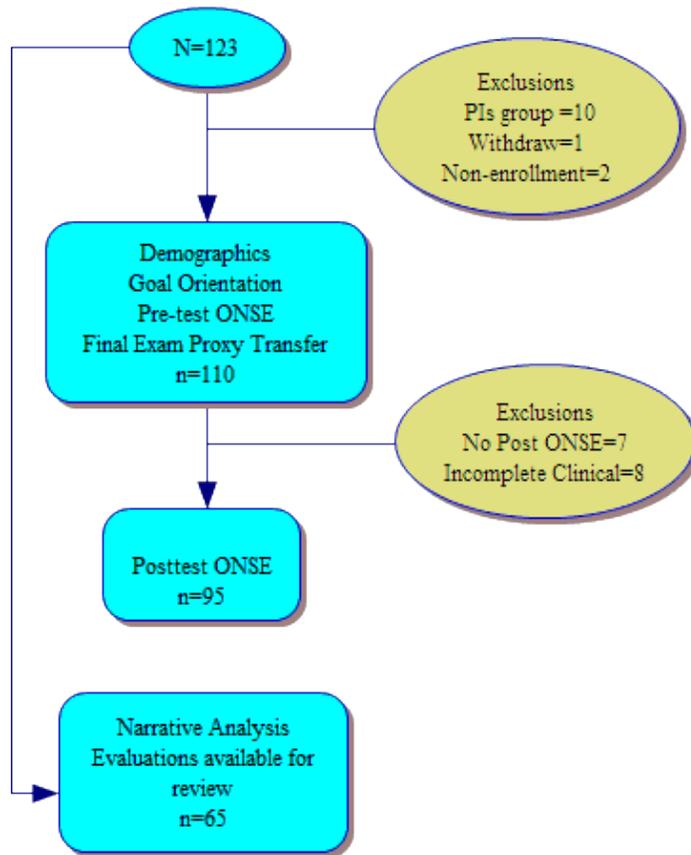


Figure 3: Enrollment

Sample Strategy

Randomization of groups to condition was performed by the dissertation committee chair, who was not directly involved in data collection. One group from each 45-hour obstetric cohort was randomly selected to serve as the simulation-enhanced group using a computer program ($n = 40$; groups 1, 4, 7, and 10). The remaining groups served as controls ($n = 70$). The randomization strategy is represented in Figure 4.

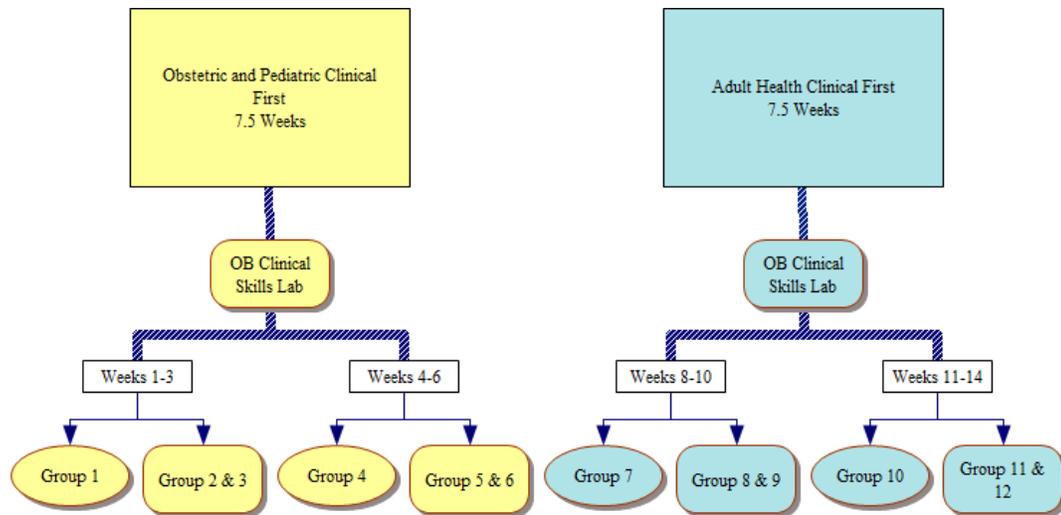


Figure 4: Randomization Strategy

Setting

The setting for the study was a large public university that offers undergraduate through doctoral education. The university is a large, 4-year university serving more than 53,000 students in a metropolitan area in the southeastern United States. The college of nursing offers graduate and undergraduate degrees in nursing. At the time the study was conducted, the undergraduate nursing population included approximately 400 students enrolled as generic and second-degree-seeking students (prelicensure).

The study was conducted within the obstetric clinical practice component of the Nursing Care of Families course (NUR 3445). Two components comprise the course: NUR 3445C and NUR 3445L. NUR 3445C is a 15-week (entire semester) didactic course covering both pediatric and obstetric content. The course is taught by two instructors who are experts in their respective fields (i.e., pediatrics and obstetrics). NUR 3445L is a 7-week clinical practice course that offers experiences in both pediatrics and obstetrics at either the first or second half of the semester. Within the 7-week rotation, students complete a 45-hour clinical rotation in obstetrical nursing.

The obstetrics rotation can occur at any point during the semester, meaning students scheduled for practice at the beginning of the term begin their rotation with little exposure to content, while students scheduled at the end have completed the majority of the didactic content. Clinical faculty members who serve as instructors of NUR 3445L hold a minimum of a master of nursing degree and have extensive clinical experience in obstetrics. Each clinical instructor is responsible for overseeing the learning experience of approximately 10 students per group in the clinical area. The typical student progression through the course is represented in Figure 5.

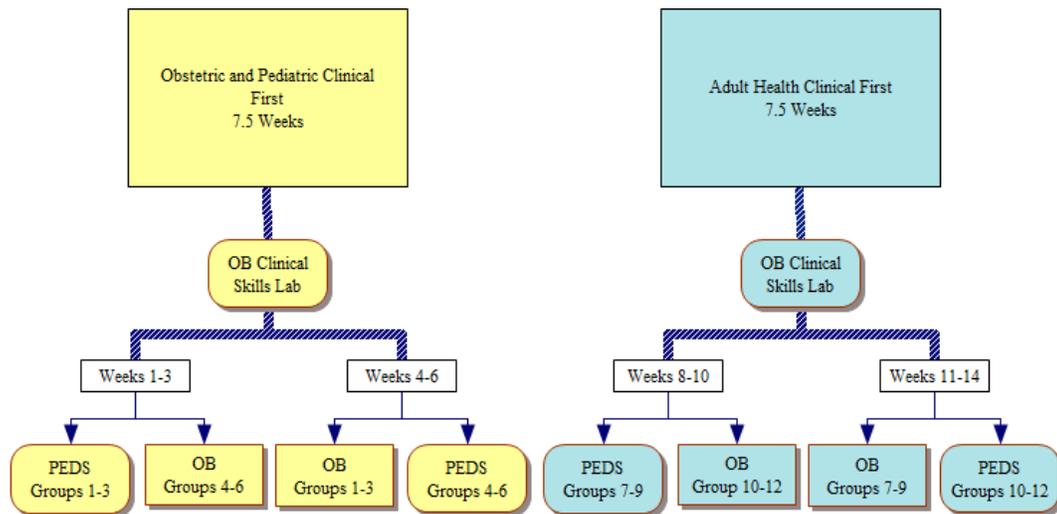


Figure 5: Typical Student Progression Through NUR 3445

Ethical Considerations

Approval

The study protocol was submitted to the Institutional Review Board at the University of Central Florida. Approval was received (see Appendix B). No changes occurred in the study protocol without the approval of the Institutional Review Board.

Protection of Human Participants

Participation in the study was voluntary; no students were coerced to participate. Participation or nonparticipation in the study in no way influenced the students' grades. All students were provided with an information sheet to read regarding the study on the clinical skills day. The PI was available to answer questions face-to-face concerning the study at that time or thereafter via telephone conversation. Completion of the demographic information sheet was considered as consent to participate (see Appendix C). There were no harms anticipated for the participants.

Potential Risks

No personal identification information was collected on any instrument. Prior to analysis, data were coded with a numeric identifier so that no individual's information could be identified by name. All coding with a study identifier was done by individuals not directly participating in the study to prevent the PI from knowing the identity of the individual student's results.

Potential Benefits

It was possible that those students participating in the simulated group would benefit from the simulation-enhanced experience. The benefit was expected to be improved ability to transfer safe and effective nursing care behaviors from the classroom to the clinical practice environment. In addition, all participants were expected to benefit from realizing they had contributed to research that provided data that may improve the strategies used in nursing education.

Confidentiality

To ensure confidentiality was maintained, response forms were coded by a research assistant so that no individual could be identified by his or her responses. For situations in which clinical instructors were asked to collect data, forms were collected and transported in a manila envelope provided by the PI. All of the forms and data storage devices containing participant data were stored in a locked box in the PI's office. After 3 years, all of the data forms and electronic files will be destroyed and/or deleted.

Measures

Measures of individual differences, knowledge, skills, and self-efficacy related to the safe care of the obstetric patient are described in the following sections of this chapter. Examples of the instruments are provided in Appendix C through Appendix G. An additional measure, the clinical evaluation form completed for each student by his or her group instructor, is provided in Appendix H. Permission to use various measures was obtained, as demonstrated in Appendix I. Informed consent was obtained, as demonstrated in Appendix J.

Demographics

The following demographic information was collected: gender, age, ethnicity, course grade, and semester week for beginning the obstetric clinical. Demographic items were collected when the student completed the ONSE instrument (see Appendix C). Demographic items were verified by a cross-check of class records.

Individual Differences

Individual differences were assessed for mastery and performance orientation because both of these constructs related to self-efficacy (Ford et al., 1998). The Goal Orientation scale (Button, Mathieu, & Zajac, 1996) is a two-dimensional instrument used to measure mastery and performance orientation (see also Appendix D). The tool has eight items for each scale. Sample items for the mastery scale are “I do my best when I’m working on a fairly difficult task” and “I try hard to improve on my past performance.” Sample items for the performance scale are “I like to be fairly confident that I can successfully perform a task before I attempt it” and “I like to work on tasks that I have done well on in the past.” A 6-point Likert-type scale was used to capture answers to the questions asked relative to mastery and to performance, with choices ranging from 6 = *Strongly agree* to 1 = *Strongly disagree*. Internal reliability coefficients for the instrument have been reported ranging from .79 to .85 for mastery and from .68 to .81 for performance (Button et al., 1996; Ford et al., 1998). For the present study, alpha was .84 for mastery and .85 for performance.

The Goal Orientation Scale can be used to create a categorical score. Responses to the mastery and performance orientation scales are summed. The category receiving the higher score is recorded as the student’s goal orientation: mastery or performance. If the score is tied, the goal orientation is recorded as no preference. Respondents were assigned to a category according to the category that had a higher score.

Learning Outcomes

Knowledge. The standard measure of students' knowledge is the multiple-choice examination. Ten questions were identified for comparison. The 10 multiple-choice questions covered content related to the safe and effective care of the obstetric patient and were designed to test the students' ability to meet the objectives of the course. Questions are presented in Appendix E. Knowledge was scored by summing the number of correct answers. Item discrimination scores for the question items in both the fall 2009 (range: .13-.37) and spring 2010 (range: .07-.39) semesters were acceptable.

Skills/behavior. A measurement of student skill when communicating information was taken using a modified Situation Background Assessment and Recommendation (SBAR) form (Dunsford, 2009; Edwards & Woodard, 2008). The SBAR form was developed as a tool to structure and standardize communication with the intent of creating a shared mental model among clinicians. Each section of the SBAR form covers the following area of communication: (a) description of what is happening and why the SBAR was initiated, (b) explanation of what led to the current situation and pertinent patient history, (c) current patient status supported by objective data, and (d) how the problem might or should be corrected or monitored (Haig et al., 2006). The SBAR form developed for this study was adapted from the SBAR communication forms by Dunsford (2009) and Edwards and Woodard (2008) (see also Appendix F). A proxy measure of transfer of learning was obtained by having all students complete an SBAR form on a case study provided at the end of the course. The proxy measure was scored for accuracy and completeness of the SBAR forms. These scores were compared between groups.

The rubric was a 4-point scale of percentage of pertinent information provided, with ranges from 1 to 4 (i.e., 1 = wrong or limited information, 2 = < 50% of pertinent information, 3 = > 50% of pertinent information, and 4 = 100% pertinent information provided). The section scores were combined for a maximum total score of 16 for the SBAR (see Appendix G).

Self-efficacy. Student perceptions of individual belief about their self-efficacy when caring for the obstetric patient were measured using the Obstetric Nursing Self-Efficacy (ONSE) (see Appendix C). The ONSE scale consists of 18 items with which students rate self-efficacy of their belief in their ability to perform specific behaviors related to obstetric nursing care. Items on the ONSE are classified into three areas: assessment, intervention, and communication. The rating scale has a range of five responses of certainty (4 = *Completely sure* to 0 = *Not at all sure*). A total self-efficacy score is calculated using the sum of the score for each of the three areas. For the present study, alpha was .96 for the pretest ONSE and .93 for the posttest.

Transfer. The clinical evaluation form was used to measure clinical performance with respect clinical skills and behaviors. This form is designed for a clinical instructor to use to evaluate students. Students are rated on their achievement of course objectives. For each criterion, students are assigned one of the following ratings: (a) satisfactory, (b) unsatisfactory, (c) needs improvement, or (d) not applicable. The clinical evaluation form also includes a section for open-ended comments by both faculty and students to complete, if desired. The narrative documentation by the instructors in the comments section was reviewed for themes of transfer. A sample evaluation form is provided in Appendix H.

Approval for Use of Instruments

The ONSE instrument and SBAR rubric were created by the PI for the purposes of this research. The author of the Goal Orientation scale for individual differences has stated the scale may be used freely. The author's statement offering free use of the scale is included in Appendix I.

Intervention and Procedures

Introduction to the Study

Students were informed about the study during their clinical orientation day. A brief review of the study questions, methods, clinical group assignment, potential benefits, description of the intervention, and overview of data collection instruments was provided at that time. A summary document was provided to all students. This document included a contact telephone number for the PI and students were encouraged to contact the PI if they had any follow-up questions. Informed consent (see Appendix J) was obtained when the summary document was provided.

Following the completion of the informed consent process, students were asked to complete the demographic data form, the pretest ONSE, and Goal Orientation scale. Students were instructed to record their responses on a scannable form and to use their college-provided unique identification on the form in lieu of their name. The forms were then sent to the university's testing services for scanning and scoring. A unique identifier was assigned to each participant (based on the PID for matching purposes) by the dissertation committee chair. Reports with all identification removed were returned to the PI for data input and analysis. Student identifiers and group assignments were not available to the PI during data analysis.

Simulation—Enhanced Clinical

Students in the simulated-enhanced clinical condition participated in a 7-hour simulated clinical experience. Two obstetric simulation scenarios were designed for the experience. The scenarios were reviewed by expert obstetric nursing faculty for accuracy and relevance. The first focused on intrapartum care, specifically induction of labor complicated by tachysystole (previously referred to as uterine hyperstimulation) and Group B *streptococcus*. The second, focused on care of the mother during the immediate postpartum period, specifically immediate postpartum care of the patient receiving magnesium sulfate. Storyboards for the scenarios are presented in Appendix K and Appendix L, respectively.

The learning strategies of metacognition, identical elements, and practice were embedded in the simulation scenarios. Students were given a basic overview of the expectations and objectives for the day 24 hours prior to the experience and were advised to prepare as they would for a clinical day. The scenario objectives were derived from the course objectives and the activity statements related to safe and effective care, published in the 2007 *NCLEX-RN® Detailed Test Plan* (National Council of State Boards of Nursing, 2007).

Students were divided into two subgroups (A and B) to allow for smaller group learning activities in each scenario. The two scenarios occurred at the same time under the supervision of the PI. Up to five students were assigned to each subgroup to participate in each scenario. Roles were randomly assigned at that time for each simulation as follows: team leader, direct care nurses (two students), and medication nurses (two students). Students were randomly assigned to a different role when they

switched scenarios. Prior to the simulation, students participated in a preconference activity (similar to that done in the clinical setting) to discuss basic plans and review clinical preparation.

Students spent approximately 120 minutes in each simulation scenario. At the conclusion of each patient scenario, each student was given approximately 20 minutes to develop a written SBAR report. Debriefing occurred immediately after the SBAR exercise, and 45 minutes was allotted for each experience for a total of 90 minutes of debriefing. The debriefing period is similar to the postconference experience after the conclusion a traditional clinical day. The schedule for this process is presented in Table 2.

Table 2
Simulated Clinical Day Schedule

Group	Preconference review of day, assignment of roles	Scenario:	SBAR	Break	Scenario:	SBAR	Lunch	Debrief
A		Tachysystole			Postpartum			
5 students	0700	0800	1000	1020	1030	1230	1250	1300
Group	Preconference review of day, assignment of roles	Scenario:	SBAR	Break	Scenario:	SBAR	Lunch	Debrief
B		Postpartum			Tachysystole			
5 students	0700	0800	1000	1020	1030	1230	1250	1300

Students completed two SBAR reports during the simulated clinical day, one after the completion of each of the two scenarios. The second and final SBAR report of the day represented final training performance. Both SBAR reports were turned in to the instructor at the completion of the clinical day.

Standard Clinical

Students participating in the standard clinical groups served as the control group. They received only the standard clinical practice experience. They received no exposure to the simulation experience.

Posttesting

Posttesting was conducted on four outcomes: self-efficacy, knowledge, skills, and transfer of training to the clinical environment. Both the simulation groups and the control groups participated in posttesting.

Knowledge

Ten items related to the safe and effective care of the obstetric patient were included on the 100-question course final examination. Students used the designated scannable form to record their answers for the final examination. Completed forms were sent to university's testing services for scoring. The research assistant transcribed each student's study identifier based on the PID. The de-identified file was returned to the PI who abstracted the 10 knowledge items used in the study for data entry into SPSS version 18 and data analysis.

Self-efficacy

Upon completion of the clinical rotation, the clinical instructor asked students to complete the posttest ONSE using scannable forms during the final postconference. Each instructor was provided with a manila envelope to collect the forms and return them to the PI. Forms were collected and forwarded to the university's testing services for scoring. The research assistant transcribed each student's study identifier based on the

PID. The de-identified file was then returned to the PI for data entry into SPSS version 18 and data analysis.

Transfer of Training

Direct Transfer

A copy of the student clinical evaluation form was obtained by the research assistant. The research assistant transcribed each student's unique identifier based on the PID. The de-identified file was then returned to the PI for data analysis.

Proxy Transfer

Students were asked to complete an SBAR form for an obstetric case study that was included in the final examination for the course. The case study was provided as the extra-credit portion of the exam and students were awarded 2-4 points for completing the SBAR, depending on their SBAR score. Adequate time was provided for completion of the case study, as evidenced by a 100% completion rate. The research assistant coded the SBAR forms based on the students' unique identifier matched to their university identification number. The PI reviewed scoring procedures with the research assistant prior to final scoring. The research assistant scored the SBAR forms using a standardized grading rubric (Appendix G). The de-identified file with the scores was returned to the PI for data analysis. Ten de-identified SBAR forms were randomly selected and scored by the PI to ensure reliability of scoring. The PI and research assistant scored the SBAR similarly. The case study is included in Appendix M.

Preliminary Study

The ONSE Instrument

The ONSE is a new instrument that was developed for this study. Because of the critical relationship reported by previous researchers (see, for example, Bandura, 1980; Etheridge, 2007; Kraiger et al., 1993) to exist between self-efficacy and behavior, it was important to design a valid and reliable instrument to measure self-efficacy. The instrument was developed by the PI and subjected to several rounds of review.

Subject Matter Expert Review

In the first round of preparation before administration of the ONSE instrument to students, six subject matter experts reviewed the scale for omissions and deletions. During the second round, a content validity index was calculated. Six experts rated each item for relevancy on a 4-item scale (1 = *Not relevant* to 4 = *Extremely relevant*). Item content validity was calculated for individual items. Four items were found to have low item content validity $< .78$, as recommended by Polit and Beck (2006) and Polit, Beck, and Owen (2007). Two low-scoring items related to intervening to reduce or stimulate the uterus scored .67.

The other items related to the area of communication. Two items from the communication section scored .67. The lowest scoring item, "Provide detailed assessment data when feeling rushed or stressed during consultation or handoffs," was scored as .50 and was dropped from the instrument. Items scoring .67 or above were retained because there was concern these items reflected the newest practices and all experts may not fully recognize the importance of the item. Once the item was dropped, the scale-content

validity average was calculated at .91. A scale-content validity index/average of .90 is considered to demonstrate excellent content validity (Polit et al., 2007).

Student Focus Groups

Two student focus groups were held to further refine the instrument. Fifteen students participated in the first round and provided feedback about the language, format, and readability of the instrument. Minor modifications were made to address the issues raised by participants in the first student focus group. A second focus group of three students reviewed the instrument to ensure issues identified by participants in the first focus group had been appropriately addressed.

Pilot Test

The instrument was pilot-tested during the fall semester 2009 to gather psychometric data and for final review and revision. The sample was derived from students enrolled in the Nursing Care of Families (NUR 3445L) course ($N = 60$). NUR 3445L is the clinical practice course that is corequisite to the Nursing Care of Families (3445C) theory course. Students enrolled in NUR 3445L have completed the Essentials in Nursing Practice (NUR 3755L) and Health Assessment (NUR 3065) courses. They are coenrolled in three other courses covering adult health theory/clinical, pathophysiology, and pharmacology. As part of NUR 3445L, clinical groups of 10 students complete one of three 45-hour obstetric clinical rotations offered over the 15-week term.

Approval from the university's Institutional Review Board was obtained to conduct the study (see Appendix B) and all students were oriented to the procedures for the study on the first day of the theory course. Upon completion of the 45-hour obstetric clinical rotation, an electronic mail message containing an imbedded Web link to the

ONSE (see Appendix C) was sent to all members of the clinical group via the online course management system. Consent to participate was assumed if the survey was completed. One week following distribution of the initial invitation to participate, a reminder electronic message containing the link to the survey was sent to each group via course-mail. An announcement was made in class reminding students to complete the survey and a third reminder message was sent to all students during the final week of the course prior to the posting of final exam grades.

The ONSE survey was constructed in Survey Monkey, which is a secure online survey generator that offers a password-protected environment in which survey data can be collected. Data were collected for each of the three clinical time periods at the online survey site and downloaded to the PI's computer for analysis. The three data files were merged, yielding a final sample ($n = 20$) of students.

ONSE Reliability Testing

A split-half reliability test was performed to assess the homogeneity of the scale. The split half was the appropriate test because there was no alternative form of the test and retesting of the same population was not done (Streiner & Norman, 2007). More importantly, the sample size was not adequate to provide a stable estimate of covariance for an alpha coefficient. As n decreases, the margin of error for alpha increases (Duhachek, Coughlan, & Iacobucci, 2005).

Because there were several ways to divide the scale, it was possible to calculate a range for reliability scores. Two rounds of random splits were calculated using the syntax function in SPSS version 18. In addition to the two rounds of random splits, one odd-even split was performed using the automated scale reliability function in SPSS. Split-

half reliability coefficients were calculated as .96, .96, and .85, respectively. The split-half reliability coefficients that were calculated exceeded the .70 threshold for reliability, as recommended by Nunnally (1978).

Knowledge Items

Ten items on the 100-question scale were designed to measure knowledge related to assessment, intervention, and communication skills. The scannable answer forms were scored by the university's Test Scoring Services department and a report containing student scores and item discrimination scores was generated. The item discrimination scores were used to analyze the knowledge items for the fall 2009 final exam.

A student's correct response on an item with a score of .3 or more correlated with a higher grade on the overall exam. Those items with correlations between -.3 and .3 may not correlate with the student's grade but did not necessarily need revision. Recommendations from test scoring stated that items below -.3 should be considered for revision (UCF Testing Scoring Services, n.d.). Item discrimination scores ranged from .13-.37 for seven of the 10 items.

During the pilot test, three items reflected unanimously correct responses. These three items were reviewed for clarity. After review of the items with another instructor, the items were retained because it was determined that cueing during the lecture by the PI may have occurred. To mitigate the possibility of answer cueing by the PI, a graduate student delivered the lecture content during the spring semester.

Simulation Clinical Scenarios

The simulated clinical day was pretested during the fall 2009 semester. The 11 students composing the PI's clinical group took part in the simulation. The schedule for the day (see Table 2) worked well. Students reported for clinical in uniform at 0700 and the preconference activity began. Upon completion of the preconference, two groups of five students each were formed. An oral SBAR report was provided by the PI to each group. The oral report served to model the intended performance outcome.

During the scenarios, students were permitted to consult their text and instructor; both resources were used by the students. Of note, students were found to refer to their text prior to consulting the faculty. The students took approximately 1.5-2 hours to complete the scenarios.

While completing the first SBAR report of the day, students were noted to still be working in their groups of five, despite the instruction to complete the written SBAR report individually. Upon reflection and consultation with the dissertation chair, the expectation of having the students work as individuals was determined to be unrealistic and the group process was deemed to offer the potential of a positive learning experience. Both SBAR reports completed by the students were retained for review.

In the original plan for the simulation, students were to give reports to the oncoming nursing team when the groups switched scenarios to experience making and receiving a handoff. In addition, the scenarios were to evolve and progress through scenario time. For example, the second group (Group B) of five students would have received the report on a laboring patient from a fellow student and the clinical course would have been altered by the actions of the first group. However, during the

simulation, the PI noted that students had varying levels of understanding of the scenario content. The PI determined consistency would be best served if the model SBAR report was delivered by the PI at the beginning of each scenario period and the scenario events were repeated identically for each group.

At the end of the day, the debriefing period served to clarify and redirect incorrect knowledge. The debriefing prompts were used and students actively engaged in the dialogue. Students were asked to provide input on the simulation experience. They responded positively, stating they enjoyed “having more time” to look things up and think. One student commented, “The second time is always easier.” As a group, they believed the simulation would help them to provide better care in clinical practice.

The PI’s clinical group used a standard SBAR report in clinical practice and in the simulation. Two issues were identified during the pretest. First, wording of the original SBAR form was awkward to use with students and provided too many cues for students as to what should be reported. The form was revised to address these shortcomings. Second, it became evident that the scoring rubric (see Appendix G) would be ineffective if the scorer did not know the clinical details of the patient. As a result, the proxy measure of transfer was proposed as a way to evaluate transfer of skills. All students were required to complete the proxy measure by using the revised SBAR form (see Appendix F) for a standardized case study presented on the final exam for the course.

Data Analysis

Initial analysis of the data focused on addressing the problem of missing data. Six missing item values were noted for the goal orientation instrument for five individuals (see Appendix D). These values were imputed using the mean values for other

individuals with similar grades and ethnicity. The data were screened for normality and ranges were established. Identification of non-normal distributions for the data and examination for potential outliers was conducted at this time.

Data Analysis Plan

3. The plan for data analysis addressing the research questions is presented in Table

Table 3
Plan for Data Analysis

Question	Independent Variable	Dependent Variable	Covariates	Analysis
Q 1: After adjusting for individual differences and pretest scores, is there a difference in the self-efficacy scores between students who participated in a simulation-enhanced clinical experience when compared to students who experienced the standard clinical experience?	Group	Self-efficacy ONSE score (sum of the scale)	Pretest, Goal orientation (0,1)	ANCOVA for goal orientation on ONSE post test scores
Q 2: Is there a difference in knowledge scores on posttest multiple-choice examinations for students who participated in a simulation-enhanced clinical experience when compared to students who experienced the standard clinical experience?	Group	Number of knowledge items answered correctly		<i>t</i> test (for independent sample)
Q 3: Is there a difference in the clinical accuracy and completion of SBAR form scores between students who participated in simulation-enhanced clinical experience when compared to students who experienced the standard clinical experience?	Group	SBAR rubric score (sum of the scale)		<i>t</i> test (for independent sample)
Q 4: What are the comments made by clinical instructors for obstetrics when evaluating clinical performance for undergraduate nursing students?				Qualitative content analysis.

Analysis of Qualitative Data

Because no quantitative instrument exists to directly measure transfer to the clinical environment, it was decided that the issue of transfer for this study might best be answered with the addition of a qualitative descriptive approach. It was reasonable to assume clinical faculty evaluations and comments could provide insight into whether and how students were transferring what was learned in the classroom to the patient in the clinical setting. Therefore, narrative analysis techniques explored the transfer of skills to the clinical environment as noted by the clinical instructor.

Written comments of students on course evaluations for NUR 3445L (see Appendix H) served as the data source. The method of analysis for the documents was narrative description, which uses the everyday language of the participants to describe an event. This qualitative method is particularly useful to answer questions related to participants' thoughts, feelings, or responses about an event (Sandelowski, 2000). Information related to participants' thoughts, feelings, and responses about an event was important because the qualitative analysis was used to explore the thoughts and responses of the clinical instructors regarding evidence of transfer in student clinical performance. If the themes of transfer could be found in the unstructured narrative, this information might be used as evidence that transfer does occur from the classroom to the clinical environment.

Process

Instructor comments from the course evaluations were de-identified and compiled into a Microsoft® Office Excel® spreadsheet. The comments were reviewed to begin to identify the emergence of themes. Key words, labels, and quotations were identified

within the spreadsheet and highlighted for later use and explication. Highlighter colors were assigned to particular themes and the themes were coded by colors; colors were then linked to the code. The codes were collapsed and merged into themes which led to the development of an outline to organize themes.

Themes were reviewed with a member of the dissertation committee who was an expert in qualitative research. The themes elaborated on characteristics that participants used to describe or define student performance in the clinical setting. Respondent comments were used in the theme outline to serve as exemplars for a particular characteristic. Finally, a narrative report was developed to support the conclusions from the analysis.

Limitations

Several potential limitations were identified. The structure of the course was a limitation. That is to say, students who had clinical practice rotations during the first half (weeks 1-8) of the semester may have been at a disadvantage regarding transfer to the clinical environment because they had not received the same amount of lecture time as compared to students who began clinical practice rotations in weeks 9-15. In addition, the second semester marks the beginning of Adult Health I clinical rotations; one half of the class began a 7.5-week obstetric or pediatric clinical rotation while the other half was assigned to a 7.5-week adult health rotation. Experience with adult health clinical, pediatric clinical, and lecture may have had an impact on the effect of the intervention for students who had their clinical experience in the second half of the semester. These experiential differences may have been reflected in their self-efficacy scores and possibly transfer to the clinical environment.

It is also possible that the qualities/characteristics of the clinical instructor may have had an impact on students' self-efficacy scores and transfer to the clinical environment. As individuals, the instructors had varied skill levels, experiences, personalities, and teaching styles. These variables are difficult to control; however, it was expected that random assignment of groups should have helped to mitigate this issue.

Summary

Chapter 3 detailed the methods, procedures, and instrumentation used to evaluate knowledge, skills, and attitudes of obstetric nursing students. A short discussion of expected limitations for the study was offered. Because no instrument was readily available to measure attitudes in this population, the ONSE instrument was developed for use in this study. Pretest procedures were presented and pilot data for the ONSE provided support as a valid and reliable instrument for this population. Psychometric properties for instruments used to measure goal orientation and knowledge were reviewed and considered acceptable for use in the study.

CHAPTER 4: RESULTS

Introduction

The purpose of this study was to compare the learning outcomes from two teaching strategies for clinical experiences in obstetrics: a traditional hospital-based clinical experience and a simulation-enhanced clinical experience. Data were collected from January 2010 through May 2010, with data analysis occurring immediately afterward. A demographic description of the sample and data analysis appropriate to the type and level for each research question is presented in this chapter.

Sample

Descriptive statistics were computed using demographic data. Demographic data were compared between groups to assess equivalence of the standard and simulation-enhanced groups.. A Chi square was calculated for demographic variables of ethnicity ($X^2 (4) = 5.886, p > .05$) and gender ($X^2 (1) = .693, p > .05$). No differences were found between the groups. An independent-samples *t* test was calculated to compare the groups for course grade and age. The mean age for the control group ($M = 21.2, SD = 2.3$) was not significantly different from that ($M = 21.0, SD = 2.1$) of the experimental group ($t (108) = .506, p > .05$). The mean course grade for the control group ($M = 86.31, SD = 3.92$) was not significantly different from the mean ($M = 85.83, SD = 4.61$) for the experimental group ($t (108) = .5906, p > .05$). Additional sample demographics and means are presented in Table 4.

Table 4
Sample Demographics & Key Study Variables

Sample population		Group		
		Standard	Simulation-enhanced	Total
Ethnicity	Black	4 (6%)	6 (15%)	10 (9%)
	White	45(64%)	24 (60%)	69 (63%)
	Asian	4 (6%)	5 (12.5%)	9 (8%)
	Hispanic	9 (13%)	2 (5%)	11 (10%)
	Undisclosed	8 (11%)	3 (7.5%)	11 (10%)
Total n		70 (100%)	40 (100%)	110 (100%)
Gender	Male	4 (6%)	4 (10%)	8 (7%)
	Female	66 (94%)	36 (90%)	102 (93%)
Total n		70 (100%)	40 (100%)	110 (100%)
Age	< 19 years	0	4 (10%)	4 (4%)
	20	28 (40%)	11 (28%)	39 (35%)
	21	27 (39%)	18 (45%)	45 (41%)
	22	11 (16%)	4 (10%)	15 (15%)
	> 24 years	4 (6%)	3 (7.5%)	7 (6%)
Total n		70 (100%)	40 (100%)	110 (100%)

Obstetric Nursing Self Efficacy Scores					
		Pretest	Posttest		
Group	Simulation-enhanced	47.40	63.80		
	Standard	51.12	64.55		
Total n		55	40	95 (100%)	
Goal Orientation	Mastery	50.86	62.67	21	
	Performance	45.78	63.17	59	
	No Preference	58.87	69.87	15	
Total n		55	40	95 (100%)	

Results to Study Question

Question 1

After adjusting for individual differences and pretest scores, is there a difference in the self-efficacy scores between students who participated in a simulation-enhanced clinical experience when compared to students who experienced the standard clinical experience?

Analysis of covariance (ANCOVA) was performed to determine the effect of the simulation-enhanced clinical experience on the ONSE posttest scores. The independent variable was group membership for treatment (simulation-enhanced) versus control (standard clinical experience). The covariates were the ONSE pretest scores group and goal orientation (mastery versus performance). Data were screened for outliers and assumptions for the test were verified. Dummy codes for goal orientation were created for the analysis. After adjustment for pretest scores and goal orientation, posttest test scores did not vary significantly. ANCOVA results are presented in Table 5.

Table 5
ANCOVA Summary Goal Orientation

Source	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	<i>n</i> ²
Corrected model	922.122 ^a	4	230.530	2.092	.088	.085
Intercept	19189.416	1	19189.416	174.175	.000	.659
Pre-ONSE sum	321.939	1	321.939	2.922	.091	.031
Goaldum1 ^b	297.727	1	297.727	2.702	.104	.029
Goaldum2 ^c	337.238	1	337.238	3.061	.084	.033
Group	.728	2	.728	.007	.935	.000
Error	9915.605	90	110.173			
Total	401367.000	95				

Note. ^a $R^2 = .044$. ^b Performance orientation (1) and others (0). ^c Mastery (1), others (0)

The results of the ANCOVA were inconsistent with the model of transfer because there was an expectation that there should be a main effect for treatment group (simulation-enhanced clinical, standard clinical) on ONSE posttest scores. The findings were reviewed with a member of the committee who had expertise in multivariate analysis. It was determined that a higher order interaction involving sequencing may have been confounding the effect of the intervention.

A 2 x 2 ANCOVA was performed to test for an interaction effect between group and sequencing (e.g., when students were assigned the clinical rotation). After adjustment for the covariate of ONSE pretest scores, ONSE posttest scores varied with sequencing (whether obstetric clinical was completed during first or second half of the semester), $F(1,90) = 4.120$, $p < .05$, partial $n^2 = .044$. A summary of the ANCOVA results is

presented in Table 6. A comparison of group means, as presented in Table 7, revealed that students who had obstetric clinical or simulation during the first half of the semester had higher scores on the posttest ONSE than those students who had this experience during the second half. However no significant interaction effect was observed for group and sequencing ($p=.12$).

Table 6
ANCOVA: Testing for Interaction between Group and Sequence

Source	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	<i>n</i> ²
Corrected model	1177.221 ^a	4	294.305	2.742	.033	.109
Pre-ONSE sum	903.771	1	903.771	8.420	.005	.086
Group	1.169	1	1.169	.011	.917	.000
Sequence	442.239	1	442.239	4.120	.045 ^b	.044
Group * Sequence	264.355	1	264.355	2.463	.120	.027
Error	9660.505	90	107.339			
Total	401367.000	95				

Note. ^a = Adjusted $R^2 = .069$. ^b = This covariate is also significant in the analysis reported in Table 5 when goal orientation was not included as covariates.

Table 7
Means for Self-Efficacy Posttest Scores as a Function of When Clinical Occurred

Sequence of Clinical Experience	Estimated Marginal Mean
First half	67.27
Second half	60.89

Question 2

Is there a difference in knowledge scores on a posttest multiple-choice examination for students who participated in a simulation-enhanced clinical experience when compared to students who participated in the standard clinical experience?

The *t* test is the appropriate test to compare an interval-level dependent variable on a dichotomous nominal-level independent variable. The assumptions for the test were randomization and a normal distribution for the dependent variable within the groups. In this case, the distribution was found to be non-normal with a skew of -1.15. After consultation with a committee member who had expertise in statistics, it was decided that the knowledge score variable should be recoded into a dichotomous variable for high and low scores. Scores were split at the median; a score of 9 or more was recoded as a high score while a score of 9 or less was recoded as a low score.

A Chi-square analysis was performed comparing the dichotomous knowledge score (high or low) for students who participated in a simulation-enhanced clinical experience with knowledge scores for students who participated in the standard clinical experience. It was hypothesized that there would be a difference on the knowledge scores between the groups. No significant deviation from the hypothesized values was found ($X^2(1) = 2.389, p > .05$).

Question 3

Is there a difference in the clinical accuracy and completion of situation-background-assessment-recommendation (SBAR) form scores (proxy measure) between students who participated in simulation-enhanced clinical experience and students who participated in the standard clinical experience?

The assumptions for the t test of randomization and normal distribution for the dependent variable within the groups were met. An independent-samples t test was calculated comparing the mean clinical accuracy and completion SBAR form scores (proxy measure) for students who participated in a simulation-enhanced clinical experience when compared to students who participated in the standard clinical experience without simulation exposure. No significant difference was found ($t(108) = -.907, p > .05$). The mean proxy measure score for the simulation-enhanced group ($M = 10.49, SD = 2.263$) was not significantly different from the mean of those participating in the clinical experience ($M = 10.90, SD = 2.373$).

Question 4

What are the comments made by clinical instructors in obstetric when evaluating clinical performance for undergraduate nursing students?

A qualitative descriptive analysis of the open-ended comments written by the clinical instructors (see Appendix H) was performed. The comments sections of the clinical evaluation were consolidated into a Microsoft® Office Excel® spreadsheet and a preliminary review of the comments was completed. A review of the key words, labels and quotations revealed themes commonly noted by the clinical instructors to describe clinical behaviors exhibited by students. Themes were coded and developed into an outline which was used to organize and present the findings of the analysis.

During the initial review, it became obvious that each instructor applied an idiosyncratic approach and unique terminology to the narrative evaluation of individual students. In addition, they placed emphasis on different skills and student attributes. For example, Instructor A used one of two identical phrases to describe students in each of

her clinical groups: “provided appropriate & caring healthcare to OB pts.” or “excellent attitude & behaviors for gaining knowledge in OB.” This instructor’s comments were excluded from the analysis because identical statements added little value to the analysis. The remainder of the instructors individualized their comments to the particular student.

A qualitative descriptive approach was used to analyze the data from the remaining instructors ($n = 4$). The themes produced from the narrative comments, which were coded as follows: knowledge acquisition, skill proficiency, attitudes, helpfulness, and professional role attributes. Comments related to attitude and skill acquisition were most prevalent. Instructors also frequently commented on helpfulness and knowledge acquisition.

Attitude

Some aspect of student attitude was described by every instructor. Student attitude seemed to be referred to as either a positive personality trait or as commentary on the instructor’s perception of student confidence. That is, some instructors described students as “eager to learn,” “enthusiastic about seeking unique learning opportunities to enhance her Ob [sic] knowledge,” or “enthusiasm in each area of the clinical experience.” Other comments, such as “a self-directed learner, aware of her strengths and limitations and actively pursues new learning opportunities,” and “a very serious student & an independent learner in the unit,” seemed to reflect how confident the student appeared to be in the eyes of the instructor.

Skill Proficiency

Only one instructor (Instructor B) commented on performance of specific psychomotor skills, although the instructor did so for every student ($n = 40$). Descriptions

pertaining to skill proficiency frequently began with “able to.” For example, “able to assess a newborn and new mother with assistance” or “able to administer medications safely on the unit.”

Knowledge Acquisition

Three of the four instructors described students as “knowledgeable about” or rated students on their level of knowledge. Instructor C used “performed with knowledge of expected behaviors” as a transition to the statement related to how a particular student met course objectives. The majority of comments from the remaining instructors contained examples such as “is very knowledgeable about nursing” or “perception and knowledge of concepts and care priorities were exceptional.” In rare instances, comments were more specific, like “pull prior knowledge about situations or problems to help her recognize new solutions and interventions.”

Helpfulness

Themes related to helpfulness were also noted by instructors. This insight was expressed in phrases such as “helping,” “being helpful,” or “willing to assist.” Themes of collaboration were included in this category because they seemed closely related to the concept of helpfulness, such as “listens well, as well as collaborates with others when needed” or “collaborate with others to get problems solved,” were directed at a reaching a common goal or problem solving.

Professional Role Attributes

Punctuality, pre- and postconference contributions, preparation, and assignments were noted as themes in varying degrees by all instructors. Comments such as “submitted all assignments for clinical” were categorized as instructor-driven, while comments such

as “has shown evidence of good quality preparation for clinical each week” or “is consistently punctual and prepared for clinical experience, and actively contributes to pre- and postconference discussions” were categorized as being related to professional role attributes.

Summary

The results of data analyzed for this study were presented in this chapter. Results for the ANCOVA were unexpected and an alternative analysis was proposed, calculated, and data presented. Data for the proxy transfer score was not normal; the data was recoded and a X^2 analysis was computed. A t test was calculated and presented to answer Question 3. Finally, a summary of the narrative analysis was performed and presented for the open-ended comments written by clinical instructors on the clinical evaluations for students who participated in the study.

CHAPTER 5: DISCUSSION

Findings

Question 1: Self-efficacy

A measure of individual differences for goal orientation was proposed as a covariate for this study, based on the findings of Ford et al. (1998). According to the model by Ford et al., it was expected that a mastery orientation would be positively related to self-efficacy scores and performance orientation would be related to a lower score. These relationships were not consistently supported by the results in the current study. An additional Chi-square analysis was calculated to determine if the groups differed for goal orientation. No difference was found among the groups ($X^2(2) = .182, p > .05$).

The majority of students for this study indicated a predilection for performance orientation ($n = 59$); 15 students (16%) had identical scores on each scale. Button et al. (1996) acknowledged that it is possible for some individuals to exhibit equivalent high or low scores on both dimensions, but did not comment on the ramifications of this occurrence. Some nursing students might be equally inclined to both perform well on and master a task.

The results of the analysis of covariance that was proposed produced unexpected findings. According to the model by Ford et al. (1998), it was predicted that goal orientation would have an effect on self-efficacy scores. However, there was no significant effect for goal orientation on self-efficacy scores for this study's population.

The model also predicted that the inclusion of metacognitive learning strategies in training positively impacts self-efficacy independent of goal orientation. The findings from this analysis are difficult to interpret because students participating in this study also completed a simulation for their Adult Health 1 course and may have completed a clinical rotation for their pediatric or Adult Health 1 course. It may be that participation in these activities fostered the development of metacognitive thinking, self-efficacy, or both.

Sequencing

After consulting with a committee member who had expertise in statistics, it was proposed that a higher order interaction for time sequencing (i.e., whether obstetric clinical was completed in the first or second half of the semester) might be confounding the effect of the intervention. However, there was no significant interaction between sequencing and treatment group. This argues against the lack of effect for the intervention being due to differences in sequencing occurring between the study groups.

Sequencing appeared to have a negative effect on self-efficacy scores for students who participated in obstetric clinical during the second half of the semester. However, students were not found to differ on course grade or on knowledge scores, leaving room to speculate that something was different in the clinical environment. It is possible that the clinical experience may not have been the same during the obstetric clinical in the second half of the semester. When the clinical schedule was considered, it was noted that alterations in the clinical schedule (i.e., alternative assignments, longer days, or day swaps) were made by instructors to accommodate instructor needs. Given the variety in the narrative evaluations by the instructors, these alterations are a plausible explanation worthy of further investigation.

Self-efficacy is an important outcome for this study because high self-efficacy ratings improve the likelihood for transfer of training behaviors. In this study, no difference was found on posttest ONSE scores between the control and experimental groups, and both groups had relatively high/low self-efficacy levels. The lack of group differences in self-efficacy is at odds with some previous research in this area. For example, researchers who substituted simulation instead of classroom lecture for medical surgical content were able to demonstrate improved self-efficacy scores for students who participated in the simulation group when compared to students who participated in standard lecture teaching methods (Jeffries & Rizzolo, 2006, Sinclair & Ferguson, 2009).

What made this study different was that the comparison was a standard clinical day. Few studies have been conducted that compared outcomes of simulation against those of a more typical clinical rotation. Past research has found that simulation experiences may modestly improve self-efficacy scores or show no difference. For example, Blum, Borglund, and Parcels (2010) found no difference in self-confidence scores for entry-level medical surgical students who participated in simulation when compared to those who received the standard clinical experience without simulation. However, Hicks et al. (2009) documented small but statistically significant improvements in self-confidence (i.e. self-efficacy) scores among students participating in a simulated medical surgical clinical (.34), standard clinical (.15), and a 15% combination simulation/clinical (.36). Madorin and Iwasiw (1999) found immediate improvement in self-efficacy scores for students exposed to the computerized simulation but, upon completion of the entire clinical rotation, mean scores were not significantly different from those who participated in a standard clinical rotation. The findings from the current

study add to growing support for substituting at least for some portion of clinical hours with simulation without having a negative impact on self-efficacy.

Question 2: Knowledge

There was no difference in posttest-only knowledge scores for students participating in a standard hospital-based clinical experience and those who completed a simulation-enhanced clinical experience. Many students in both the simulation and standard clinical group scored in the high and low test score groups. Items were related to assessment, intervention, and communication, which were skills facilitated during the simulation. However, all students were expected to learn the material presented in the course lecture. All students had the opportunity to study the material covered on the examination, which likely had an impact on the results. Alternatively, it may be the case that the knowledge items were not sufficiently discriminating to accurately detect a difference between the groups.

The current study's findings support that knowledge outcomes are the same for clinical and simulation. In this case, 15% of the clinical experience was substituted with simulation hours; it is possible that additional simulation hours may have resulted in improved knowledge scores but this assertion requires further research. Outcomes for both groups were the same, which supports simulation as a comparable substitute for at least 15% of clinical hours without differences in knowledge level.

Other researchers have reached similar conclusions, in that knowledge scores were not different for groups participating in simulation as compared with those whose instruction included an alternative strategy (Hicks et al., 2009; Jeffries & Rizzolo, 2007; Kardong-Edgren et al., 2009; Scherer, Bruce, & Runkawatt, 2007). In contrast, some

researchers have reported higher knowledge scores among students who participated in simulated experience when compared to those who participated in case studies or some other learning strategy (Brannan et al., 2008; Howard, 2007; Linden, 2008). The comparison group learning strategy is important to note because, of these studies, only Hicks et al. (2009) compared a simulated experience with a clinical experience. Interestingly, although Hicks et al. (2009) found no statistical difference for the groups in their study, all groups demonstrated decreased knowledge scores from pre- to posttest.

Question 3: Transfer of Skills

The acquisition of skills is generally measured by observation via an objective structured clinical examination or a clinical checklist. For nursing-related studies that used an observed simulated clinical examination, no clear benefit for one strategy over the other (clinical versus simulation) has been established (Alinier et al., 2006; Hicks et al., 2009). Clinical checklists like the one used at the study's setting are linked to specific program outcomes, which makes the data difficult to generalize to other institutions. More general measures such as, the Lasater Clinical Judgment Rubric measure clinical competence in clinical decision making (Lasater, 2007) have produced mixed findings when traditional clinical groups were compared with simulation groups (Blum et al., 2010; Dillard et al., 2009).

This study was the first attempt to measure skill transfer using a proxy measure (the SBAR form). The intent of the proxy score was to measure the student's ability to assess a patient situation and comprehensively communicate that information in writing using an SBAR form. The SBAR form included some cueing information which may have affected the results. For example, the form provided specific instructions for each

section such as “give the clinical context—as much information as required to clearly and quickly set up for the assessment data.” All students were required to use the SBAR at the midterm during a mandatory simulated learning experience that occurred in their Adult Health clinical course. This previous experience may have affected their performance on the final measure. No differences in the mean scores of the clinical accuracy and the completion SBAR form were noted for students participating in a standard hospital-based clinical experience and those who completed a simulation-enhanced clinical experience. It may be that better methods are needed to evaluate clinical skills or that there truly is little difference in the method used to teach clinical skills.

Question 4: Analysis of Qualitative Data

Transfer of training is the ability of the student to successfully apply what has been learned to a more complex real world environment. Knowledge acquisition appeared to be an important theme to address for at least three of the four instructors (instructors C, D, and E). However, only Instructor B routinely addressed assessment and medication skills in the narrative comments. There were also comments related to student confidence as perceived by the instructors, although those comments appeared to be related to confidence that the student exhibited as a learner.

The focus of the analysis was to find evidence of transfer of knowledge, skills, and attitudes to clinical practice. Instructors commented on the concept of transfer of training in varying degrees. Some comments related to transfer were used by instructors to routinely describe students who achieved satisfactory clinical performance. For example, Instructor D commented, “[the student] adapts well to unfamiliar situations and

seeks clarification of unusual events.” In contrast, Instructor E used a similar phrase, “pull prior knowledge about situations or problems to help her recognize new solutions and interventions,” to describe an exceptional student’s performance.

Instructor comments were found to be idiosyncratic with regard to what clinical behaviors were valued and commented upon. However, there were no standards or directions on what is or should be included in the narrative section of the evaluation. The comments appeared at the end of a multipage checklist that addressed program and course-specific outcomes. There may have been a tendency to assume that if a student has achieved success on these outcomes, little more is needed in the narrative unless student performance falls outside the expectations of the instructor. For example, comments were particularly detailed when describing students as above average or those performing poorly. For example, Instructor B described a student as follows:

able to remove staples on a post-op C/section—administered IM injection on a baby—assisted in laboring patient—assessed a newborn & new postpartum mother—able to “coach” a laboring mother. Has been a pleasure to have as a student in OB.

Negative comments were heavily influenced by the themes most often described by the particular instructor: “counseled on administrating [*sic*]. . . NS [normal saline] into a epidural catheter. Student has been safe on the unit since midterm problem—able to remove staples from a C-section wound.”

Overall, the terms that related to transfer—self-efficacy, knowledge acquisition, and skill proficiency—were present in the narratives but there was no consistent pattern for how these were applied to a particular student. The presence of these types of comments was encouraging but difficult to interpret because of the broad range of focus associated with the various meanings for each instructor. It is important to note that

elements of communication and helpfulness or collaboration are critical behaviors necessary to deliver safe and effective obstetric nursing care.

Very little research was found that addressed precise criteria used by clinical instructors to evaluate and document clinical student outcomes.. That which was available suggested that some aspect of clinical teaching unique to a particular instructor may affect student outcomes (Hickey, 2010; Tanda & Denham, 2009). It may be that comments noted in this study reflect characteristics valued by a particular instructor, which may have some bearing on what is reinforced in clinical practice. This distinction is important to understand because for this program, sequencing was related to self-efficacy scores. If differences in teaching strategies among instructors affect self-efficacy scores, it is important to further examine these variations.

Limitations

The challenge for research in an educational setting is to control extraneous variables. To the greatest extent possible, study noise was planned for and controlled. However, it was not possible to anticipate all intervening issues encountered in this study. For example, it was impossible to predict the unplanned absence of an experienced clinical instructor. This absence, coupled with an unexpected increase in the number of students enrolled in the course, necessitated adding of two new instructors who were unfamiliar with the clinical setting. In addition, some clinical faculty modified schedules and assignments to meet clinical hour requirements. It is difficult to determine what effect, if any, these issues may have had on the learning outcomes in the study. However, because the data analysis found a decrease in self-efficacy scores related to sequencing, it

is reasonable to speculate that one or some combination all of these issues may have been responsible for or at least contributed to the decline.

The instrument adopted for this study to assess goal attainment was developed to assess psychology students and may not have been appropriate for nursing students. It was expected that students would fit into one of two goal orientations: mastery or performance. In this study, some student scores were equivalent on both dimensions, a result which did not allow fully dichotomous grouping. Because dichotomous grouping could not be performed for all participants, a third combination group had to be created to represent students who had equivalent scores on both dimensions. Perrot, Deloney, Hastings, Savell, and Savidge (2001) suggested that students in health professions may change their orientation as they progressed through their programs. They also suggested that a scale with at least one additional dimension is required to adequately assess goal orientation for health care students. If this is the case, a different instrument may be required to capture goal orientation differences for nursing students.

It is important to have an adequate sample size to increase power and reduce the possibility of a Type II error, but this option may not always be feasible. The sample for this study was limited by the number of students enrolled in the course. In addition, there was a paucity of available research to use for an estimate in assessing sample size. As a result, an a priori power analysis was not calculated. For the t test calculated on the proxy measure in this study, the effect size was small ($d = .18$). To detect this difference, assuming a standard power of .80, the sample size would need to be 972 (Soper, n.d.). In the event of an effect size this small, the question of practical significance must be

considered; if such a large sample was recruited, does a small increase in the proxy score represent sufficient evidence to support one method over another?

ANCOVA was used to improve the power of the study; the advantage of the ANCOVA is that it can be used to decrease error variance by factoring out the effect of a known covariate. For ANCOVA to be useful, the measure for the covariate should be valid and reliable for the intended population. In this study, goal orientation was predicted to affect self-efficacy scores. That was not found to be the case for this population of students. It is possible that the goal orientation scale was not the appropriate instrument for nursing students, or it could be that there was not variance in self-efficacy for this group of students based on goal orientation. Also, there was an unexpected effect on the scores caused by sequencing of the clinical experience. The sample size precluded analysis beyond that of splitting the groups into first and second half; it may have been useful to further analyze the data by week or instructor.

Conclusions

This study did not detect statistical differences between groups of students receiving standard clinical experiences and simulation-enhanced clinical experience. It is possible that the model on which this study was based does not differentiate between simulation-enhanced clinical experience and standard clinical experience. The model for learning transfer is predicated on links between learning strategies: metacognition, identical elements, and activity level in support of learning outcomes, which predict transfer. Upon reflection, metacognitive strategies and activity level are embedded within the standard clinical experience.

In both the clinical and simulation settings, psychological fidelity (identical elements) was assumed to be achieved. If this was the case, then it is acceptable that the outcomes for students would be similar. It was hypothesized that the simulation-enhanced clinical allowed more control over the strategies and therefore might represent a superior method of teaching clinical practice, but that hypothesis was not proven true in this study. However, a 7-hour simulated clinical experience may not have been sufficient to take advantage of the benefit of controlling these strategies.

If outcomes for clinical practice and simulation are similar, as was the case in this study, then the decision to use one strategy or the other should be based on an assessment of advantages of each method. Simulation offers the ability to tailor learning activities to meet specific objectives. Objectives can be closely matched to those of the course. The question then becomes one of cost versus benefit. Simulation is labor intensive; a well-designed and executed simulation takes hours to plan and set up, and requires additional personnel to deliver.

For this study, 16-20 hours was allocated to simulation design and 2-4 hours of set-up was needed prior to each simulation day. The PI acted as both facilitator and computer operator; however, this is not optimum practice. Future simulations should include an additional staff member to operate the mannequins. The Gaumard Scientific Company NOELLE® mannequin can range in price from \$3995 for a basic model to \$21,995 for a high-fidelity model (Gaumard, 2010). In comparison, the standard clinical practice requires only one faculty member, no additional equipment, and although preparation varies, it is generally minimal.

Does simulation offer sufficient benefit to outweigh these costs? Schiavenato (2009) suggested that the “why simulation?” is the real question. He argued that nursing has lacked a theoretical imperative to guide the use of simulation and that safety may be an appropriate ideology to guide and select simulated activities.

For obstetrics, training in safety and communication skills is critical when considering outcomes for the mother and fetus. The clinical experience is limited in many ways, first because of the litigious nature of the specialty and second because of the shrinking number of available clinical practice sites. Raines (2010) argued the benefits of a fully simulated clinical rotation would outweigh the cost because the outcomes for safe and effective obstetric care can be met without relying on clinical experiences that may or may not meet clinical objectives. The standard clinical rotation offers no opportunity to practice common interventions, such as titrating oxytocin infusions or intervening in the event of an obstetric emergency. A simulated experience may be superior to the standard clinical rotation because student nurses are not permitted to practice the interventions necessary to maintain safety in obstetrics; students in simulation are permitted to do rather than merely observe.

Implications

College of Nursing

For the College of Nursing, the findings of this study have program evaluation implications. The decrease in self-efficacy scores of students for the second half of the semester is concerning. Although it is difficult to determine reasons for the decrease (which may also be due to chance), it is important to consider that something about the clinical rotation was different during the second half of the semester. It may be that it was an isolated occurrence related to scheduling of instructors. The narrative analysis of qualitative data suggests that instructor's idiosyncrasies may value and reinforce certain clinical behaviors in students. The difference in self-efficacy scores and narrative analysis merit further investigation in future semesters.

Nursing Education

If nursing educators are to adopt simulation experiences for obstetric courses, there will be a need to change to the current model of implementing clinical practice. This change may require a pedagogical shift that some educators may not be inclined to adopt. Findings from studies like this one could be used to support the use of a strategy that can provide students with a practice environment in which clinical experiences are controlled and consistently reinforce safe and effective care of the obstetric patient. It also may be that for programs in which the challenges of clinical space and time are not an issue, such a drastic change may not be necessary. This study suggests it is important to ensure that clinical outcomes for safe and effective obstetric care are reinforced consistently by all clinical instructors regardless of the method of the clinical practice experience.

If a simulated obstetric clinical is attempted, a substantive knowledge of simulation techniques and subject matter expertise will be required on the part of the instructor to deliver quality simulations. There will be a need to retrain clinical faculty and staff using evidence-based methods for effectively teaching using simulation, and continual reevaluation of ongoing research in the field. This situation presents an opportunity to level the baseline knowledge of all faculty so that obstetric content will be consistent and the process of debriefing standardized.

Health Care Policy

The current focus of nursing simulation is on the equipment that is used for such experiences. Although usable and functional equipment is important, this does not mitigate the value of well-prepared faculty. It is important to advise funders of nursing education that the cost for equipment that does not outweigh the need for knowledgeable and skilled professionals. The true cost of simulation is the time and effort invested by the faculty committed to its successfully meeting the clinical objectives for a particular course.

Theory

This study used Ford et al.'s 1998 model for transfer of training to guide the design, implementation, and evaluation of simulated clinical experiences. This comprehensive model is inclusive of pre-training factors and an important post-training outcome—transfer of training to the clinical environment. Specifically, there is consideration for the effect of pre-training individual differences among students on

learning outcomes and an examination of links between learning outcomes and transfer into clinical practice.

Although the findings from this study did not demonstrate a clear relationship for individual differences and self-efficacy, previous studies suggest that there may be a correlation between the two. Further investigation may help educators to understand individual differences particular to nursing students and how those differences can be leveraged or modified to improve training outcomes for nursing students. In addition, because specific learning strategies embedded in the model, such as metacognition, have been positively linked to knowledge, training performance and self-efficacy, use of the model should be encouraged to improve outcomes in the clinical environment.

Recommendations

The literature review for this study identified several gaps in the research. A limited number of valid instruments to measure simulation outcomes was noted to be among these gaps. The self-efficacy instrument developed for this study demonstrated good reliability data for this population, but further psychometric testing of the ONSE instrument is needed to determine if it is reliable and valid in other student populations. The ONSE was designed to measure self-efficacy ratings for the beginning obstetric practitioner and should not be limited to the evaluation of simulated experiences. In addition, it was not intended for exclusive use with student populations. Psychometric testing with new graduates who are orienting to obstetric specialties is needed to validate the instrument's use in these populations.

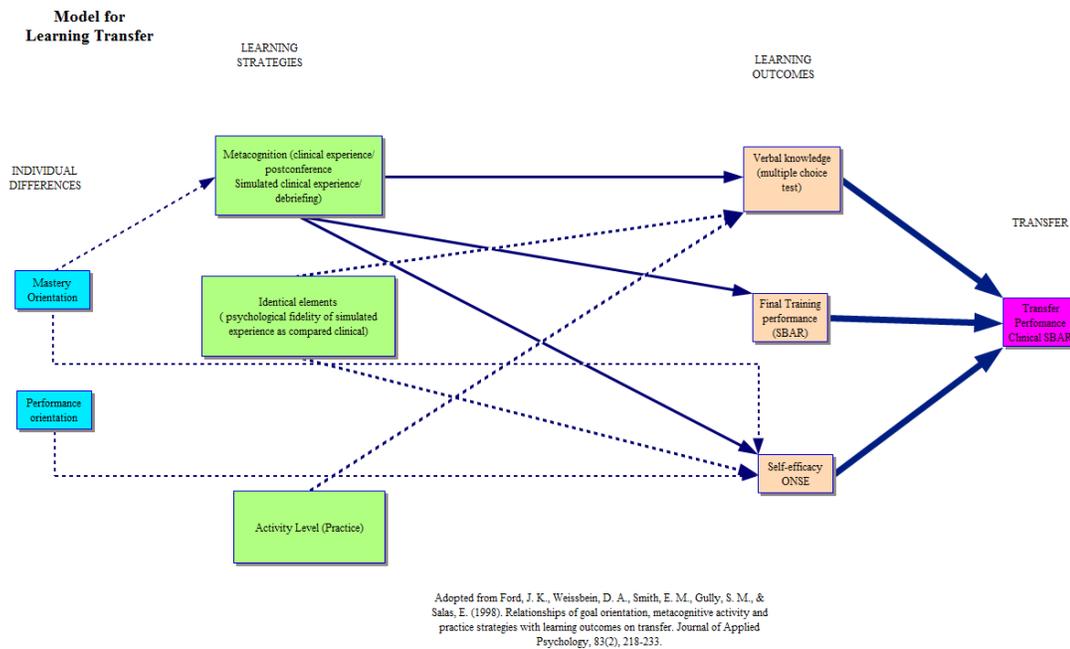
Additional research is important to further refine simulation practices if educators are to adopt simulation experiences as a part of clinical education. Future studies should

focus on comparing groups who have experienced a fully simulated obstetric rotation. If this study were replicated, a fully simulated group would be added for comparison. Also the goal orientation tool used in this study should be modified or another more sensitive to instrument for students should be located. In addition, a consistent and reliable method for assessing transfer has yet to be developed. It may be that a focused interview with faculty and students would be beneficial to support the assumption that transfer has occurred.

Brief Summary

In summary, this study was intended to evaluate the effects of a simulation-enhanced clinical experience on learning outcomes for knowledge, self-efficacy, and transfer of training. Findings suggest that there is little difference in outcomes among students who participated in the simulated-enhanced clinical when compared to outcomes for students who participated in the standard clinical experience. The findings support the literature which describes nursing education programs that have increased simulation in their curriculum. Research implications are for further psychometric testing on the ONSE instrument and revision of the research methods used if the study is replicated.

APPENDIX A: MODEL OF LEARNING TRANSFER



Note. Adapted from “Relationships of Goal Orientation, Metacognitive Activity and Practice Strategies with Learning Outcomes on Transfer,” by J. K. Ford, E. M. Smith, D. A. Weissbein, S. M. Gully, & E. Salas, 1998, *Journal of Applied Psychology*, 83, p. 228. Copyright 1998, American Psychological Association.

Figure 6: Model of Learning Transfer

APPENDIX B: IRB APPROVAL



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: UCF Institutional Review Board #1
FWA00000351, IRB00001138
To: Mary Elizabeth Guimond
Date: December 23, 2009

Dear Researcher:

On 12/23/2009, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: Exempt Determination
Project Title: Evaluation of a Simulation-Enhanced Obstetric Clinical
Experience on Learning Outcomes for Knowledge, Self-efficacy,
and Transfer
Investigator: Mary Elizabeth Guimond
IRB Number: SBE-09-06647
Funding Agency:
Grant Title:
Research ID: n/a

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in IRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Joseph Bielitzki, DVM, UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 12/23/2009 08:17:15 AM EST

IRB Coordinator

**APPENDIX C: SURVEY FOR OBSTETRIC CLINICAL PROGRAM
EVALUATION**

Survey for Obstetric Clinical Program Evaluation

Demographic Information

There are three pages to this survey. You will write on this one only. For the remainder of the survey, please use your Scantron sheet.

PID: _____

Age: _____

Gender: _____

Once you have completed this page, please bubble in your PID on your Scantron and complete the remainder of the survey.

Obstetric Nursing Self-efficacy

Please rate your level of obstetric nursing care self-efficacy. Self-efficacy is the belief you have in your ability to perform specific behaviors in an obstetric setting. Use the scale below to bubble your answers to the questions (1-18) on your Scantron form.

A = Not sure at all

B = Slightly sure

C = Moderately sure

D = Very sure

E = Completely sure

How sure are you that you can

1. Obtain an obstetric history?
2. Recognize critical elements of an obstetric history?
3. Perform a comprehensive obstetric assessment?
4. Identify signs of fetal well-being (or status) on a fetal heart monitor tracing?
5. Recognize changes in maternal vital signs that require intervention (hypo/hypertension, fever, tachycardia)?
6. Recognize changes in maternal physical assessment that require intervention (edema, reflexes, epigastric distress, decreased urinary output, etc.)?
7. Implement measures to maximize fetal oxygenation status (positioning, maternal oxygenation, etc.)?
8. Implement measures to reduce uterine activity (fluids, Pitocin, d/c, etc.)?
9. Implement measures to stimulate uterine activity?
10. Collaborate with other members of the team to stabilize maternal vital signs?

11. Collaborate with other members of the team to stabilize fetal well-being?
12. Make timely contact (before the occurrence of an adverse event) with the physician or nurse midwife to report critical changes in maternal or fetal status?
13. *Document* an obstetric history?
14. Thoroughly *communicate* the patient situation (condition or status) during consultation or handoffs?
15. Report relevant elements of the patient background during consultation or handoffs?
16. Anticipate and/or recommend course of action to physician or nurse midwife when seeking consultation when feeling *stressed* or *rushed*?
17. Accurately communicate planned course of action during a consultation or handoff?
18. Accurately communicate plan of care or change in plan of care to patient and family?

APPENDIX D: GOAL ORIENTATION SCALE

Goal Orientation Scale

1. The opportunity to do challenging work is important to me. (m)
2. When I fail to complete a difficult task, I plan to try harder the next time I work on it.
(m)
3. I prefer to work on tasks that force me to learn new things. (m)
4. The opportunity to learn new things is important to me. (m)
5. I do my best when I'm working on a fairly difficult task. (m)
6. I try hard to improve on my past performance. (m)
7. The opportunity to extend the range of my abilities is important to me. (m)
8. When I have difficulty solving a problem, I enjoy trying different approaches to see which one will work. (m)
9. I prefer to do things that I can do well rather than things that I do poorly. (p)
10. I'm happiest at work when I perform tasks on which I know that I won't make any errors. (p)
11. The things I enjoy the most are the things I do the best. (p)
12. The opinions others have about how well I do certain things are important to me. (p)
13. I feel smart when I do something without making any mistakes. (p)
14. I like to be fairly confident that I can successfully perform a task before I attempt it.
(p)
15. I like to work on tasks that I have done well on in the past. (p)
16. I feel smart when I can do something better than most other people. (p)

Adapted from "Goal Orientation in Organizational Research: A Conceptual and Empirical Foundation, by S. B. Button, J. E. Mathieu, & D. M. Zajac, 1996,

Organizational Behavior and Human Decision Processes, 67, p. 33. Copyright 1996,
Elsevier.

APPENDIX E: KNOWLEDGE QUESTIONS

Knowledge Questions

1. A woman is being treated with magnesium sulfate for preterm labor. Which assessment would indicate magnesium sulfate toxicity?
2. A nurse is admitting a laboring patient; she has progressed to 38 weeks' gestation. Which information in the history is the most important to relay in a report?
3. Upon assessment, the nurse notes the following for a client who has preeclampsia: Blood pressure 158/100; urinary output of 50 mL; lungs clear to auscultation; urinary protein +1; edema of hands, ankles, and feet. In 1 hour, the following findings are made. Which assessment data would indicate the need to request that the physician assess or intervene immediately?
4. A client was admitted for induction of labor. After she was admitted, a tocodynameter was applied to monitor her contraction pattern. After several hours, the contraction pattern is not being traced well despite repositioning. What is the best action for the nurse to take at this time?
5. The laboring client presses the call light and reports that her water has just broken. Assuming the nurse has taken the appropriate steps, what is most important to report to the physician?
6. A woman experiencing preterm labor asks why she is on betamethasone (Celestone). Which is the best response by the nurse?
7. The nurse is preparing a newborn for a circumcision. Which of the following data would be important for the nurse to report to the physician prior to the procedure?
8. Which of the following interventions is appropriate once spontaneous rupture of membranes has occurred?

9. One hour after delivery, a client's fundus is boggy and has risen to above the umbilicus. The first action the nurse would take is to what?
10. In order to identify the duration of a contraction, the nurse would do what?

APPENDIX F: MATERNAL SBAR

Maternal SBAR

<p>SITUATION</p> <p>Identify yourself: your unit and the patient.</p>											
<p>BACKGROUND</p> <p>Provide the patient's diagnosis or reason for admission, medical status, relevant history</p>	<p>Allergies:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 15%; text-align: center;">Gravida</td> <td style="width: 15%; text-align: center;">Parity</td> <td style="width: 15%; text-align: center;">EDC</td> <td style="width: 15%; text-align: center;">EGA</td> <td style="width: 40%; text-align: center;">Blood Type</td> </tr> <tr> <td style="height: 100px;"></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Gravida	Parity	EDC	EGA	Blood Type					
Gravida	Parity	EDC	EGA	Blood Type							
<p>ASSESSMENT</p> <p>Provide specific information on vital signs, recent labs, other quantitative or qualitative data.</p>	<p>Cervical Exam ___ / ___ / ___ Contractions _____</p> <p>Fetal position: _____</p> <p>FHT's: _____</p> <p>Maternal V/S: HR: _____ B/P: ___ / ___ Temp: _____ RR: _____</p> <p>Significant Assessment Findings:</p>										

<p>RECOMMENDATIONS or REPORT</p>	<p>Recommendations to provider:</p> <p>Come to see the patient <input type="checkbox"/></p> <p>Discuss the possibility of a change in the patient's birth plan <input type="checkbox"/></p> <p>Other suggestions: _____</p> <p>_____</p> <p>Are tests needed?</p> <p>Mag level <input type="checkbox"/></p> <p>Type and Cross <input type="checkbox"/></p> <p>H & H <input type="checkbox"/></p> <p>Other: _____</p> <p>If change is ordered:</p> <p>When do you want to be updated?</p> <p>How often do you want vital signs? _____</p>	<p>Report to colleague:</p> <p>Her next assessment/test/procedure is due @ _____</p> <p>V/S are ordered every _____</p> <p>Pending Lab results</p> <p>_____ Labs were sent @ _____ and should be ready _____</p> <p>Provider called @ _____ to report _____ update due @ _____</p>
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Note. Adapted from “SBAR for Maternal Transports: Going the Extra Mile,” by C. Edwards & E. K. Woodard, 2008, *Nursing for Women's Health*, 12(6), p. 519. Copyright 2008, Wiley-Blackwell.

Adapted from “Structured Communication: Improving Patient Safety with SBAR,” J.Dunsford, 2009, *Nursing for Women's Health*, 13(5), pp. 384-390. Copyright 2009, Wiley-Blackwell.

APPENDIX G: SBAR RUBRIC

SBAR Rubric

Section	1 = Wrong or limited information	2 = Less than 50% of pertinent information	3 = More than 50% of pertinent information	4 = All pertinent information provided
Situation				
Background				
Assessment				
Recommendation /Report				

APPENDIX H: CLINICAL EVALUATION FORM

Clinical Evaluation Form
 University of Central Florida
 Bachelor of Science in Nursing Basic Program
 NUR 3445L: Nursing Care of Families Clinical

Student Name: _____	
OB Faculty Name: _____	OB Rating: [] Satisfactory [] Unsatisfactory Date _____
Peds Faculty Name: _____	Peds Rating: [] Satisfactory [] Unsatisfactory Date _____
	Final NCF Rating: [] Satisfactory [] Unsatisfactory Date _____
	Family Case Study: [] Satisfactory [] Unsatisfactory Date _____
<u>Evaluation:</u> A student must receive a rating of satisfactory performance in each of the categories by completion of the semester in order to receive a passing grade for the course(s). A rating of less than satisfactory in any of the categories will constitute an unsatisfactory grade.	

Directions:

1. The clinical faculty will complete a midterm evaluation and a final evaluation of the student's clinical performance for the clinical rotation.
2. The student will complete a separate self-evaluation at the end of each section of clinical rotation.
3. A conference will be scheduled at both the midterm and the end of the clinical rotation.
4. Indicate beside each evaluation criteria whether the student's performance on that particular item is Satisfactory, Needs Improvement, Unsatisfactory, or Not Applicable.

<u>Satisfactory</u>	S	Student performed consistently and appropriately for his/her level of educational experience.
<u>Needs Improvement</u>	NI	Student is inconsistent in performance of criteria for her/her level of educational experience.
<u>Unsatisfactory</u>	U	Student failed to meet performance standards for these criteria at a level appropriate for his/her level of educational experience and/or is unsafe for practice.
<u>Not Applicable</u>	N/A	Student had no opportunity to demonstrate achievement of this criterion.

Comments are required to substantiate all Needs Improvement and Unsatisfactory ratings. Comments may also be included for satisfactory ratings as well.

5. ******Indicates critical behaviors for an overall clinical evaluation of satisfactory. An unsatisfactory evaluation in any one of these designated behaviors constitutes a clinical failure.
6. If a student receives an Unsatisfactory in any critical behavior, immediate review is required and will result in corrective action which may include immediate clinic failure.
7. If a student receives an NI or a U, at mid-clinical, the student must make an appointment with the clinical instructor for written counseling to address these issues.
8. Failure to address /correct an NI or U may result in clinical failure. An Unsatisfactory evaluation in this course will prohibit progression in the nursing program.
9. An rating of Satisfactory on the Maternity and Pediatrics clinical evaluations, and the FCS are necessary for completion of the clinical portion of course and is required for a passing grade in the course.
10. Clinical evaluation: Please note than an Unsatisfactory of a critical area (marked by ****** on the clinical evaluation) in either the OB or Peds component of the Nursing Care of Families clinical experience will result in an Unsatisfactory evaluation for the entire clinical course.
11. All skills newly achieved or extensively practiced during clinical experiences should be included on Checklist of Nursing Psychomotor Skills. This list should be reviewed with the clinical instructor at mid clinical and final evaluation. The student is responsible for maintaining the checklist.
12. Completed student and faculty evaluations are placed in the student's file at the completion of the clinical experience.

Program and course objectives	Areas of evaluation	OB PEDS Midterm			OB PEDS Final	
		N/I	S	U	S	U
<p>Program objective:</p> <p>1. Synthesize knowledge from nursing and the physical, biological, behavioral, psychological and social sciences, and the humanities in the practice of professional nursing.</p> <p>Course objective:</p> <p>1. Apply family theories and related research in the design and implementation of community based care for families.</p>	<p>Core nursing knowledge**</p> <ul style="list-style-type: none"> • Identifies assessment data for each client • Relates knowledge base to client care <ul style="list-style-type: none"> • Support systems • Developmental stages across the life span • Nutrition • Safety • Risk factors • Demonstrates understanding of <ul style="list-style-type: none"> • Client care needs • Prescribed medications • Prescribed treatments • Prioritizes nursing interventions 					
<p>Program objective:</p> <p>2. Use critical thinking as the basis for professional nursing practice.</p> <p>Course objective:</p> <p>2. Demonstrate critical thinking in describing the relationships among culture, socioeconomic status, spirituality, law, ethics, family policy and family systems.</p>	<p>Critical thinking:</p> <ul style="list-style-type: none"> • Anticipates consequences of nursing interventions • Uses problem solving and decision making to adapt and prioritize nursing care as client's health condition changes • Relates content from nursing curriculum to clinical setting and care plan • Anticipates risk factors that impede effectiveness of nursing care plan 					

Program and course objectives	Areas of evaluation	OB PEDS Midterm			OB PEDS Final	
		N/I	S	U	S	U
	<ul style="list-style-type: none"> Identifies potential resources to achieve outcomes Seeks new information when needed Evaluates effectiveness of own thinking in the planning and implementing of care 					
<p>Program objective:</p> <p>3. Participate in interdisciplinary teams and community partnerships to meet the health care needs of individuals, families, and communities in a diverse society with particular emphasis on needs of vulnerable populations.</p> <p>4. Apply theories and principles of leadership and management to collaborate with interdisciplinary teams to promote and maintain quality health care for individuals, families, and communities</p> <p>Course objectives:</p> <p>3. Demonstrate effective communication while collaborating with the client, family and other members of the health care team to provide community based care to children and families.</p>	<p>Collaboration</p> <ul style="list-style-type: none"> Identifies the nurse's unique contribution to the health team <ul style="list-style-type: none"> Identifies various roles of the nurse in providing care Identifies own role as a member of the health team Communicates willingness to be a team member Initiates communication with health care team members Seeks guidance to identify resources pertinent to the situation Enlists the assistance of a variety of health care workers Suggests changes to the plan of care Gives a report to the appropriate person in the agency Reports pertinent information in a concise, clear manner <p>Management</p> <ul style="list-style-type: none"> Identifies unmet client outcomes Assumes responsibility for safe implementation of client care Seeks guidance to maintain client safety Completes assignments in a timely manner 					

Program and course objectives	Areas of evaluation	OB PEDS Midterm			OB PEDS Final	
		N/I	S	U	S	U
	<ul style="list-style-type: none"> Recognizes conflict situations and seeks guidance immediately Demonstrates awareness of cost factors in delivering care 					
<p>Program objective:</p> <p>5. Demonstrate effective verbal, written, and electronic communication in the promotion of culturally appropriate care.</p> <p>Course objective:</p> <p>4. Demonstrate effective communication while collaborating with the client, family and other members of the health care team to provide community based care to</p>	<p>Therapeutic communication**</p> <ul style="list-style-type: none"> Addresses client/family in a respectful manner Validates client/family understanding of communication Communication with client/family and health care team is clear and timely manner Adapts techniques congruent with situation Demonstrates self-awareness and an ability to use a reflective 					

Program and course objectives	Areas of evaluation	OB PEDS Midterm			OB PEDS Final	
		N/I	S	U	S	U
children and families.	<p>process in therapeutic communication</p> <ul style="list-style-type: none"> Identifies own strengths and weaknesses in working with client/family <p>Professional communication**</p> <ul style="list-style-type: none"> Verbalizes an understanding of the legal aspects of documentation Uses legible and appropriate terminology, spelling and grammar <ul style="list-style-type: none"> Appropriately quotes subjective data Describes findings in objective terms Documents all aspects of client assessment, goals, interventions, and response on appropriate agency forms Communicates effectively with other members of the health team: <ul style="list-style-type: none"> Requests clarification of pertinent information from faculty and/or other health team members Reports verbally to faculty and/or other health team members any changes in physiological/psychological parameters 					
<p>Program objective:</p> <p>6. Apply innovative technologies to optimize outcomes for self, clients, and communities.</p> <p>Course objective:</p> <p>5. Use technology to meet the nursing needs of individuals and families in</p>	<ul style="list-style-type: none"> Technology <ul style="list-style-type: none"> Identifies technology available at assigned facility Explores learning opportunities related to technology in facility Demonstrates appropriate use of technology in facility Integrates use of technology in nursing care 					

Program and course objectives	Areas of evaluation	OB PEDS Midterm			OB PEDS Final	
		N/I	S	U	S	U
childbearing and childrearing periods.						
<p>Program objective:</p> <p>7. Demonstrate competency in the performance and evaluation of nursing techniques and skills.</p> <p>Course objectives:</p> <p>6. Apply the nursing process to address the health promotion, health maintenance, and illness management needs of childbearing and childrearing families and individuals.</p> <p>7. Differentiate between normal and a normal findings in the perinatal, newborn and childhood developmental periods.</p> <p>8. Integrate pharmacological principles during medication administration and education with childbearing and childrearing families.</p> <p>9. Identify needed referrals to community based support organizations.</p> <p>10. Implement family centered teaching plans with individuals and families in childbearing and childrearing periods.</p>	<p>Nursing process</p> <p>Assess:</p> <p>Appropriately collects relevant subjective and objective data for clients</p> <ul style="list-style-type: none"> • Assessment of domains** <ul style="list-style-type: none"> • Physical • Psychosocial • Cognitive • Identifies the influences of culture, age, growth and development, ethnicity, genetics, socioeconomic status, belief systems on the client • Considers client's response to alterations in health <ul style="list-style-type: none"> • Identifies stressors and strengths used by client <p>Analyze:</p> <ul style="list-style-type: none"> • Examines data relationships • Clusters data appropriately • Develops problem list • Classifies actual and potential nursing diagnoses • Supports nursing diagnoses with appropriate objective and subjective data • Prioritizes nursing diagnoses 					

Program and course objectives	Areas of evaluation	OB PEDS Midterm			OB PEDS Final	
		N/I	S	U	S	U
		<p>Plan:</p> <ul style="list-style-type: none"> • Client outcomes <ul style="list-style-type: none"> • States realistic goals and objectives that are congruent with nursing diagnosis • Realistic deadlines are set for attainment of goals • Goals are determined with input from involved individuals and family members • Includes both long and short term goals • Includes measurable outcome criteria: <ul style="list-style-type: none"> • Reduction of risk potential • Coping and adaptation • Pharmacological therapies • Physiological adaptations • Nursing interventions <ul style="list-style-type: none"> • Plans nursing interventions appropriate to client outcomes • Designs interventions appropriate to client condition • Designs interventions congruent with interdisciplinary care • States evidence based rationale for each intervention <p>Implement:</p> <p>Formulates appropriate nursing/interdisciplinary interventions with</p>				

Program and course objectives	Areas of evaluation	OB PEDS Midterm			OB PEDS Final	
		N/I	S	U	S	U
		clients in order to accomplish stated goals.				
	<ul style="list-style-type: none"> • Uses stated interventions in practice • Maintains safety standards for client systems/caregivers <ul style="list-style-type: none"> • Assures a safe, orderly environment • Appropriately uses principles of universal precautions • Demonstrates principles of hygiene and infection control • Verbalizes an understanding of environmental safety precautions and practices • Practices correct body mechanics when performing care • Recognizes and appropriately reports abnormal physical findings • Organizes care to meet client needs <ul style="list-style-type: none"> • Works independently • Implements interventions in a timely manner • Prioritizes appropriately • Administers pharmacologic agents to assigned clients <ul style="list-style-type: none"> • Demonstrates knowledge of pharmacologic agent ordered for clients • Identifies nursing implications related to pharmacologic agents • Follows federal/state laws and agency policies for the administration of pharmacologic agents <p>Evaluate:</p>					

Program and course objectives	Areas of evaluation	OB PEDS Midterm			OB PEDS Final	
		N/I	S	U	S	U
	<ul style="list-style-type: none"> Evaluates both goal attainment and effectiveness of stated plan of action. <ul style="list-style-type: none"> Identifies problematic areas Identifies planned activities that were not accomplished States alternatives (revisions); including problems/diagnoses Documents as appropriate 					
<p>Program objective:</p> <p>8. Incorporate ethical, legal, and cultural principles as professional values in the practice of professional nursing.</p> <p>Course objective:</p> <p>11. Demonstrate critical thinking in describing the relationship among culture, socioeconomic status, spirituality, law, ethics, and community health nursing practice.</p>	<p>Ethical:</p> <ul style="list-style-type: none"> Practices within the ANA Code of Ethics for Nurses Incorporates client's rights into practice Accommodates Patient Bill of Rights into Practice Identifies and reports unsafe occurrences in client care <p>Legal:</p> <ul style="list-style-type: none"> Abides by policies of the School of Nursing; Clinical Agencies and the Florida Nurse Practice Act** Recognizes, corrects, and reports safety errors** Documents in an organized complete and accurate manner Recognizes situations requiring client advocacy Maintains client confidentiality consistent with HIPPA guidelines** 					

Program and course objectives	Areas of evaluation	OB PEDS Midterm			OB PEDS Final	
		N/I	S	U	S	U
	<p>Cultural Diversity:</p> <ul style="list-style-type: none"> Identifies cultural factors related to family care Identifies the impact of socioeconomic factors on treatment options Identifies complementary/ alternative therapies used by client Compares client's health perception to those of family Incorporates cultural diversity in plan of care 					
<p>Program Objective:</p> <p>9. Use the principles of teaching and learning to promote, maintain, and restore health, and prevent illnesses with individuals, families, and communities.</p> <p>Course Objective:</p> <p>12. Apply the nursing process to address the health promotion, health maintenance, and illness management need of childbearing and childrearing families and individuals.</p>	<p>Teaching:</p> <ul style="list-style-type: none"> Assesses readiness of client/family for teaching Teaches at appropriate developmental level of client/family Uses appropriate teaching aids for content and development level of family Evaluates effectiveness of teaching 					
<p>Program Objective:</p> <p>10. Use research in the exploration of health problems and the implementation of evidence based practice.</p>	<p>Research</p> <ul style="list-style-type: none"> Identifies research findings that are relevant to client and family care Applies research findings to validate client and family care Uses Evidence Based Practice standards to develop nursing 					

Program and course objectives	Areas of evaluation	OB PEDS Midterm			OB PEDS Final	
		N/I	S	U	S	U
Course objective: 13. Apply family theories and related research in the design and implementation of community based care for families.	interventions					
Program objective: 11. Assume responsibility for lifelong learning and plan for professional career development. Course objective: 14. Demonstrate professional behaviors.	Personal responsibility** <ul style="list-style-type: none"> • Accountable for own actions including punctuality and professional appearance. • Conforms to UCF/Agency dress and conduct codes. • Responsible for integration of previous learning. • Critiques behavior to identify strengths and areas requiring more goals for learning. • Prepares in advance for clinical experience: <ul style="list-style-type: none"> • Readings • Skills practice • Presents to the clinical experience with necessary materials • Completes assignments <ul style="list-style-type: none"> • In accordance with guidelines • On time • Uses legible and appropriate terminology/grammar • Seeks to develop individual potential <ul style="list-style-type: none"> • Pursues learning opportunities 					

Program and course objectives	Areas of evaluation	OB PEDS Midterm			OB PEDS Final	
		N/I	S	U	S	U
	<ul style="list-style-type: none"> Accepts direction from other members of the health team Accepts constructive criticism and modifies behavior accordingly. Identifies own feelings and their potential effects on professional relationships. <p>Professional values:</p> <ul style="list-style-type: none"> Demonstrates awareness of and respect for basic agency policies and concern. Demonstrates understanding of culture, beliefs and perspectives of others. Honors the rights of clients to make decisions about health care Protects patient privacy.** Preserves the confidentiality of clients and health team members Demonstrates accountability for own actions.** <p>Promptly and regularly attends clinical experiences:</p> <ul style="list-style-type: none"> Present for entire clinical day Calls appropriate person if late or absent <p>OB Late _____ Absent _____</p> <p>PEDS Late _____ Absent _____</p>					

APPENDIX I: PERMISSION

Morning Betsy—

The Performance Goal and Mastery Goal Orientation measures were published in the journal article. This puts them in the public domain, and you are free to use them.

Good luck with your research!

--Scott

From: Mary Guimond [mailto:mguimond@mail.ucf.edu]
Sent: Monday, October 12, 2009 6:03 PM
To: Scott Button
Subject: Re: FW: Scott Button

Thank you for responding. I am a doctoral candidate @ the University of Central Florida-College of Nursing. I am trying to prepare my dissertation proposal. My topic is related to the transfer of safety behaviors of nursing students caring for obstetric patients. I am using Ford's model for learning transfer as a conceptual framework. Because of the importance of individual differences and their relationship to self-efficacy—I need to assess students for mastery or performance goal orientation.

You have developed a tool to measure goal orientation and I am attempting to obtain permission to use your instrument for the purpose of gathering data for my dissertation. The study will occur (hopefully) in the Spring of 2010 and I am gathering data for approximately 137 students.

Can you provide permission or advise me of steps that I should take to obtain permission? Please advise of an estimated cost, if appropriate.

Thank you again for your attention, I am grateful for your time.

B

Betsy Guimond, RN, WHNP-BC, MN
Instructor, College of Nursing
University of Central Florida
407-823-5234
HPA 1-239

From: Ben King
Sent: Monday, October 12, 2009 4:31 PM
To: Scott Button
Subject: FW: Scott Button

From: Mary Guimond [mailto:mguimond@mail.ucf.edu]
Sent: Sat 9/26/2009 9:52 AM
To: info
Subject: Scott Button

Hello, I am trying to locate Scott Button; an administrator at PDRI suggested that he might be employed with your organization.

I am interested in using a scale that he developed and am seeking to ask for permission. Any help locating him would be appreciated.

Sincerely,
Betsy Guimond, MN, WHNP-BC
mguimond@mail.ucf.edu
Instructor of Nursing
Simulation Coordinator
Doctoral Candidate
College of Nursing
University of Central Florida

APPENDIX J: INFORMED CONSENT

January 11, 2009

Dear Students,

All students who are enrolled in NUR 3445 during the spring 2010 semester are invited to participate in a study to assess learning outcomes related to simulation in obstetric clinical practice. Your participation and honest answers will help us to understand how simulation may be used to facilitate learning. A goal is to have 120 students participate.

Eligibility:

- You must be at least 18 years old to participate.
- You must be enrolled in NUR 3445 during the spring 2010 semester, and have not previously taken the course.

Participants agree to complete the following surveys/tools:

- The Obstetric Nursing Self-efficacy (ONSE) instrument, which assesses your perceived ability to provide care.
 - The survey takes approximately 20 minutes to complete. You will complete it at the beginning and end of the clinical course.
- The Goal Orientation for Individual Differences survey, which assesses your motivation to learn.

- The survey takes approximately 10 minutes to complete. You will complete it at the beginning of the course.
- In addition, scores on selected items related to obstetric content on Exam 3 and the final exam will be recorded. Clinical evaluations will also be reviewed by the investigator.

Procedures:

- Participation in the study is completely voluntary. You may choose not to participate.
- All information will be confidential. Your responses will be de-identified and coded by a research assistant so that the data cannot be matched to you. The investigator, Ms. Guimond, will not know the identity of any participant.
- You may skip any question you are not comfortable answering.
- There are no anticipated risks. Participation or nonparticipation will in no way affect your grade in the course.
- No compensation will be provided for participation. No other benefits to you as a participant in the survey are known.
- Completion of the ONSE survey at the beginning of the course constitutes consent and that you are at least 18 years of age.

If you have questions concerns or complaints, please contact Betsy Guimond, Doctoral Candidate, College of Nursing, at mguimond@mail.ucf.edu or (407) 823-5234,

or Dr. Mary Lou Sole, Faculty Supervisor, College of Nursing, at msole@mail.ucf.edu or (407) 823-2744.

The IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

Thank you for taking the time to contribute to the improvement of this course. I sincerely appreciate your participation. Your time and effort in helping me gather information is greatly appreciated.

Sincerely,

Betsy Guimond

APPENDIX K: SIMULATION TACHYSYSTOLE

Simulation: Tachysystole

Supplies needed (lab): Noelle, orders, MAR, computer (student), 1 liter IV, pump, 500 mL bag, medications (Pit and Amp)

Supplies needed (student): Stethoscope

Objectives:

Students participating in a simulation will:

- Assess physiological status of pregnant client.
- Identify signs of potential prenatal complications.
- Monitor the client in labor.
- Monitor fetal heart rate.
- Monitor medications administered during the labor process.
- Provide care for the client experiencing complications of pregnancy/labor and/or delivery (e.g., eclampsia, precipitous labor, hemorrhage).
- Notify primary health care provider about the client's unexpected response/emergency situation.
- Identify and intervene in life-threatening situations (respond to maternal or fetal distress).
- Assess client for unexpected adverse response to therapy (e.g., increased intracranial pressure, hemorrhage).
- Intervene in response to the client's unexpected response to therapy (e.g., unexpected hematopoietic changes).

Simulation Form: Scenario 1, Barbara Gordon

Event	Mannequin settings	Description of patient: What is happening in this moment in time?	Outcome behaviors: Identify what the students should do in order to be successful for the frame in terms of: assessments made, medications delivered, skills attempted, treatments provided, etc.	Cues: If redirection or additional information is necessary, how will the students be directed? Examples: phone, actor, simulator statement.
Initial frame 0800	BP: 110/66 Pulse: 88 regular Character: FHTs 140s RR: 21	26-year-old female at approx 36 weeks. SROM 0630. NPC G4/1112. SVE 3-4/50/0. U/S confirmation dates in triage. Admitted to L & D. Pit protocol ordered. GBS prophylaxis ordered. Reactive NST in triage @ transfer students see minimal variability. Patient has received Stadol in triage, pain level is now @ 4, she is sleeping intermittently.	<input type="checkbox"/> Gathers appropriate prenatal history <input type="checkbox"/> Completes physical assessment mother <input type="checkbox"/> Pain assessment <input type="checkbox"/> Assessment of fetal heart tones and contractions <input type="checkbox"/> Prepares and reviews plan of care with instructor. <input type="checkbox"/> Records above as indicated. <input type="checkbox"/> Reviews medication orders with instructor. <input type="checkbox"/> Checks for allergies. <input type="checkbox"/> Hangs Ampicillin. <input type="checkbox"/> Teaching Ampicillin. <input type="checkbox"/> Documents medication. <input type="checkbox"/> Monitors FHT @ appropriate intervals (verified by instructor).	Instructor will be available for consult. If students do not ask for assistance, instructor will ask for an update on patient. Depending on time available, ask students to prepare a plan to communicate actions and explain status to patient.

Event	Mannequin settings	Description of patient: What is happening in this moment in time?	Outcome behaviors: Identify what the students should do in order to be successful for the frame in terms of: assessments made, medications delivered, skills attempted, treatments provided, etc.		Cues: If redirection or additional information is necessary, how will the students be directed? Examples: phone, actor, simulator statement.
After Ampicillin infused.		Minimal variability continues with subtle late decelerations.	<input type="checkbox"/>	<input type="checkbox"/> Maternal position <input type="checkbox"/> IV hydration <input type="checkbox"/> Assess maternal hypotension <input type="checkbox"/> Turn off pitocin <input type="checkbox"/> Reassess	If students do not notice or are confused, increase severity of lates. Faculty consult. Discuss need for O ₂ . Have students prepare a teaching plan for interventions.
Status post-interventions	FHT 140 minimal variability.	Late decelerations disappear.	<input type="checkbox"/>	Consider calling provider.	Prepare SBAR.
		Provider @ BS to assess with SVE. After the exam, the provider comes out and states that the patient is complaining of pain @ 7. Anesthesia has been called.	<input type="checkbox"/>	Explains the cervical exam.	Patient states, "She said I am not progressing, what does that mean?" Review chart, SBAR, provider's note with student.
			<input type="checkbox"/>	Develops a teaching plan and instructs the epidural.	
			<input type="checkbox"/>	Documents exam and FHTs.	
	FHT 130 moderate variability.	FHTs are improved.	<input type="checkbox"/>	Assessment of fetal heart tones and contractions.	CNM: "Let's restart that Pit @ 4 milliunits/minute."
			<input type="checkbox"/>	Create and review plan of care with instructor.	
			<input type="checkbox"/>	Records above as indicated.	
			<input type="checkbox"/>	Reviews medication orders with instructor.	
			<input type="checkbox"/>	Checks for allergies.	
			<input type="checkbox"/>	Restarts Pitocin.	
			<input type="checkbox"/>	Hangs Ampicillin.	

Event	Mannequin settings	Description of patient: What is happening in this moment in time?	Outcome behaviors: Identify what the students should do in order to be successful for the frame in terms of: assessments made, medications delivered, skills attempted, treatments provided, etc.	Cues: If redirection or additional information is necessary, how will the students be directed? Examples: phone, actor, simulator statement.
After ampicillin infused		Minimal variability continues with subtle late decelerations.	<input type="checkbox"/> Documents medication.	If students do not notice or are confused, increase severity of lates. Faculty consult. Discuss need for O ₂ .
	118/76 94 18 98.4	Status postdelivery. Nursing baby. Fundus is firm minimal lochia noted on pad.	<input type="checkbox"/> Develops teaching plan for first hour postpartum.	Receiving nurse: "Has she voided? Did she get up? Have you fed her?"
	Late decelerations deteriorate to marked variables with poor fetal recovery.		<input type="checkbox"/> Assesses history and bladder.	Have students research need for emergent delivery and create plan of care. Ask them to prepare patient for emergent delivery. Each student prepares an SBAR for change of shift transfer to the OR.
			<input type="checkbox"/> Recognizes need for catheter (intermittent).	
			<input type="checkbox"/> Documents properly.	
			<input type="checkbox"/> SBAR—transfer to floor.	

Debrief Questions

After the scenario:

Bring the scenario report and the recorder's paper to review. Begin with the experience questions, then focus on any redirection that may be needed. Use student cues, if there is an area that students need to discuss, don't discount it. Give them adequate time to debrief misconceptions, emotions, and understanding.

Allow the students to discuss freely their perceptions of their reactions during the scenario.

1. How do you feel about your actions during the scenario? What did you do well? What do you feel you would like to change?
2. Was there anything that made you particularly anxious?
3. Considering the stated objectives, which ones do you believe that you achieved, how?
4. What can you apply to assessing patients that you are currently working with?

APPENDIX L: SIMULATION: POSTPARTUM

Simulation: OB Postpartum

Supplies needed (lab): Noelle, orders, MAR, computer (student), (2) 1 liter IVs, pump (or image of pump in this case), medications (mag & RhoGAM)

Supplies needed (student): Stethoscope

Objectives:

Students participating in a simulation will:

- Assess physiological status of postpartum client.
- Identify signs of potential postpartum complications.
- Monitor the client receiving magnesium.
- Monitor medications administered during postpartum period.
- Provide care for the client experiencing complications of pregnancy/labor and/or delivery (e.g., eclampsia, precipitous labor, hemorrhage).
- Notify primary health care provider about the client's unexpected response/emergency situation.
- Identify and intervene in life-threatening situations (respond to maternal or fetal distress).
- Assess client for unexpected adverse response to therapy (e.g., increased intracranial pressure, hemorrhage).
- Intervene in response to the client's unexpected response to therapy (e.g., unexpected hematopoietic changes).

Event	Mannequin settings	Description of patient: What is happening in this moment in time?	Outcome behaviors: Identify what the students should do in order to be successful for the frame in terms of: assessments made, medications delivered, skills attempted, treatments provided, etc.		Cues: If redirection or additional information is necessary, how will the students be directed? Examples: phone, actor, simulator statement.
After RhoGAM	BP 125/85 P 110 R 20	Uterus is boggy with large amounts of vaginal bleeding.	<input type="checkbox"/>	<input type="checkbox"/> Assess bleeding	<p>“Can you come help me?”</p> <p>Faculty consult.</p> <p>Have students prepare a teaching plan for interventions—assign someone to communicate actions.</p>
				<input type="checkbox"/> Palpate fundus	
				<input type="checkbox"/> Attempt fundal massage	
				<input type="checkbox"/> Reassess	
				<input type="checkbox"/> Document	
			<input type="checkbox"/>	Consider calling provider	SBAR for provider update.
			<input type="checkbox"/>	Repeat order	Provider orders methergine 0.2 mg NOW.
			<input type="checkbox"/>	Reviews medication orders with instructor	
Status post-interventions			<input type="checkbox"/>	Reassess uterus	Each student prepare SBAR for oncoming shift.
			<input type="checkbox"/>	Reassess bleeding	

Debrief Questions

After the scenario:

Bring the scenario report and the recorder's paper to review. Begin with the experience questions, then focus on any redirection that may be needed. Use student cues, if there is an area that students need to discuss, don't discount it. Give them adequate time to debrief misconceptions, emotions, and understanding.

Allow the students to discuss freely their perceptions of their reactions during the scenario.

1. How do you feel about your actions during the scenario? What did you did well?
What do you feel you would like to change? (recognizing and releasing emotions)
2. Was there anything that made you particularly anxious?
3. What did you learn? (reinforcing objectives, clarifying information, enhancing critical thinking, and problem solving)
4. What can you apply to assessing patients with whom you are currently working?
(reflection and linking to real world)

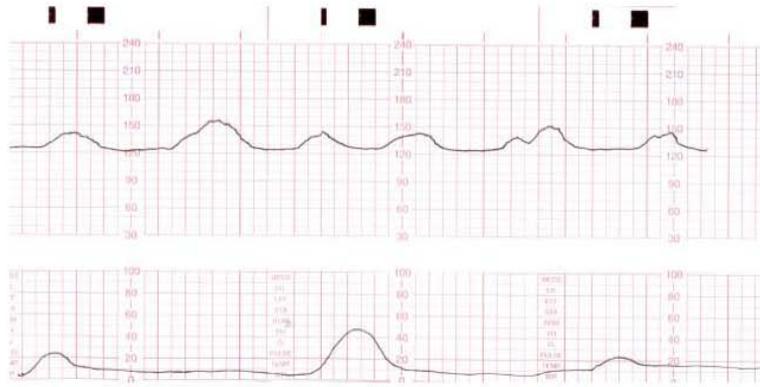
APPENDIX M: OB CASE STUDY: SBAR COMMUNICATION

OB Case Study: SBAR Communication

Directions:

1. Assume that you are the nurse in triage and have completed the attached triage form.
2. Review the data on the form and fetal heart monitor strip.
3. Using your SBAR communication form, complete the form with all the information that you will need to convey to the provider for this patient to admitted to L & D.

Fetal heart monitor strip



Hannigan, A.
DOB: 10/16/1983

26 Female

MD: Knight, Kelly

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