Baccalaureate Nursing Students’ Perceptions of Labor and Delivery Simulation as a Learning Method

By

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Abstract

The purpose of the study was to determine baccalaureate nursing students’ perceptions about the use of labor and delivery simulation as a learning method in regard to perceived benefits, areas for improvement, effects on self-confidence and optimal placement within course curriculum. Using a qualitative design, a convenience sample of seven students from a southern Colorado university were interviewed, using eight open-ended questions designed to elicit perceptions of the high-fidelity simulation. Interviews were audio-recorded and transcribed. Themes were identified and grouped into the study categories. Themes included: hands-on and realistic; independent/critical thinking and application of knowledge; effects on self-confidence; anxiety and need for more preparation. Overall, participants valued the simulation as a learning method and as practice working in a team of registered nurses communicating with the patient and co-workers. Placement of the simulation in the middle or at the end of the semester was suggested. In future studies, students should be given a 30 minute orientation to the high-fidelity mannequin and equipment. Communication from the "patient" should take place throughout the scenario to allow students to practice communication skills.
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Chapter I

Introduction

Background and Significance of the Problem

Due to the unpredictable nature of childbirth, nursing students often complete obstetric rotations without experiencing the birth process in its entirety. Additionally, the maternity rotation is often placed as an introductory clinical course due to the assumed “low risk” of mothers and infants (Mahlmeister, 2008). The opportunity for hands-on learning takes place in the care of postpartum patients and in the care of newborns in the nursery. However, in reality, the high acuity and liability on the labor and delivery unit may relegate nursing students to an observational role (Mahlmeister). Furthermore, the unpredictable nature of the census on an obstetrical unit results in the potential for limited opportunities to care for this type of patient.

High-fidelity simulation (HFS) has been utilized as a teaching and learning pedagogy for healthcare disciplines, including nursing, for many years. Research in the use of simulation specific to the care of the obstetric patient, however, is limited. The care of the gravid patient offers students a unique opportunity to intervene for the safety and positive outcomes of two patients simultaneously. The baby is an unseen client who can only be assessed through fetal monitoring. Students are challenged to critically decipher how interventions for the mom will indirectly affect the baby, thereby necessitating higher level clinical judgment skills. Faculty guided simulation experiences enhance critical thinking and promote the use of clinical judgment, and are provided in a non-threatening environment, where untoward effects are not a threat. This allows
students to participate in high-risk and emergent situations without the fear of patient harm or staff scrutiny.

Simulation scenarios may also promote confidence as a result of an increased sense of self-efficacy for novice nursing students (Bambini, Washburn & Perkins, 2009). A labor and delivery simulation may afford great benefit to the baccalaureate nursing students’ self-efficacy and confidence in caring specifically for the laboring patient. It is important that students actually work with a patient in labor to develop proficiency and self-confidence, and perhaps, encourage graduates to pursue a position in the obstetrical arena. Use of a labor and delivery simulation in a less-threatening environment may provide an effective teaching and learning method.

Simulations have traditionally taken place prior to clinical placements, as a means of preparation for the students. Alternatively, conducting simulation at the conclusion of a clinical rotation allows students to draw on mental images, creating a sense of realism in relation to prior patient experiences. Students’ perceptions may help to clarify if simulation should occur at the onset of the clinical rotation, to prepare students, or would optimum placement be after some skills acquisition, to assess competency and confidence in the care of the laboring patient? Determining the optimal placement within a curriculum that will allow the simulation experience to promote growth in clinical decision making and judgment is imperative to the success of the experience.

Statement of the Problem

The labor and delivery portion of the undergraduate nursing obstetrical clinical experience allows for minimal hands-on care of the laboring patient. The high acuity and liability of this type of patient dictates more of an observational role. Students are
generally encouraged to assist with vital signs, transfers to the bathroom, perineal care, placement of intravenous catheters and medication administration, which are skills routinely learned in a medical-surgical clinical rotation. Skills specific to the care of the woman in labor, such as monitor placement, cervical examinations, fundal height measurement, therapeutic positioning, comfort measures, fetal monitoring with appropriate interventions, and precipitous delivery are witnessed, but not practiced by the student nurse. While students typically leave this rotation feeling excited about what they have experienced, there is limited opportunity for supervised practice to build confidence in caring for a labor and delivery patient. Could the use of high-fidelity simulation potentially fill this gap in skill attainment? Would the simulation be more effective as a preparation tool, prior to the clinical rotation, or does allowing students to demonstrate their attained knowledge at the completion of the program increase student confidence and encourage entry into this specialized field? Do students report an increase in confidence at the conclusion of the simulation experience?

The majority of baccalaureate nursing programs have implemented simulation as a nursing pedagogy, however, there are limited studies which address the most effective use of a labor and delivery simulation. Understanding student nurses’ perceptions for the optimal use of simulation may guide educators in developing effective scenarios to enhance the clinical experience in labor and delivery. The research questions will address the baccalaureate students' perceptions about the use of high-fidelity simulation as a learning tool in the care of a labor and delivery patient in regard to the perceived benefits, areas for improvement, effect on self-confidence and optimal placement within the course curriculum.
It is important that simulation scenarios build student confidence and foster growth in clinical judgment. To achieve this, educators must determine the most effective use of the high-fidelity mannequins, as well as the optimum placement within the didactic and clinical coursework. Improving student learning, while making efficient use of faculty time and resources will direct the implementation of a successful simulation experience into an obstetric nursing curriculum.

**Statement of Purpose**

The purpose of this study was to determine baccalaureate nursing students' perceptions about the use of labor and delivery simulation as a learning method in regard to perceived benefits, areas for improvement, effects on self-confidence and optimal placement within course curriculum.
Chapter II

Review of Literature

Relevant Literature

The publication by the American Association of Colleges of Nursing (2005) explored the many reasons for the nationwide nursing faculty shortage and encouraged nursing programs to explore the use of simulated clinical experiences as a partial solution to this issue. Although studies had been published in other healthcare disciplines, minimal research had been conducted to validate whether effective transfer of knowledge and skills takes place using simulation as a learning method in nursing. As programs continued to face shortages of both faculty and clinical sites, research began to determine if simulation was a valuable substitute for clinical experiences.

A qualitative study conducted by Bambini, Washburn and Perkins (2009) evaluated student perceptions regarding the use of high-fidelity simulation (HFS), and three themes emerged from the study; communication, confidence, and clinical judgment. It appeared that students viewed simulation as a favorable learning method, and in addition, the data analysis indicated that simulation can be effective in increasing students’ self-efficacy in their ability to perform clinical skills. Just one year later, Garrett, MacPhee and Jackson (2010) set out to determine the components necessary for an effective simulation experience. The main components identified included a design framework, faculty training, student orientation and preparation, real-life scenarios, facilitator prompts, videotaping and debriefing. By implementing these components into a simulation scenario, the skills of critical thinking, teamwork and safe delivery of patient care can be enhanced. A faculty guided, collaborative setting, allows learners to discuss
what went well, areas for improvement and gives them an opportunity to correct errors and plan for future real-life scenarios that may arise. Another, more recent study by Kirkman (2013), concluded that students were able to transfer knowledge and skills from a high-fidelity clinical simulation to the traditional clinical setting. Recommendations from this study suggested that HFS be used in conjunction with traditional clinical rotations and didactic instruction.

The National Council of State Boards of Nursing (NCSBN) conducted a study from 2011 through 2014 to determine the extent that HFS could effectively replace traditional clinical nursing hours. This comparison study measured students’ knowledge, competency, critical thinking and perceptions of how well their learning needs were met. It was concluded at the end of the nursing study, that there were no significant differences between the traditional 10% simulation clinical, versus 25% and 50% simulation groups, regarding knowledge, clinical competence, critical thinking, readiness for practice, and NCLEX pass rates. The study supports substitution with simulation for up to 50% of traditional clinical time, provided faculty are formally trained, utilize theory-based learning and provide a realistic environment comparable to that which was used in the study (Hayden, Smiley, Alexander, Kardong-Edgren and Jeffries, 2014).

In striving to derive a conceptual framework for the use of clinical simulation, Kneebone (2005) targeted three key areas that lead to gain in technical proficiency: the role of expert assistance in task-based learning, learning within a professional context and the affective component of learning. Kneebone believed that in a healthcare setting, the clinical needs of the patient must take priority over the educational needs of the learner, and therefore called learning “a byproduct of care” (Kneebone, 2005, p. 551). He
concluded that simulation allows for sustained, deliberate practice in a safe environment, guided by experts, and ensures that learning supports experiences gained in the clinical setting. A study by Blum, Borglund and Parcells (2010) examined the effect of high-fidelity simulation on student self-confidence and clinical competence. The study found that students reported confidence and competence increased regardless of whether students had traditional or simulation laboratory experience. This finding led the researchers to believe there is a need for an emphasis on building self-confidence for entry-level students as they develop their skillset. Additionally, the use of simulation in the later semesters may enhance clinical competence prior to graduation. Determining the optimum timing of a simulation experience, within a course curriculum, is also crucial to its success. Tosterud, Hedelin and Hall-Lord (2013) examined student perceptions of various simulation methods, and whether educational level influenced these perceptions. The researchers noted that the need for realism in terms of surroundings is related to ability to draw on mental images and experience. Therefore, students who are further into a program may have more experiences to draw upon. The findings of this study reported that regardless of both the method of simulation and education level, students were satisfied and achieved self-confidence in learning.

Gaining buy-in from students has a direct effect on the success or failure of a simulation experience. Their perceptions of the benefits will effect participation and effort put forth. Perceptions of students in regard to simulated clinical experiences were studied by Schoening, Sittner and Todd (2006). Qualitative statements from their study were divided into themes including; hands-on learning and practice, confidence, self-efficacy, nonthreatening environment, critical thinking, realism, knowledge, review,
decision making, value, transferability, satisfaction, and teamwork, communication, preparedness. Statements from students were sorted into the above categories and benefits were noted in all the areas listed. This shows that students not only perceive HFS as a valuable learning tool, but that they also believe they are more prepared for collaborative practice and clinical skills (Schoening et al.). In 2010, Leonard, Shuhaibar and Chen studied nursing perceptions about the use of HFS for intra-professional team education, specifically exploring the value of peer coaching as a learning pedagogy for nursing education. They noted that debriefings allowed students to receive peer feedback and to share their individual perspectives according to their level of experience. Partin, Payne and Slemmons (2011) noted that obstetricians and midwives who attended simulation training had improved outcomes in the delivery and management of patients. Emerging themes from this study included the nonthreatening environment, enhancement of learning, and feeling prepared to practice. Although these results reflect physician and mid-level practitioner appraisals, perhaps the results are transferrable to nursing students, as well.

Realism of the character and skills of the teacher were themes identified by the focus group interviews conducted by Reid-Searl, Eaton, Vieth and Happell (2011). The purpose of this study was to explore undergraduate students’ experiences with HFS. The realism of the characters as well as the skill and knowledge of the faculty leading the simulation impacted the perceived quality of the learning experiences. Most recently, a study described the perceptions of nursing students about the design and effectiveness of a community-based simulation (Wheeler and McNelis, 2014). Focus group interviews resulted in the themes of simulation was realistic, learning was fun, thinking outside the
box, and being in the role. The use of role-play in simulation is supported by this study. Benefits listed included active and collaborative learning, as well as diverse learning with high expectations. Students reported that the scenario and debriefing gave them opportunities for problem-solving, feedback and the opportunity to reflect on the learning experience (Wheeler & McNelis, 2014). Regardless of nursing discipline, the student perceptions of the value, and emerging themes, remain consistent and similar in nature.

Providing a well-rounded clinical experience can be challenging for many reasons, especially in the maternal-newborn clinical rotation. Miller (2014) cites difficulties in finding a patient who will allow a student observer for her birth, patients who will not consent to a male student assisting in her care, and the overall scarcity of clinical sites as factors resulting in an uneven clinical experience at best. Other challenges that occur in the obstetric rotation include clinical days where there are no births and the limited scope of practice dictating an observer role, are further emphasized by Jeffries, Bambini, Hensel, Moorman and Washburn (2009). The group notes that “this lack of exposure may make transitioning into the maternal-newborn rotation registered nurse role quite challenging for many new graduates and leave the hospital nurse educator with the challenge of bridging these educational gaps” (Jeffries et al., 2009, p. 613). Clinical simulation has the potential to bridge the maternal-child education gaps, providing students the opportunity to prepare for real-world experiences by increasing student confidence in the care of the obstetric patient. These experiences may encourage more students to pursue this field upon graduation.

It is suggested that obstetric nurses must be prepared for emergent situations such as precipitous deliveries and severe complications, thereby making quick assessment
skills, rapid interventions, decision making critical thinking and clinical reasoning is essential (Jeffries, et. al, 2009). In order to achieve this learning, Robertson (2006) says “students need to encounter real-life situations where they can experience the pressures of client care situations with the safety net of the faculty…[simulation] evokes real-life responses from participants but does not result in real untoward effects” (p. 74).

Qualitative themes that emerged from Robertson’s study were that students enjoyed having to think on their toes, prioritizing, and the feeling or working in a real life situation. In a study by Sittner, Hertzog, and Fleck (2013) the themes that emerged were immersive learning and confidence building. This study reported that prior to participating in the simulation scenario, only 53% of the 38 students had experienced caring for the laboring woman through all phases and stages of labor. The qualitative results supported previous studies which emphasized the importance of linking didactic content to a simulated environment. Further, Sittner et al. recommended incorporating a labor and delivery scenario at the conclusion of an obstetric rotation, in order to give the students an opportunity to provide hands-on care for a laboring patient, thereby drawing on their learned didactic content.

Determining whether or not HFS learning is sustained over time is also a factor to its relevance in the nursing curriculum. In a self-efficacy trial conducted by Christian and Krumwiede (2013), it was found that self-efficacy in the management of a high-risk obstetric situation, preeclampsia, was maintained eight weeks following the HFS training. They noted that “self-efficacy has been linked to improved proactive nursing performance and outcomes” (p. e376). It can be deduced that simulation learning within
a nursing curriculum may also improve long standing self-efficacy for new nurses as they enter the workforce.

**Nursing Theoretical Framework**

Of the many works by Dr. Patricia Benner, her *From Novice to Expert* (1984) theory best frames the utilization of simulation in nursing education. Benner’s theory purports that the novice nurse has minimal experiences in situations which they are expected to perform, thereby lacking in competence and confidence. Through experience, novice nurses can move from the detached observer role into the role of an active performer. The same philosophy can apply to novice nursing students. As previously stated, students are often observers in the care of a laboring patient, rather than active performers. The high-fidelity labor and delivery simulation provides a hands-on experience, which may increase confidence.

Dr. Benner believes that experience is a prerequisite for becoming an expert. Although it is not practical that student nurses complete their didactic and clinical education at the expert level, perhaps high-fidelity simulation can provide opportunities for growth in clinical judgment and application that will allow graduated students to enter the workforce at Benner’s “advanced beginner” stage of proficiency. This level is achieved when the nurse can demonstrate acceptable performance because they have had prior experience in actual situations. Participation in simulation as an adjunct to clinical rotations adds to the depth of student experiences. The advanced beginner has knowledge that is developing, but may occasionally require supportive cues, which can be faculty guided during simulation, and later provided by nursing preceptors in the workforce.
Further research into Benner’s work invites the examination of her book, *Educating Nurses: A Call for Radical Transformation* (Benner, Sutphen, Leonard and Day, 2010). In her book, Benner describes the concept of integrative teaching/integrative learning to prepare students to function in clinical situations. Benner writes “students rehearse clinical situations of practice in order to learn how to use their communication skills and in-depth knowledge of pathophysiology and pharmacology, and attend to patient well-being and other salient patient and family concerns” (p. 158). The reading further describes integrative teaching as a means to connect knowledge acquisition and use with clinical imagination and ethical comportment. Simulation provides a means of integrating these essential concepts in a safe and non-threatening environment, where faculty guidance can ensure that each student can develop increased proficiency in the specific areas where they may be lacking. In addition, therapeutic communication can be practiced through the use of patient and family member role play. This integration of clinical and didactic learning can further move the novice student to the advanced beginner, and then to the competent level as described by Benner’s theory.

**Key Words**

*Critical Thinking*: “Purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based” (Facione, 1990, p. 2)

*Hands-on learning*: Knowledge gained by actually doing something rather than learning about it from books and lectures; being actively or personally involved in an experience (Merriam-Webster, 2015)
High-fidelity simulation: “High fidelity human patient simulation is an instructional technique that involves a technology comprised of a life-size human mannequin, monitors, and computer-driven programming that requires design, administration, and role play enactment of a dynamic clinical scenario” (Dunnington, 2014, p. 15).

Labor and Delivery Nursing: Training in the care of the patient who is preparing to give birth to include monitoring of vital signs, fetal heart rate, contraction pattern and maternal comfort status, as well as prompt identification of potential or real complications, education and care of the mom and baby directly after birth (nursingschools.net, 2015)

Perceptions: The way one thinks about or understands something; understanding or noticing something through the use of the senses (Merriam-Webster, 2015)

Self-confidence: Feeling certain about accomplishing a task or goal such as performing a procedure or making a diagnostic decision; grows when strengths and limitations are recognized through experience (Potter, Perry, Stockert & Hall, 2013)

Self-efficacy: “the conviction that one can successfully execute the behavior require to produce the outcomes” (Bandura, 1977, p. 193)
Chapter III

Method

Description of Research Design

The purpose of this study was to determine baccalaureate nursing students' perceptions about the use of labor and delivery simulation as a learning method in regard to perceived benefits, areas for improvement, effects on self-confidence and optimal placement within course curriculum. A qualitative descriptive design using eight, open-ended, structured interview questions was used to determine perceptions of students following participation in a two hour high fidelity labor and delivery simulation experience. “Qualitative approaches share a similar goal in that they seek to arrive at an understanding of a particular phenomenon from the perspective of those experiencing it” (Vaismoradi, Turunen & Bondas, 2013, p. 398). In this type of design, the independent variable is the labor and delivery simulation experience and the dependent variable is students’ perceptions about the experience. The researcher did not directly control or manipulate these variables. Rather, the design allowed the researcher to collect information on perceptions. This study is intended to contribute to the limited body of knowledge which studies the use of high-fidelity simulation, specifically for the care of the labor and delivery patient.

Protection of Human Subjects

Prior to recruiting participants for this study, approval from the Colorado State University-Pueblo Institutional Review Board (IRB) was obtained to ensure protection of the students participating (see Appendix A). The researcher conducted the study in accordance with the standards of the department of nursing and the university.
Information pertaining to study participants will be kept strictly confidential and managed according to the requirements of the IRB. The researcher obtained signed consent from the students prior to the simulation experience (see Appendix B). Students were informed that participation in the research study was voluntary and that they could refuse to be in the study or stop at any time. They understood that there would be no negative consequences if they decided not to participate or to stop. All interviewees were identified by the last four digits of their university personal identification (PID) number only. Audiotapes will be kept in a locked file cabinet in the researcher’s office for five years and then destroyed.

**Identification of the Population and Sample**

A population of 24 junior level baccalaureate students enrolled in NSG 312, Care of the Childbearing Family, that had completed all obstetric (OB) clinical hours were offered the opportunity to voluntarily participate in a labor and delivery simulation scenario. The same students were also asked to voluntarily sign up for a structured interview within 48 hours of the experience as part of a graduate student’s thesis research. Seven total students were interested in participating in the scenario and the interview process, so a convenience sample of all seven students was used. Of the seven, two were male and five were female, ranging from young adult to middle age.

**Instrument**

The labor and delivery simulation, including preparation and debriefing, was one hour in length. The structured interviews lasted no more than thirty minutes in length. The interview questions were adapted from a sample qualitative questionnaire from St. Leonard’s Community Services (2008) website, which is located in Ontario, Canada.
Permission was obtained for their use, with minimal modifications (see Appendices C and D). Review of the proposed questions came from a panel of experts, who were the graduate faculty of the university where the study took place. The eight questions that were presented were open-ended, which invited narrative answers by the interviewees. Questions addressed perceived benefits of the simulation scenario, perceived effect on self-confidence, perceived learning, suggestions for improvements, and recommendations for optimal placement within the theory course schedule. There was also opportunity for the interviewees to add or discuss any information that they felt was pertinent to the study.

Procedure

The researcher, in cooperation with the university simulation coordinator, implemented a peer-reviewed labor and delivery simulation scenario utilizing the Laerdal high fidelity mannequin, SimMom™. The simulation took place on a weekday using scheduled two hour blocks, with two to three students in each session. The simulation occurred in a southern Colorado university nursing simulation laboratory. All students enrolled in NSG312, “Care of the Childbearing Family,” and having completed required clinical hours were asked to voluntarily participate in the simulation. The researcher explained the study, obtained written consent from the seven who were willing to volunteer for a structured interview, and then conducted the simulation and debriefing. Prior to the completion of the experience, all seven of the willing participants were scheduled for structured interview consisting of eight open-ended questions, which was conducted in a mutually agreed upon location within 48 hours of the simulation. All participant responses were audio-recorded for transcription and thematic analysis. All
other students not participating in the study were offered the opportunity to engage in the same simulation experience at a later time.

**Data Analysis**

Interviews were recorded and transcribed verbatim by the researcher. Transcripts were thoroughly evaluated several times using concept mapping to determine words and phrases that constituted recurring themes. Phrases were compared and contrasted to identify patterns. Thematic analysis and coding was used to identify common thoughts that emerged.
Chapter IV

Results

Research Results

This purpose of this study was to determine baccalaureate nursing students' perceptions about the use of labor and delivery simulation as a learning method in regard to perceived benefits, areas for improvement, effects on self-confidence and optimal placement within course curriculum. Structured interviews were used to determine the perceptions of students. After explaining the study and obtaining consent, a total of seven interviews were conducted with baccalaureate nursing students who were currently enrolled in NSG 312, Care of the Childbearing Family, and had completed all obstetric (OB) clinical hours, at a southern Colorado university, spring semester 2015. Each interview, consisting of eight questions, was audio-recorded and lasted no more than thirty minutes. After completion of all seven interviews, each individual recording was listened to and transcribed by the researcher.

To identify recurring words and themes, the researcher developed a cognitive map of the responses. Once each interview was cognitively mapped, themes were able to be detected. A total of twelve themes emerged from the data, eight positive and four negative. Common positive themes that emerged included: Hands-on; realistic; increased confidence; independent/critical thinking, application of knowledge; the role of the registered nurse; patient communication; and timing within the semester. Common negative themes were: anxiety-provoking; needed more time for preparation; identification of weaknesses; and the need to be more efficient. These twelve themes
were then grouped into the perceptions of: perceived benefits; effects on self-confidence; areas for improvement; and placement within course curriculum.

**Perceived Benefits**

**Hands-on and Realistic**

It is no secret that the use of simulation offers an experience that caters to the kinesthetic or hands-on learner. While some students learn primarily through visual and auditory coaching, simulation provides a third modality of learning to compliment classroom and clinical instruction. Five out of the seven participants commented on the benefit of hands-on learning, with subject #4 stating “it was nice to have hands on because that is more what a nurse is going to do.” However, it was also clear that in order to gain buy-in from students, the scenario needs to be realistic and promote a real-life experience. Six of the seven students also commented on the realism of this particular scenario. Subject #4 stated:

I liked that it was a real life scenario. I liked that we were able to have all the signs and symptoms that that kind of mom would have. We had baby on the monitor just like we would have, we had baby on the monitor strip, mom dilated, we could see baby crowning, the doctor did not show up, we gave birth to the baby, nurses do actually have to help with delivery! It seemed realistic. The baby was not crying and did need interventions; that actually does happen… I was actually able to do something I thought I would never do, participate in the birth of a child. This is the best simulation I have done so far.

This sentiment was echoed by five other participants in the study, such as subject #6, who stated “pretty representative of what would happen in real life.” It can be assumed that
the capabilities of this new, state of the art mannequin contributed to the believability of the simulation. Najjar, Lyman and Miehl (2015) note that high levels of fidelity within the scenario are viewed as contributing to the realism of a simulation experience, even when accompanied by lower-fidelity elements.

**Independent/Critical Thinking and Application of Knowledge**

Four of the seven subjects highlighted independent and critical thinking when asked about the benefits of participating in the simulation. Three of these four also reflected on the application of knowledge aspect of learning. A recent study by Goodstone et al. (2013) confirmed that simulation is associated with improved critical thinking test scores using the Health Studies Reasoning Test (HSRT). The HSRT is a health-science-specific version of the California Critical Thinking Skills Test that is frequently used in nursing schools to measure critical thinking.

Subject #2 stated “I liked how we were just put on our own and had to make our own decisions. It made us critically think through our situations versus having help… [we were] allowed to make mistakes and see the results of those mistakes.” Subject #4 furthered this notion by stating that “I felt like I learned how to cement the signs and symptoms with the nursing intervention.” The obstetrical simulation offers this opportunity in a manner that is unique, in that the interventions directly affect the laboring mother, but also indirectly affect the fetal well-being, as reflected on the fetal monitor. Subject #1 addressed this thought in saying:

it’s just a different application of knowledge because even though in the clinical setting you see what’s going on and you are thinking about all the things you would be doing, it’s a little more challenging when you have
to be the one touching and dealing with the patient. Now, the firsthand application of knowledge makes you realize how much more you need to know, and quickly be on your feet.

It seemed that the students appreciated this chance to apply what they had learned and to recognize that they are making critical connections from the didactic learning to the clinical application and judgement. When asked what was liked most about the simulation, subject #1 stated, “gave me the opportunity to think through these type of situations on my own, with peers, without worrying about losing a patient or baby…[it was a] good way to put what I know into practice.”

The Role of the RN versus the Observer and Patient Communication

One of the most prominently emerging themes reflected on being able to act in the role of the nurse, rather than that of the observer. As discussed in Chapter I, the high acuity of the labor and delivery unit dictates more of an observer role for student nurses. Three of the study subjects confirmed this, such as the comment by subject #3, “[it was my] first hands-on experience with a delivery as opposed to clinical where we’re just kind of in the background,” and subject #4, “in my clinicals I didn’t get to do much, I got to view,” and finally subject #5, “I have just been a fly on the wall, just witnessing…I learn more from hands on, so it was good for me to do rather than to just watch. Before, I was just standing there and observing.” Being an active participant in the care allowed the students to actively apply what they had learned.

When discussing the role of the registered nurse, some comments were specifically aimed at the uniqueness of a labor and delivery scenario. Traditionally, when conducting a nursing simulation scenario, one student is in the role of the primary
registered nurse (RN) and the other students take on the role of a licensed practical nurse, nursing assistant, family member or observer. In this scenario, all of the students acted in the role of the RN. Subject #6 simply stated, “nice to be in the nursing role instead of the nursing student role.” The compelling comments from the others targeted the OB realm quite nicely. Subject #2 stated “I liked that we had two RNs working together because that is more realistic, especially on an OB floor,” and subject #4 said “the doctor did not show up, we gave birth to the baby, nurses do actually have to help with delivery!” Subject #3 summed up these sentiments:

I liked that the physician did not come in quickly, or at all, so everything was on the nurses, which happens in the real world. Not having seen that either (a birth) in the clinical setting, I thought it was neat that everything was on the nurse.

The responsibility of critical thinking and clinical judgment became the responsibility of the students, acting in the role of the RN. It was clear that the students viewed the challenge of independent practice, requiring teamwork and collaboration, as favorable.

A theme that emerged, which was only minimally discussed in the review of literature, was that of patient and nurse communication. Four of the seven students addressed feeling that they needed to improve their communication skills, when asked what they learned about themselves, directly related to participating in this experience. However, only two of these responses were referring to speaking in the RN role, stating “I learned to speak what is happening, speak the role. Before, I was just standing there and observing” (subject #5). And subject #3 who stated “I need to know more, and I need to work on my communication skills with the other nurse and anyone else in the
This respondent, as well as the other two also offered responses that referred to patient communication. Often, with lower fidelity simulators, the mannequin does not speak directly to the nurse, or only answers questions when asked. With this particular obstetrical simulation design, the patient was expressing her discomfort throughout the labor process, as well as her concern for the infant, once delivered. Subject #4 said “to have a simulator that can actually do everything that a real mom can do was very real…I liked that the mom was able to talk.” And again, subject #3 lamented “my communication with the patient needs to be more in tuned to the scenario. There was not a lot of communication from me to the patient.” Perhaps this theme can be explained best by subject #2, who stated “sometimes you can put off patient communication, but with all the moaning and groaning we could not ignore her!”

**Effects on Self Confidence**

The third question of the interview asked directly what effect this simulation experience had on the students’ self-confidence in caring for a labor patient. A well-known benefit of simulation in general, it was not surprising that six of the seven subjects reported increases in confidence ranging from subject #6 saying “I think it had some effect on my confidence,” to subject #5 stating “had a great effect.” Subject #7 added “I am one of those who has to repeat it, so it helped me since I was in the hospital and had some experience. I wish I did the simulation a little bit more so it would boost my confidence.” Only one subject, #3 offered a negative response, saying “it was definitely a very humbling experience….makes you realize how much more you need to know.” Overall, it appears that an increase in confidence can be generalized to various types of simulation experiences.
Areas for Improvement

Anxiety and Need for More Preparation

Feelings of anxiety were reported by four of the seven study participants prior to beginning the scenario. One student described the situation as “nerve-wracking,” while another used the term “intimidating,” and yet another stated “I wasn’t sure what to expect.” Subject #5 summed up these feelings by saying “I knew what to expect from witnessing labor, but I did not know what track the mannequin was going down.” While anxiety is not historically unusual in simulation settings, the complexity of an obstetric scenario offers opportunity for greater apprehension. Not only are the traditional monitors present, but the students must also be adept at interpreting fetal monitoring strips, deciphering contraction patterns and taking verbal and behavioral cues from the laboring mother.

Question number six of the interview asked what could be improved about this particular simulation scenario. All seven of the study participants relayed that they needed more time for preparation, more time to acclimate to the monitors, more time to review orders and charts, and more time to become familiar with the mannequin. The high-fidelity mannequin used for this study was brand new to the university and the students had not utilized its’ capabilities prior to this experience. Therefore, repeated attempts at learning with this particular mannequin would presumably result in less anxiety. As cited, “students with more experience were able to prepare more generally for simulation, drawing on their clinical experience, past simulation and their ability to work in teams to arrive ready to manage a broader range of possibilities within the
scenario” (Najjar, Lyman & Miehl, 2015). The correlation between the feelings of inadequate preparation time and increased anxiety entering the scenario cannot be denied.

**Identification of Weaknesses and Need to be More Efficient**

In addition to feeling anxious, five of the seven subjects noted that their clinical weaknesses were made evident through participating in the scenario. Subject #1 stated “it pointed out certain things that I need to brush up on, clinical knowledge, certain numbers to look for on the monitors…..good way to put what I know into practice, [and] show me what I don’t know, what I need to work on.” Question number two asked what the students felt they learned from the simulation. Subject #3 stated:

Your reactions need to be much quicker than perhaps I reacted during the simulation. You don’t have time to necessarily guess as to what’s happening, but really have to have all interventions in place and be several steps ahead to make sure what you are doing is actually working. Definitely a very humbling experience…makes you realize how much more you need to know and quickly be on your feet.

Further adding to the theme of being more efficient, subject #2 stated “I learned probably to look at the fetal heart rates a lot more and to be more aware of my surroundings, and what I could do to be more efficient in a situation. I felt a little slow because my brain turned off.” And again, subject #6 stated “I need to stay calm, think about the question and about what’s going on before I act.” Notably, the prior themes of anxiety and need of preparation tie in here, as well. The students may have entered the scenario feeling uneasy and unprepared, which could lead to slower thought processes and inefficiency. However, real world nursing emergencies do require quick thinking, so being able to
identify this as a weakness may also lead to motivation and be viewed as a benefit of the simulation experience.

**Placement Within Course Curriculum**

The final question addressed where the participants believed this simulation should be placed within the semester. Responses to this question varied, with three subjects citing the beginning as a review before clinicals, four citing the middle of the semester to compliment the clinical experience and three stating that the end was appropriate for application of knowledge. It should be noted, however, that after responding with “right before clinicals,” subject #1 also stated “we could not have made the same decisions before our clinical experience. Also of note, two of the subjects recommended multiple placements within the semester. Subject #2 asked:

Could we have multiple times or just one time? Obviously, I think clinical at the hospital is the best, but the simulation allows you to think on your own and critically think and make mistakes without really hurting a patient. So I think during the middle and again at the end, because during the middle, we are learning different things at the hospital and it allows you to make mistakes, and at the end it really shows what we have learned and how you’ve grown in efficiency, work ethic and teamwork.

Subject #3 agreed stating “it is a good experience to go over before clinical to know what to expect…in the middle of the semester it is an application of knowledge directly, so it would help to cement all the knowledge from class and clinical.” Further supporting this thought, subject #7 stated “probably after having one or two labor and delivery days at the hospital so that way you kind of know what to do and then if you have another one
you would know what to expect.” Finally, in support of having the simulation at the end of the clinical experience, subject #6 said “we didn’t learn this stuff until into the semester, so I think this is a good time (at the end). Other areas are better early, but with OB, I think the end.”

**Limitations of the Study**

This study had a small convenience sample and included only junior level students at one southern Colorado university. Students at other institutions may have different perceptions regarding the use of simulation as a learning method. The study university had just recently purchased the high-fidelity mannequin and the students had limited orientation time to become familiar the mannequin and the supplemental equipment and monitors. Greater familiarization with the equipment may alter student perceptions of their learning. Finally, the self-reporting interview format could have altered participant responses, as they may strive to offer professional statements or wish to please the interviewer.
Chapter V
Conclusions and Recommendations

Conclusions

The purpose of the study was to determine baccalaureate nursing students’ perceptions about the use of labor and delivery simulation as a learning method in regard to perceived benefits, areas for improvement, effects on self-confidence and optimal placement within course curriculum. Results of this study confirmed many of the previously reported benefits of high-fidelity simulation including, hands-on and realistic learning, critical thinking and application of knowledge, and increased self-confidence.

Benefits of the labor and delivery simulation reported during the interviews revealed that students felt the experience was critical as they are often only observers in the labor and delivery clinical rotation. Additionally, this study revealed two less commonly reported benefits: being able to work as a team of registered nurses in the role of the nurse and practice with patient and co-worker communication skills. The acute nature of the obstetrical unit often calls for independent and competent practice by a team of registered nurses while awaiting the arrival of a physician. This requires high-level communication skills between the nurses and effective and therapeutic communication with patients and family members. Further, the complex environment caring for a labor patient presents the additional challenges of assessing fetal monitoring strips and navigating the radiant warmer for the newborn baby.

It was clear from the study responses that more preparation time and orientation time for the scenario were needed. As a result, students felt anxious at the start of the scenario and perceived themselves as inefficient. When considering curriculum
placement, the results of this study indicated that the middle or end of the clinical rotation was viewed as optimum, and perhaps more than one simulation experience would be beneficial. The students felt that the knowledge base necessary to successfully perform in the labor and delivery simulation would not be acquired until at least a portion of the didactic and clinical rotation had been completed. Overall, the perceptions of the study participants favored the use of simulation as a learning method to assist in the proper nursing care of a labor and delivery patient.

**Recommendations**

As research into providing safe and effective care of the laboring mother and newborn continues to develop, it will become even more important for nursing students to be exposed to high-level acuity obstetrical situations in a simulation setting. Prior to beginning such a scenario, students should be given an orientation to the high-fidelity mannequin, as well as all complementary equipment and monitors involved. The simulation preparation time to become familiar with the patient chart and physician orders should be no less than 30 minutes. A simulation coordinator should provide live communication by speaking through the mannequin, to allow students to practice effective communication skills during a stressful situation. When notified by the RN, the physician should be “unavailable” to allow the students acting as registered nurses to practice effective teamwork.

Since the high-fidelity simulator was new to the study university, placement within the curriculum has yet to be determined, and perhaps these study results will assist with determining the optimal placement of this simulation. A mid-semester experience would allow students to obtain a foundation for clinical and didactic learning. A repeat
of the scenario near the end of the rotation as well would allow application of knowledge presented in theory class.

Summary

This research study contributes to the current body of knowledge related to the use of high-fidelity simulation in nursing education. In light of the recent study by the National Council of State Boards of Nursing (2014), it is clear that more work needs to be done to determine the percentage of clinical time that can be replaced by simulation to achieve maximum learning outcomes. As research continues to support the educational benefits of simulation, gaining buy-in from both students and faculty will be imperative. The financial constraints that many programs are currently facing will present additional challenges to designing and implementing effective simulation. Nursing educators must rise to this challenge by designing and utilizing creative and innovative scenarios that comply with curricular standards and meet course objectives. Through the effective use of simulation as a learning method, nursing programs can provide optimal learning experiences despite shrinking clinical sites and limited hands-on opportunities to prepare safe and effective nurses.
References


APPENDIX A

4.13.15
IRB Review
Proposal Title: Baccalaureate Nursing Students’ Perceptions of Labor and Delivery Simulation as a Learning Method
Principal Investigator: Persons
New application from Nursing

Dear Lisa,
Thank you for submitting your IRB application “Baccalaureate Nursing Students’ Perceptions of Labor and Delivery Simulation as a Learning Method”. This application has been reviewed according to the policies of this institution and applicable federal regulations. The review category for this application is Exempt. This letter serves as notification that you now have IRB approval for a period of 12 months from the date of this letter. The expiration date for your approval is 4.13.16. Once human research has been approved, it is the Principal Investigator’s responsibility to report any changes in research activity related to the project, including revisions or amendments, serious adverse consequences, renewal or completion. If you have any questions, please contact me at barbara.brettgreen@csupueblo.edu. Thank you for your concern regarding the protection of human subjects, and good luck with your research.

Best regards,

Barbara Brett-Green, Ph.D.
IRB Chair
APPENDIX B

Consent to Participate in a Research Study
Colorado State University- Pueblo
College of Engineering, Education and Professional Studies And
The Department of Nursing

TITLE OF STUDY: Baccalaureate Nursing Students’ Perceptions of Labor and Delivery Simulation as a Learning Method

PRINCIPAL INVESTIGATOR: Lisa Persons, RN, BSN – Graduate Student - Nurse Educator

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH? You are being asked to participate in this study because you are a junior level student in the nursing program at CSU-Pueblo. Additionally, you are over the age of 18 and have completed the required clinical hours for NSG 312L. Having recently completed your clinical rotation in women’s services, your opinion of the use of simulation as an additional learning method is very much valued.

WHO IS DOING THE STUDY? This study is being conducted by a graduate nursing student enrolled in the Nurse Educator track at CSU-Pueblo, as partial fulfillment of the graduate thesis requirement for a master's degree.

WHAT IS THE PURPOSE OF THIS STUDY? The purpose of this study will be to determine baccalaureate nursing students’ perceptions of perceived benefits, areas for improvement, effects on self-confidence and optimal placement within course curriculum with the use of a labor and delivery simulation as a learning tool.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST? The study will take place at the CSU-Pueblo simulation laboratory. The simulation scenario will take no more than two hours, including preparation, the scenario, and debriefing. The follow up interview will take place at an agreed upon location either Friday, April 17th or Saturday, April 18th. The interview consists of eight questions and will take 45 minutes to complete.

WHAT WILL I BE ASKED TO DO? For this study, you will be asked to study simulation preparation materials for 30 minutes, then participate in the 30 minute simulation scenario. Following the completion of the scenario, a 30 minute debriefing session will take place. You will then be asked to sign up for an audio-recorded interview time slot for either April 17th or April 18th.

ARE THERE REASONS WHY I SHOULD NOT TAKE PART IN THIS STUDY? You should not participate in this study if you do not desire to return for a follow up interview. You should also not participate if you are under the age of 18 or have not completed the NSG 312L clinical rotation.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS? There are no known risks associated with participating in this study.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY? Your participation in this project will provide you with more exposure to care of the labor and delivery patient, as well as helping to determine the optimal use of the simulation within the CSU-Pueblo nursing curriculum for future nursing cohorts.

DO I HAVE TO TAKE PART IN THE STUDY? Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty.
or loss of benefits to which you are otherwise entitled. Making the decision to not participate in the study will not affect your grade in NSG 312L.

WHAT WILL IT COST ME TO PARTICIPATE? There is not cost involved in this study.

WHO WILL SEE THE INFORMATION THAT I GIVE? We will keep private all research records that identify you, to the extent allowed by law.

For this study, we will use the last four digits of your PID only so that the only place your name will appear in our records is on the consent and in our data spreadsheet which links you to your PID. Only the research team will have access to the link between you, your PID, and your data. The only exceptions to this are if we are asked to share the research files for audit purposes with the CSU Institutional Review Board ethics committee, if necessary. When we write about the study to share with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

CAN MY TAKING PART IN THE STUDY END EARLY? You may be required to stop before the end of the study if all or part of the study is discontinued for any reason by the investigator or university authorities, or if you fail to adhere to requirements for participation established by the researcher.

WILL I RECEIVE ANY COMPENSATION FOR TAKING PART IN THIS STUDY? There is no compensation for taking part in this study.

WHAT IF I HAVE QUESTIONS? Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the investigator, Lisa D. Persons at 719-547-4085 or lisa.persons@csupueblo.edu. If you have any questions about your rights as a volunteer in this research, contact the CSU-Pueblo IRB Chair, Dr. Barbara Brett-Green, at barbara.brettgreen@csupueblo.edu. We will give you a copy of this consent form to take with you.

WHAT ELSE DO I NEED TO KNOW? By signing this consent form, you are agreeing to participate in both the simulation experience, AND the follow up interview. You will be contacted on the day of your scheduled interview as a reminder, prior to your scheduled interview time.

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing two pages.

Signature of person agreeing to take part in the study __________________________ Date __________________________

Printed name of person agreeing to take part in the study __________________________

Name of person providing information to participant __________________________ Date __________________________

Signature of Research Staff __________________________
Good morning Lisa ~ thank you for your inquiry. I have had the chance to review the documents and as an authorized signatory for St. Leonard’s Community Services, hereby provide authorization for usage of our materials as requested for inclusion within your thesis requirements.

We wish you the best of luck with your academic studies.

 Regards CMD
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Executive Director

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APPENDIX D

Adapted Qualitative Interview Questions

1. Tell me about your experience with the simulation?
2. What did you feel you learned from participating in the simulation?
3. What effect, if any, did the simulation experience have on your self-confidence in caring for a labor patient?
4. What did you like most about the simulation?
5. What things can you observe about yourself that are different now from before the simulation, that you believe is directly related to what you learned in the simulation experience?
6. How could the simulation be improved?
7. What do you believe would be the best time within the semester to complete the simulation?
8. Is there anything else you would like to say about the simulation that was not covered in these questions?

APPENDIX E

Curriculum Vitae

Lisa D. Persons
RN, BSN
COLORADO STATE UNIVERSITY-PUEBLO
Summer 2015

391 Morning Glory Drive
Pueblo West, CO 81007
719-547-4085

EDUCATION

Beth-El College of Nursing at UCCS
Bachelors of Science in Nursing 1998

TEACHING / LIBRARY EXPERIENCE

Colorado State University Pueblo - Pueblo, CO
Adjunct Clinical Faculty 2014 – present

Pueblo Community College – Pueblo, CO
Adjunct Clinical Faculty 2004 - present

RESEARCH EXPERIENCE / SCHOLARLY OR CREATIVE ACTIVITIES

Development and implementation of a Labor and Delivery simulation scenario utilizing a high-fidelity mannequin that was newly acquired by CSU-Pueblo

Planning and implementation of a community “baby shower” to raise awareness and raise funds for the new high-fidelity SimMom mannequin

SERVICE / PROFESSIONAL ACTIVITIES

Sigma Theta Tau International Honor Society – Iota Pi Chapter
Colorado State University – Pueblo, Mary Kontz Award May 2015