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The Student Nurse's Change in Knowledge During a Clinical Rotation in Labor and Delivery

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THE STUDENT NURSE'S CHANGE IN KNOWLEDGE DURING A CLINICAL
ROTATION IN LABOR AND DELIVERY

By

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ABSTRACT

Purpose: The purpose of this study was to determine if the baccalaureate degree student nurse's clinical experience in labor and deliver affects his or her knowledge of labor and delivery nursing care.

Design: A descriptive, non-experimental pre-test post-test design.

Method: A convenience sample of 45 baccalaureate student nurses enrolled in the parent/child class at a large southeastern university. Data collection took place from August 2013 to October 2013.

Results: The mean difference between pre-test score and post-test score demonstrated minimal gain in knowledge during the clinical rotation in labor and delivery. The number of hours the student nurse participated in the labor and delivery rotation was statistically significant. Students who completed an 8- hour clinical rotation had significantly higher knowledge than the students who completed a 2-hour clinical rotation. No additional statistical significance was found.

Conclusion: Limited knowledge gain in this sample of BSN students after their clinical experience may be the result of multiple factors. Time may be needed for student's reflection and critical analysis to assimilate learning. Additionally faculty should develop strategies to increase knowledge and retention.

Keywords: labor and delivery nursing, clinical learning, knowledge

CHAPTER 1: INTRODUCTION

Student nurses face many challenges to learning both in the classroom and in the clinical setting. These challenges affect how well prepared a nurse is when he or she enters into practice. A student nurse not adequately prepared is more likely to perform significant mistakes. These errors can lead to serious injury or even death of the patient. Because of the shortage of nurses across the country, hospitals may limit the number of student nurses trained on each unit. Yet the number of students enrolled in nursing schools continues to rise to meet the critical nursing shortage. This increase in students and shortage of nurses places a burden on the nursing unit that is already fatigued from understaffing.

Purpose

The purpose of this study was to determine if the baccalaureate degree (BSN) student nurse's clinical experience in labor and deliver affects his or her knowledge of labor and delivery nursing care. Since the student nurse working in labor and delivery functions in an observational role with little hands-on opportunities, an understanding was needed of how much knowledge is gained from that experience.

Background and Significance

Over the last twenty years a nursing shortage has continued to play a major role on the healthcare system of the United States. The Joint Commission (2010) reports that because of the nursing shortage, hospitals are reducing the clinical opportunities for student nurses as well as the number of students they are willing to accept for a rotation.

Requesting staff nurses to supervise these students adds extra responsibilities that may distract the staff nurse from providing safe patient care. With limited clinical experience, new graduates are unprepared to enter the workforce and practice safe nursing care.

In 2001, the national average hospital registered nurse (RN) vacancy rate was at 13%. This shortage has continued and in some areas the percentage of vacancies is even higher (Fox & Abrahamson, 2009). Nurses are handling larger patient loads to accommodate these nursing shortages. “Ninety-three percent of hospitals-based registered nurses report a lack of sufficient staff and time to maintain patient safety, detect complications early, and collaborate with other health care team members” (Benner, 2010, p. 3). The shortage of nurses directly influences the patient load each nurse is assigned during a shift and also affects the relationship and availability of time and energy to work with students on the unit. Many times nurses’ assignments are heavier than what is recommended for the best in safe practice. It is estimated that between 44,000 and 98,000 people die per year because of medical error in the United States (Goeschel, 2011). Other studies, (Reason, 2001) have shown that the lack of time the nurse spends with each patient is related to injury or harm. The Joint Commission (2010) reported a direct correlation between the number of staff nurses on a unit during a shift and the number of preventable adverse events related to patient safety. In order to prevent unnecessary accidents, errors, injuries and even deaths, the nurse to patient ratio must be reduced through substantial increases in numbers of nurses.

Expansion of the number of students enrolled in schools of nursing would increase the number of graduates becoming new nurses. Unfortunately there is a severe

nursing faculty shortage that prohibits the increase in enrollment to most BSN nursing programs. Yordy (2006) on behalf of the Robert Wood Johnson Foundation stated: “the shortage of nursing faculty in the United States is a critical problem that directly affects the nation’s nurse shortage, which is projected to worsen in future years” (pg.1). Yordy estimates that 33,000 qualified applicants to nursing programs were rejected due to limited number of nursing faculty. Additionally, 76.1 percent of nursing schools surveyed indicated the faculty shortage is the main reason for limiting the admissions of additional students to the nursing program (Yordy, 2006). However, even if faculty numbers increase and more students are admitted to nursing programs, there remains a problem with limited clinical space for the large number of students in programs of nursing.

In addition to the nursing faculty shortages, some studies (Wolff, Regan, Pesut & Black, 2010; Saitsing, Gibson & Pennington, 2011) suggest that nursing students have inadequate knowledge and critical thinking skills to enter the workforce. Saitsing, et al. (2011) discovered that many employers reported that novice new graduate nurses were ill prepared to enter practice. The survey results indicated that between 49% and 53% of novice nurses were involved with errors in nursing care. Student nurses who graduate and are not prepared for the workforce are more likely to make mistakes and these mistakes can be fatal. One study by del Bueno (1994) reported 62% of the nursing graduates were not demonstrating entry level skills to safely care for patients and identified the area of weakness is clinical education. The clinical rotation should offer unequalled opportunities that provide a context for students to acquire and practice their knowledge and skills (Fox & Abrahamson, 2009). Many new graduates report they would have been better prepared for a career in nursing if the clinical experience had offered additional real-life

experiences (Chappy, Jambunathan & Marnocha, 2010). MacIntyre, Murray, Teel, & Karshmer (2009) reported that only minimal evidence is available to support the traditional method of clinical education in nursing programs and encourage further research to accurately evaluate the outcomes of the current clinical model of teaching. Required clinical hours for a nursing program are limited and may restrict clinical rotation experiences, thus students may not have ample opportunities to gain the knowledge that is needed for safe practice. Furthermore, students are expected to link the knowledge gained in lecture with the hands-on experiences in clinical to learn to make critical judgments in the clinical setting. In some clinical areas, hands-on participation in patient care is not possible because of limited time, limited faculty supervision, and/or unavailable nurses to assist students. Newton, Billett, Jolly & Ockerby, (2009) reported that many students were unable to translate the theoretical classroom knowledge into practical clinical knowledge unless they could relate it to hands-on learning opportunities. If the clinical experience is primarily observational, as it is in labor and delivery clinical setting, the student nurse may be unable to link classroom theories with the clinical experience.

Statement of the Problem

Clinical rotations can present many challenges to students during their nursing education experiences. Many of these challenges are seen universally in all clinical areas in a hospital but some additional concerns are specific to the particular clinical area. Benner (2010) noted some general limitations that affect the student nurse's clinical rotation include: the shortage of nurses in the hospital setting, the lack of available clinical sites, the lack of clinical instructors, the faculty-to-student ratios, and the lack of

clinical hours. A limitation specific to certain areas of the hospital, such as labor and delivery, also includes restrictive hospital policies. In labor and delivery the nursing student is responsible not only for the patient, but also for the care of her unborn fetus. Labor and delivery is an unpredictable area where difficulties may arise in finding safe and effective learning opportunities for the student without putting the patient at risk (Raines, 2010). Raines also stated “the availability of patient care experiences are [*sic*] influenced by factors such as workplace culture, patient satisfaction targets, and liability issues” (p. 113). Because the priority and focus of the hospital is patient care rather than teaching students, these factors may limit the quality of the learning experience and the student’s ability to be involved in hands-on care of the patient.

In a labor and delivery clinical rotation, limitations to student learning include: having an observational experience rather than hands-on learning opportunities, a large faculty-to-student ratio, and a gap between classroom theory and clinical practice. Because of the multitude of limitations placed on the activities of the nursing student in labor and delivery during the clinical rotation, the student nurse may not be gaining as much knowledge as in other areas of the hospital during a similar clinical rotation. It is difficult to accurately assess whether the learning needs of the student are being met in their limited clinical experience. Consequently, the nursing student may start a career in labor and delivery as a novice nurse unprepared to safely care for a patient and her unborn baby.

In many clinical settings one faculty may be responsible for up to ten students. In women’s health clinical rotations, the clinical group of nursing students is often divided into three or four areas of the hospital including labor and delivery, antepartum, mother-

baby, NICU, and lactation. Often the instructor is stretched to supervise and effectively teach the students in all areas, simultaneously. Because of the fast pace and high acuity of the labor and delivery area, students assigned to the area may be mentored by a staff nurse instead of the clinical instructor. The staff nurse is responsible for most of the experience, education, teaching of skills, and role-modeling for the student nurse. While many staff nurses may be effective in this responsibility, the previously mentioned nursing shortage, their own lack of preparation as instructors, and other workplace issues may affect the type of learning experience the staff nurse can offer. Additionally, because of a lack of clinical space and availability of instructors, many nursing students may spend only one to two days in the labor and delivery area further limiting the potential to participate in deliveries and possibly limiting their learning.

Restrictions and policies in place by hospitals may decrease skills that students practice during their rotation. Because of the nature of the labor and delivery unit, the high acuity of the patients and rapidly changing situations, the possibility of making an error could lead to death or injury of a patient and her unborn child. These risks, have led many hospitals to restrict the student nurse's clinical experience to observation only. The student nurse may be allowed to complete a few skills in addition to the observation experience but most are limited to skills that reduce liability and offer minimal new learning.

A number of factors are involved in student learning during a typical clinical day. However the labor and delivery experience is particularly limited to an observational time for most student nurses which is different from the usual hands-on clinical rotation. This study examined the student nurse's cognitive learning before and after a clinical rotation

in labor and delivery to determine whether there was a change in student knowledge resulting from their experiences.

Theoretical/Conceptual Framework

The theoretical framework used for this study was Bandura's Social Learning Theory. Bandura's (1977, 1986) theory discussed social influences that affect learning. He believed that environment, cognitive factors and behavior all interact to influence the student's learning ability and students learn vicariously through others. The Social Learning Theory involves four steps to observational learning. First, attention must be paid by the observer to the role model. During the observation if the observer is distracted, a negative impact on learning may occur. Second, retention is important in the Social Learning Theory. Retention is the ability of the observer to store the information to be used later and then act on the knowledge gained from the observation. The third step in the Social Learning Theory is reproduction. Each time the observer replicates the retained behavior, the behavior or skill is improved. Finally, the last step is motivation. If the observer is not motivated to imitate the behavior, than the behavior will not be practiced and therefore the behavior will not be retained nor will improvements be made.

Nursing students do not have the opportunity to care for every patient with every disease during their one shift in clinical setting. The social learning theory supports the belief that nurses, the instructor and other students can share their clinical experiences with the novice student nurse who can learn vicariously through this experience. Bandura stressed the importance of a construct known as reproduction. He observed that in order for a student to understand images or descriptions, the student must translate the images into actual behaviors. Without the opportunity to reproduce, practice, or use the

information taught, the information may not be retained. Therefore, a student may learn through modeling performed by staff nurses, the instructor, and/ or through the environment thus leading the student to repeat the observed behaviors.

Research Questions

The research questions for this study were:

- 1) Does the student nurse's clinical observation experience in labor and delivery affects his or her knowledge of labor and delivery nursing care?
- 2) Does a 12, 8 or 2 hour shift in labor and delivery affect the knowledge levels of students?
- 3) Does the age of the student nurse affect his or her knowledge of labor and delivery nursing care?
- 4) Does the hospital where the clinical rotation occurred affect the student nurse's knowledge of labor and delivery nursing care?
- 5) Does the type of program (accelerated versus traditional) affect the student nurse's knowledge of labor and delivery nursing care?

Definitions

Traditional Nursing Student: Students enrolled in a baccalaureate nursing program typically consisting of five semesters of classroom and clinical work.

Accelerated Nursing Student: A student who is enrolled in a baccalaureate nursing program typically consisting of four semesters of classroom and clinical work. Requirements are the same as the traditional student but the time frame for completion is decreased by one semester. These students have a previous college degree before entering the nursing program.

Observational Clinical Experience: The student nurse primarily watches the staff nurse care for the patient. Very little hands-on nursing care is provided by the student. Observational student experiences are often found in high risk areas of the hospital.

Hands-on Clinical Experience: Student nurses are assigned patient(s) for whom they care with guidance and supervision from a clinical instructor or staff nurse. The student nurse may perform skills that the patient requires and may participate in medication administration and needed procedures.

Clinical Rotation in Labor and Delivery: Nursing education clinical time spent only in the labor and delivery area working as a student nurse. The amount of time spent in the area varies greatly depending on hospital and clinical faculty.

Staff Nurse: A nurse employed by the hospital whose primary role is care of the patient. This nurse may or may not have received training in clinical teaching or nursing education.

Clinical Faculty: A clinical faculty is an employee of a college or university that is responsible for educating the student nurses in the clinical experience. The clinical faculty is trained in linking classroom objectives to the clinical experience and providing learning experiences for the students.

Knowledge: The facts, information, and skills acquired by a person through experience or education or the theoretical or practical understanding of a subject. For this study, knowledge was measured by the score level on the Labor and Delivery Knowledge Assessment Instrument (LDKAI).

Assumptions

The following assumptions were made in this study. All students are undergraduate nurses in the same course and have attended all preliminary course classes for care of the obstetric patient. Clinical experiences are vital components of student learning in an undergraduate nursing program. All students received the same content regarding labor and delivery experiences during the classroom lectures prior to clinical. Student knowledge can be measured using multiple choice tests. All students completed the pre and post-tests with no assistance from fellow students, faculty or additional resources.

Limitations

One limitation related to this study was a small convenience sample size of forty-five participants which limits the generalizability of the findings. Additionally, all the participants were enrolled in one large university in the southeast. In future studies it would be important to enroll participants from different universities across the country. Additionally, the pre-tests and post-tests were administered in a variety of settings in the hospital. Students may have had the opportunity to discuss the questions and answers with other nursing students or staff nurses on the clinical unit between tests and may have made changes based on those conversations.

CHAPTER 2: REVIEW OF LITERATURE

The clinical experience for a student nurse in any clinical area is inexact, undetermined, and often unpredictable because of the nature of the environment. In a specialty area such as labor and delivery, there are additional limitations such as the large faculty-to-student ratio, the high risk nature of the labor and delivery patient necessitating an observational role for students, and the gap between classroom theory and clinical knowledge. These limitations may alter the student nurses' understanding of caring for the patient during the clinical rotation.

The literature review will address three areas of research related to the student nurse in the clinical rotation in labor and delivery and the potential limitations which may influence the student's gain in knowledge. In the first section, a review of research studies related to faculty-student ratios and the effect on student's gain in knowledge will be discussed. The second section explores hands-on learning versus observational learning while the last section focus is on the theory practice gap between the classroom and the clinical settings.

Faculty-to-student ratio

Benner (2010) explained that many faculty express concern over the faculty-to-student ratio. One faculty supervising and teaching ten students in the clinical setting can be nearly impossible and might even be dangerous for the patient's safety. Nurse educators are concerned about the faculty-to-student ratio in clinical and the potential liability the large ration can lead to errors. In addition, many hospital administrators

worry there is a direct effect between patient safety and the faculty-to-student ratio.

MacIntyre, Murray, Teel, & Karshmer (2009) discuss the concerns many hospitals report about the safety of patients when the ratio is high. A trend of many hospitals is to restrict the faculty-to-student ratio to one to six or less in the hospital setting in order to prevent unsafe practice. This creates a greater strain on schools of nursing to employ qualified clinical faculty considering the critical shortage of faculty available. Although Benner (2010) and MacIntyre, et al. (2009) discuss the negative impact large faculty-to-student ratios have on the clinical experience, no research on the effects on student knowledge level could be found to support this argument or negate it.

Some research was conducted regarding class size and student performance.

Although these studies do not pertain directly to the clinical experience, it may relate to the faculty-student ratio constraints seen in the clinical setting. Johnson (2010) found that increased class size has a significant negative impact on the final grades across all areas regardless of the student's age, gender or how many years of education the student had completed. The author suggests that if outstanding student performance is the goal of the institution, class size should be reduced. If the results are translated into the clinical setting, it would indicate that smaller clinical groups of students per faculty member would allow the students to perform at a higher level and increase the knowledge gained during the experience.

In light of the limited clinical faculty and large faculty-to-student ratios, Ownby, Schumann, Dune & Kohne (2012) studied two methods of clinical education, the traditional faculty lead clinical group and the preceptor staff nurse lead clinical experience. The authors were concerned that the staff nurses may have limited experience

in mentoring and educating to prepare and evaluate the nursing students. The researchers provided training to the staff nurses to aid them in their role as preceptor. Additional technology was provided to the staff preceptors including a project-specific website and 24 hours a day technical support to enhance the staff nurses access to classroom information, objectives and policies. The results indicated that the students' test scores in the one-on-one staff nurse clinical experience were not significantly different than the students' scores in the traditional faculty led group.

Newton, Billett, Jolly and Ockerby (2009) examined the clinical environment to see which factors influenced the student nurse's transfer of knowledge. The aim was to determine if the transfer of knowledge was hindered related to the setting or related to the individual learner. The authors described the clinical experiences as "scaffolding or otherwise mediating" (p. 323) the pedagogy of the classroom and laboratory. The study concluded that three barriers exist to student nurse learning in the clinical rotation. These barriers include lack of engagement, lack of affordances or learning opportunities available in the clinical setting and teacher impact. The students reported that the information taught in the classroom setting was not fully understood until the practical clinical situation when the student could then translate the knowledge into practice. The authors emphasized the importance of effective preceptors and active participation from the student nurse in patient care to develop a more complex understanding of nursing knowledge.

In a follow up study, Newton, Jolly, Ockerby, & Cross (2012) further investigated the influence of the staff nurse versus the clinical faculty in the clinical setting. Newton's longitudinal study examined how 767 nursing students learned in the clinical setting

using different models of clinical support. The study used the Clinical Learning Environment Inventory (CLEI) to compare supervision by clinical faculty, preceptorship, dedicated education units, clinical nursing development units, and clinical education units. In the preceptorship model, the student was assigned to an experienced staff nurse employed by the hospital. A short-term relationship between the nursing student and the staff nurse focused on orientation and socialization to the unit and assisted the student in development of expertise related to the unit. Questionnaires asked the students to respond to items about their clinical teacher and their staff nurse (if applicable). Scores indicated that effective learning required clinical faculty to remain constant and give students the opportunity to develop a relationship with the faculty more than with the staff nurse who may be there only temporarily. Faculty may then gain better understanding of each student's individual needs from working with the student week after week (Newton, et al. 2012).

Hands-on Versus Observational Experience

Limited research is available related to an observational clinical experience versus the more hands-on approach in clinical nursing education. Grierson, Barry, Kapralos, Carnahan & Dubrowski (2012) examined the video-based observational practice and feedback when student nurses are acquiring skills. The authors theorize that when a nursing student practices a skill, the human central nervous system changes with the experience. Furthermore, when a skill is practiced it is "refined to incorporate specific information about the timing, magnitude and motor impulse combinations that are required to achieve a desired outcome" (p. 410). The authors report that an observational experience augments the physical skill practice and creates a positive learning

experience. The authors also discuss the importance of observational practice to include instructor-provided learner specific feedback to supplement the learning process. In the study, nursing students (N=26) participated in a pre-test, intervention, post-test experiment. Each participant was assigned into one of three experimental groups. All three groups utilized observational learning. The difference between the groups was the involvement of collaborative interaction. The authors found benefits of interactivity during the learning. The findings suggest that increasing the amount of interaction during and following an observational environment may have a positive effect on the learning process.

Kaplan, Abraham, & Gary (2012) researched students in an observation role in the simulation scenario. Students were divided into two groups: simulation and observation. Both groups participated in case study discussions prior to the simulation and research information related to the case. The groups in simulation were encouraged to evaluate their own performance as well as other team members' performances. The observational group evaluated those participating in the simulation. After the simulation, both groups completed a questionnaire. The results of the study showed no differences between test scores of the students actively involved in the simulation and those in the observational group. Because of the level of involvement in both groups before and after the simulation, the debriefing of both groups after the simulation and the pre-experience assignments, the scores of both groups were found to be similar even with one group participating and the other observing.

These studies suggest that observational experiences may have a positive impact on the learning situation. Furthermore, if observation is completed in conjunction with

additional learning experiences, such as debriefings, case studies, or peer reviews, these learning opportunities may be even richer.

Gap Between Classroom Theory and Clinical Practice

The ability to transfer knowledge between classroom and clinical area or to apply capabilities in a lab setting to a live patient is neither automatic nor immediate. Benner (2010) noted that the gap between the two areas of learning may be bridged through effective clinical teaching. However, with heavy clinical workloads that require students to be paired with multiple staff nurses in the clinical area or shifted to various sites, it may be difficult to provide consistency in the educational experience and to assess their outcomes. In the labor and delivery unit, student nurses are often assigned to a staff nurse for the clinical rotation. Often the partnering staff nurse receives little guidance on class objectives and learning opportunities in teaching and in some cases may not provide the needed educational support or environment that supports student learning.

One study examined the necessary relationship between the clinical faculty and the staff nurse. Courtney-Pratt, FitzGerald, Ford, Marsden & Marlow (2011) reported on the quality of clinical placements, noting that the large number of undergraduates in the clinical areas may be burdensome for the staff in light of their patient care responsibilities. Clinical experience is considered by most to be “key to professional competence” (p. 1381).

In a cross-sectional survey on precepting, Robinson, Andrews-Hall and Fassett (2007) found that staff shortages often made the students feel their learning lacked direction and that they were a burden to the nurses who were precepting them. The study was a cross-sectional survey design. Results confirmed the importance of the clinical

faculty in meeting the students' learning needs and competencies in the clinical setting. Staff nurses received lower scores than clinical faculty in areas such as assisting the students make decisions about learning objectives, assessment of patients, and feedback on skill development. Furthermore, observed was the importance of the clinical faculty working to support the staff nurse by assisting their development of confidence in the educational preceptor role. The study investigators described four factors that were essential for providing a high standard experience for the student nurse. These factors include: belongingness, activities to facilitate learning opportunities, feedback from the faculty and an opportunity for reflection on the clinical day, and developing competence in their skills and knowledge. Insight into the role of staff nurse in clinical education may help close the theory practice gap by providing valuable information to the university and hospitals on the relationship between the clinical faculty and the staff nurse.

Summary

Limited research exists related to the change in knowledge in the clinical rotation and even fewer studies examine the student nurse's experience in a labor and delivery unit during the clinical rotation and the learning outcomes following the time on the unit. Benner (2010) reported that the student nurse's clinical rotation is limited by many factors. However, little research is available to provide further details on the limitations and to develop strategies to address clinical teaching concerns.

CHAPTER 3: METHODS

Student learning and knowledge of the essential content in the labor and delivery area may be variable depending on multiple factors. This chapter describes the research methodology for this study including the design, the setting and sample, data collection procedures, data collection instruments, and the data analysis plan.

This study followed a descriptive, non-experimental model, using a pre-test, post-test design. The research design provided a method to describe the change in knowledge of the nursing student. Independent variables include: age of the nursing student, gender, nursing program (accelerated versus traditional), hours in the clinical shift (two, eight or twelve), and specific hospitals used for the clinical rotation. The dependent variable was knowledge level as measured by result differences on the knowledge assessment instrument from pre-test to post-test. Because of the wide variety of experiences among the clinical groups, variations in knowledge gained by each student in this area may exist. The research questions that guided this study were:

1. Does the student nurse's clinical observation experience in labor and delivery affect his or her knowledge of labor and delivery nursing care?
2. Does a 12 hour shift in labor and delivery versus an 8 or 2 hour shift in labor and delivery affect the knowledge of labor and delivery nursing care?
3. Does the age of the student nurse affect his or her knowledge of labor and delivery nursing care?

4. Does the hospital where the clinical rotation occurs affect the student nurse's knowledge of labor and delivery nursing care?
5. Does the type of program (accelerated versus traditional) affect the student nurse's knowledge of labor and delivery nursing care?

All students received the same didactic presentation on nursing care of the labor and delivery patient during the initial weeks of the course prior to the clinical rotation in obstetrics. The study participants completed a demographic questionnaire and a pre-test at the beginning of the clinical shift. The pre-test contained 20 multiple choice questions related to principles of labor and delivery nursing care along with one open-ended question. The student nurse then completed a clinical rotation on a labor and delivery unit. At the end of the day, participants completed a post-test with twenty identical questions to the pre-test and one open-ended question. Data was analyzed using descriptive and inferential statistics.

Setting

The research was conducted with baccalaureate nursing students in their junior year of nursing school. All students were enrolled in the parent-child nursing class. The nursing students attend a nursing program at a major university in the southeastern United States. Clinical faculty distributed questionnaires to the participants in a quiet private room of the hospital where the students completed their labor and delivery rotation. Students completed their clinical rotation in one of three different metropolitan hospitals.

Population and Sample

The population consisted of baccalaureate nursing students currently enrolled in the parent-child class fall semester in a large university in the southeastern United States. A convenience sample of nursing students was recruited. Only the students who were assigned clinical rotations in labor and delivery during the months of August, September, and October 2013 were eligible for the study. Recruitment occurred in August during the first week of the parent-child class. All students were at least eighteen years of age.

Instruments

The Labor and Delivery Knowledge Assessment Instrument (LDKAI) is a set of twenty multiple choice questions designed by the researcher. (Appendices A and B) These questions were originally created by Assessment Technology Institute, (ATI) to prepare nursing students for the NCLEX exam (nurse licensing exam). The questions were selected from the 2010 maternal/ newborn practice exam. Permission was obtained from the ATI Company to use the questions for this instrument. (Appendix C) The questions contained a range of content specific to care of the labor and delivery patient to test the knowledge in each of the areas. Only questions related to the subject of labor and delivery were used. The instrument was used as both the pre-test and post-test for the study.

To test for content validity of the instrument, the questions were reviewed by two experts in labor and delivery and women's health. The experts agreed that the questions in the instrument appropriately represented needed labor and delivery knowledge for safe care delivery provided by a nursing student. ATI established reliability for each question within a standardized test bank of questions. Since the questions used in this instrument

were selected from the overall standard bank of questions, the reliability information available from ATI was not used for this instrument. The instrument contained twenty questions. Each question was worth one point for a possible total score of twenty points (range 0-20). The difference between the number correct on the pre-test out of twenty was compared to the number correct out of twenty on the post-test.

A demographic questionnaire (Appendix D) was developed by the investigator. This questionnaire consisted of five items: age; gender; accelerated versus traditional nursing program; two, eight or twelve-hour shifts for clinical day; and the specific hospital to which the student was assigned.

One open-ended question was placed at the end of the LDKI. This open-ended question asked student nurses to describe anticipated learning possibilities for their day in labor and delivery. In the post-test, an additional open-ended question requested that the student discuss their perception of their own learning for the day. The question results were used for discussion purposes and were not qualitatively analyzed.

Data Collection

The primary investigator prepared a packet for each nursing student participating in the study. Each packet had two envelopes inside. The first envelope contained a demographic questionnaire and a pre-test. The second envelope contained a post-test. The pre-test and post-test included a combination of quantitative ATI questions and one narrative question. At the top of each questionnaire was a number to uniquely identify the participant. Once the questionnaire was completed the participant returned the questionnaire to the envelope and sealed the envelope to ensure confidentiality. The demographic questionnaire and pre-test were sealed in one envelope and returned to the

clinical faculty. The post-test was completed following clinical and was sealed by the student and returned to the clinical faculty. The clinical faculty then placed both sealed envelopes into the large mailing packet that was mailed to the primary investigator. The envelopes contained no identifying names, only the number that identified participants to the investigator. Once the questionnaires were received by the investigator, they were placed in a locked filing cabinet. The primary investigator has sole access to the cabinet. All clinical faculty met to receive training from the primary investigator on administering the tests the first week of class in August prior to the first clinical rotation. Envelopes were given to the clinical faculty to distribute to the nursing students on the students' day in labor and delivery.

Data Analysis

The data collected was analyzed using descriptive statistics and a multiple regression approach. Descriptive statistics included percentage, mean and standard deviation. Inferential statistics determine the relationship between the independent variable (age, program, hospital and number of shift hours) and the dependent variable, the student's score on the ATI instrument.

Protection of Human Subjects

Prior to collecting data, approval was obtained from Kennesaw State University's Internal Review Board (IRB). (Appendix E) The researcher recruited students from the parent child course. The student principal investigator (PI) described the study, study requirements, and invited the students to participate in the study. A consent form (Appendix F) was obtained from participants at this time which was the first week of the semester before the clinical rotations began. The consent form contained email and phone

number information to contact the primary investigator if the participant had any questions or decided to withdraw from the study. A participant could withdraw from the study at any time. The participants were informed that the pre-test and demographic sheet would take approximately twenty-five minutes to complete, and the post-test would take approximately twenty minutes to complete.

Data Security

The data from this study will remain stored securely on a jump drive and kept in a locked filing cabinet. Participant confidentiality is maintained through restriction on data access. Only the primary investigator, the research chair and the statistician will have access to the data. All data is kept in a locked filing cabinet and the primary investigator is the only person with access. The data will be kept for a minimum of three years and then destroyed. The data belongs to the researcher and may not be used without permission and ethical review.

CHAPTER 4: RESULTS

This chapter presents a summary of the analyzed data from the study. Discussed in this chapter are the sample characteristics, data analysis and the results. Data was analyzed using Minitab, Version 16. The data results answered the following research questions: 1) Does the student nurse's clinical observation experience in labor and delivery affect his or her knowledge of labor and delivery nursing care? 2) Does a 12, 8 or 2 hour shift in labor and delivery affect the knowledge levels of students? 3) Does the age of the student nurse affect his or her knowledge of labor and delivery nursing care? 4) Does the hospital where the clinical rotation occurred affect the student nurse's knowledge of labor and delivery nursing care? 5) Does the type of program (accelerated versus traditional) affect the student nurse's knowledge of labor and delivery nursing care?

Sample Characteristics

Forty-seven nursing students volunteered to participate in the study. Of those forty-seven, three questionnaires were not completed, resulting in a total of forty-five questionnaires for data analysis. Nearly all participants were female ($n = 41, 91.1\%$) with a small representation of males ($n = 4, 8.9\%$) (see Figure 1). Participants ranged in age from 21 to 56 years of age with a mean age of 28.91 ($SD = 8.69$).

Twenty (44.4%) of the students were registered in the accelerated (four semesters) baccalaureate nursing program and 25 (55.6%) participated in a traditional (five

semesters) baccalaureate nursing program (see Figure 2). Nursing students completed their clinical rotation at three area hospitals. Sixteen (n=16, 35.6%) nursing students completed a clinical rotation at hospital 1, four (n= 4, 8.9%) of students completed a clinical rotation at hospital 2 and twenty-five (n=25, 55.5%) completed a clinical rotation at hospital 3 (see Figure 3) Completed demographic data is found on Table 1.

Student nurses' clinical day varied in number of hours on the unit for their first clinical rotation in labor and delivery. The majority of students completed an eight-hour shift, totaling 29 students (n= 29, 64.4%). Twelve (n=12, 26.7%) student nurses completed a 12 hour shift for the clinical rotation in labor and delivery. Four (n= 4, 8.9%) students completed only two-hours for their first clinical rotation on labor and delivery (see Figure 4).

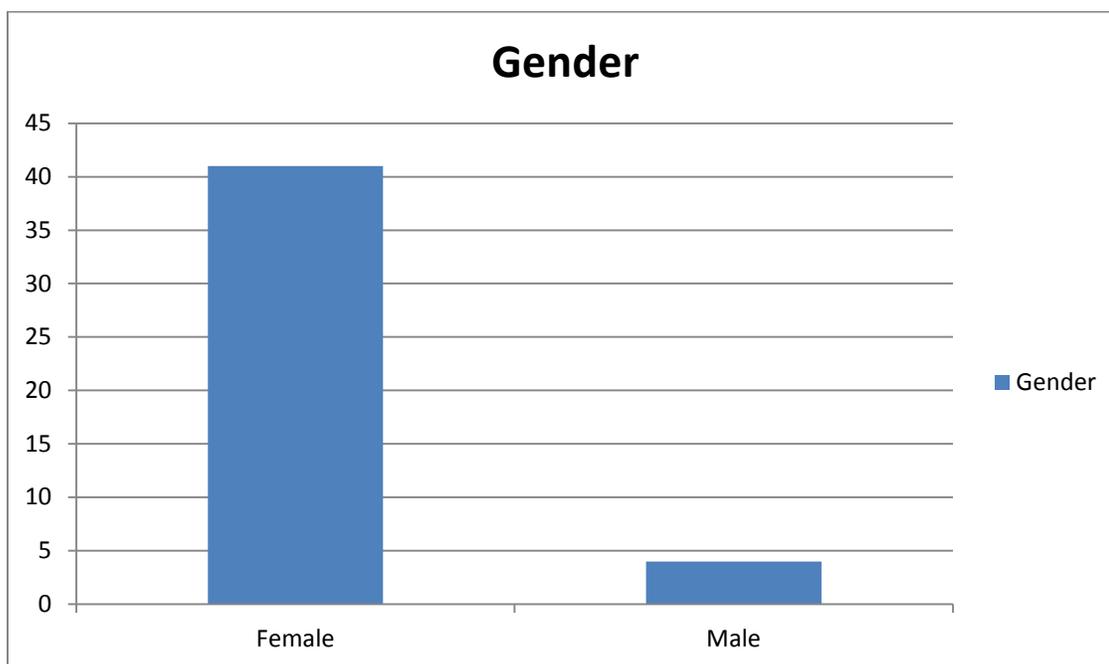


Figure 1. Gender of sample

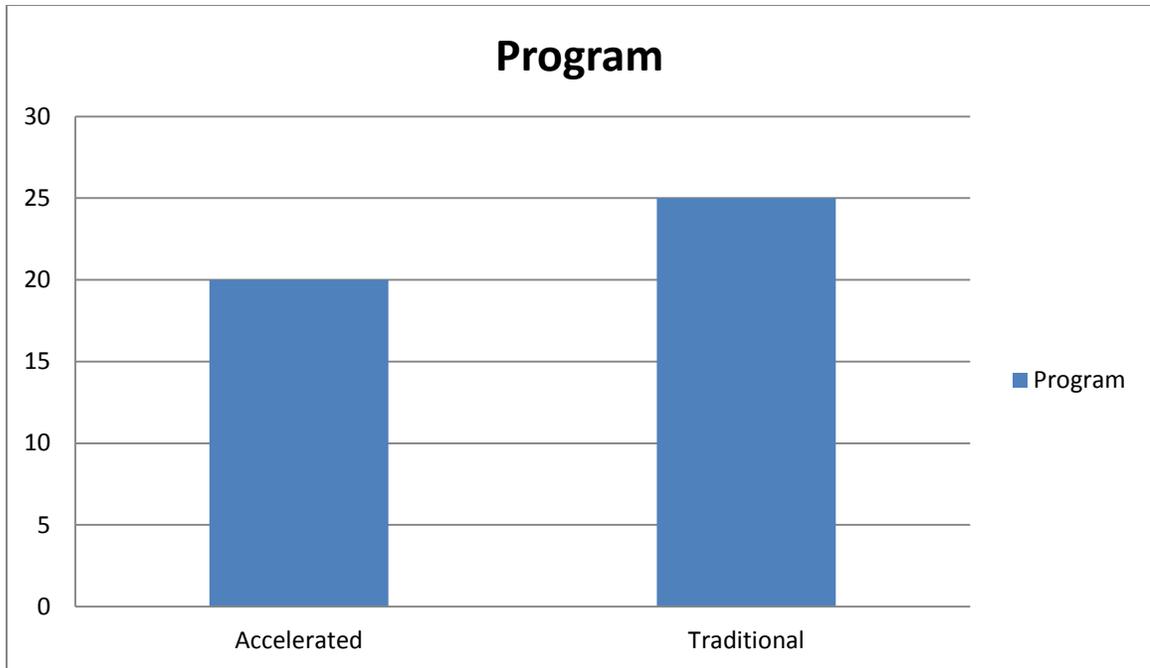


Figure 2. Number of accelerated and traditional students in the sample

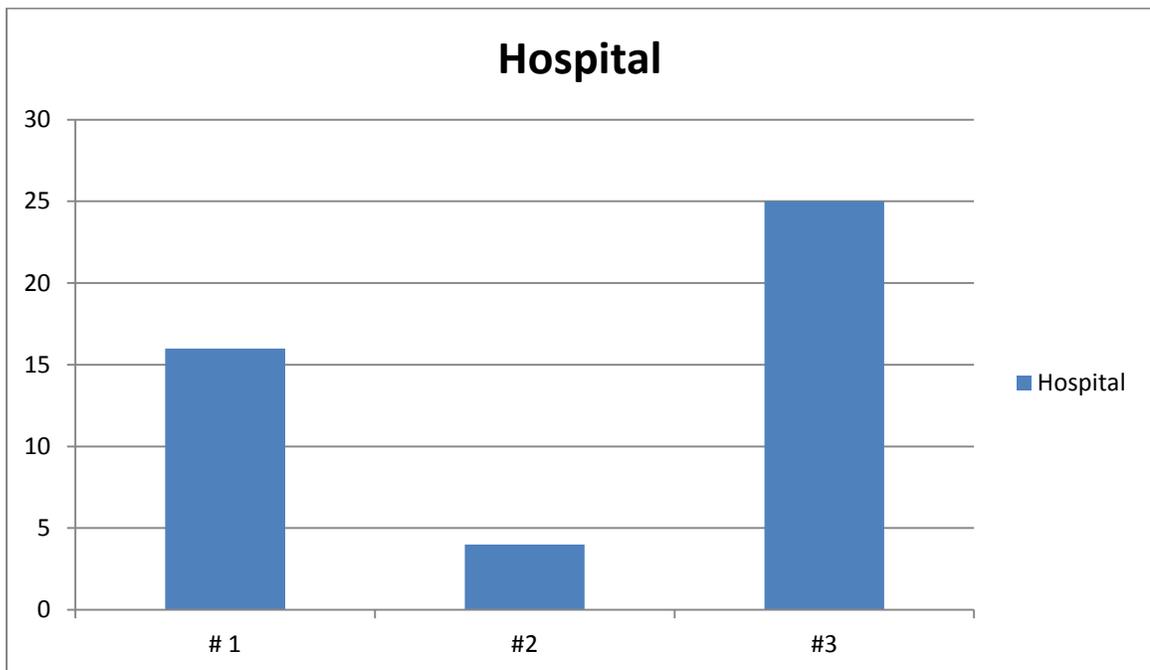


Figure 3. Hospitals in the sample

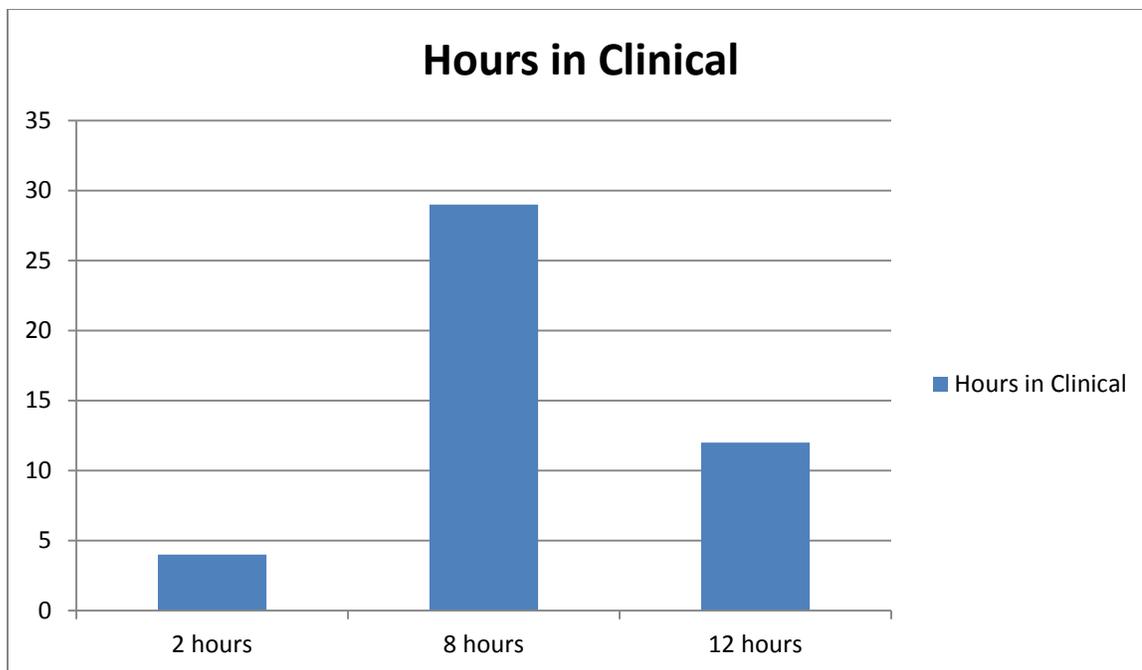


Figure 4. Number of hours that students spent at various clinical agencies

Table 1

Demographic Characteristics of the Sample

Characteristic	Number	Percentage
Gender		
Female	41	91.1
Male	4	8.9
Program		
Accelerated	20	44.4
Traditional	25	55.6
Hospital		
1	16	35.6
2	4	8.9
3	25	55.5
Hours in Clinical		
2	4	8.9
8	29	64.4
12	12	26.7

Pre-Test and Post-Test Results

The score on the pre-test ranged from 6 correct answers to 17 correct answers out of 20 total possible answers. The mean score on the pre-test is 12.511 and the pre-test standard deviation is 2.694. The scores on the post-test ranged from 3 correct answers to 18 correct answers out of 20 total possible answers. The mean score on the post-test is 13.000 and the standard deviation on the post-test was 3.053. The mean difference between pre-test and post-test is a difference of 0.489 (see Table 2).

Table 2

Pre and Post-Test

Characteristics	N	Mean	SD	Minimum	Median	Maximum
Pre-test	45	12.511	2.694	6.000	12.000	17.000
Post-test	45	13.000	3.053	3.000	13.000	18.000
Post- Pre	45	0.489	2.074	-5.000	1.000	5.000

Data Analysis

Analysis of Variance (ANOVA) was conducted to compare the effect of the type of clinical experiences on changes in knowledge. The independent variables, types of clinical experiences included three factors: program type, particular hospital setting and number of labor and delivery clinical hours. There was no statistical significance of program type (accelerated or traditional) or hospital setting on knowledge. There was a significant effect of the number of hours during the clinical rotation on knowledge at a $p < .05$ level ($F = 4.64$, $p = 0.016$) (see Table 3).

Table 3

Analysis of Variance for Post-Pre, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	p
Accelerated	1	0.004	0.063	0.063	0.02	0.899
Hospital	2	4.066	14.075	7.038	1.83	0.173
Hours in clinical rotation	2	35.589	35.589	17.795	4.64	0.016*
Error	39	149.584	149.584	3.835		
Total	44	189.244				

S = 1.95844 R-Sq = 20.96% R=Sq (adj) = 10.82% * p < .05

Post hoc comparisons using the Tukey Honest Significant Difference (HSD) test to further examine the hours in clinical rotation. Tukey's method is used to find which specific groups in the sample differ significantly from each other. In examining the three groups comprising the variable, "hours in clinical rotation", each group's mean score was compared to identify differences between two means. The mean post-pre-test scores of the students who participated in the eight-hour clinical rotation (M=0.672) was significantly different than the two-hour clinical rotation (M=-2.745). There was a large difference in mean scores between the 12 hour group and the 2 hour group, but these scores were not statistically significant. These results suggest that the number of hours do have an effect on knowledge, but the ideal amount of clinical time to make a difference is at least eight-hours. The clinical importance is that an eight or twelve-hour clinical

rotation is sufficient to score slightly better on the post-test as compared to a two-hour clinical rotation (see Table 4).

Table 4

Post Hoc Tukey HSD

Hours in Clinical Rotation	N	Mean
8	29	0.672*
12	12	0.365
2	4	-2.745*

*p<.05

Linear regression analysis was conducted to determine if the age of the participant was associated with greater gains in post-test scores. There was no relationship found between the student nurse's age and the test score changes from pre-test to post-test (see Table 5).

Table 5

Linear Regression Between Age and Post-Pre Score				
Predictor	Coef	SE Coef	T	p
Constant	0.637	1.097	0.58	0.566
Age	-0.00513	0.03638	-0.14	0.889

S = 2.09738 R-Sq = 0.0% R-Sq(adj) = 0.0% *p< .05

Research Questions Results

Research Question #1: Does the student nurse's clinical observation experience in labor and delivery affect his or her knowledge of labor and delivery nursing care?

The mean difference in pre-test and post-test scores was 0.489. This difference shows relatively little change in knowledge gain during one day of clinical rotation.

Research Questions Two: Does a 12 hour shift in labor and delivery versus an 8 or 2 hour shift in labor and delivery affect the knowledge levels of students? Students in the eight-hour group had significantly higher scores than those students in the two-hour group. There was not a significant difference in student scores between the eight-hour group and the twelve-hour group. The difference between the twelve and two-hour group was not statistically significant but may be clinically important since the difference between the scores was large.

Research Question Three: Does the age of the student nurse affect his or her knowledge of labor and delivery nursing care? The linear regression model determined no significant relationship between the two variables of age and difference between the pre-test and post-test scores.

Research Question Four: Does the hospital where the clinical rotation occurs affect the student nurse's knowledge of labor and delivery nursing care? There was no statistically significant difference in scores of students in the three hospitals compared in the analysis.

Research Question Five: Does the type of program (accelerated versus traditional) affect the student nurse's knowledge of labor and delivery nursing care? There is no statistically significant difference between the students' test scores in the traditional program versus the accelerated program.

CHAPTER 5: DISCUSSION

Clinical time for nursing students is an important component of all baccalaureate degree nursing programs. Few would disagree that hands-on learning is preferable to observation experiences in becoming proficient in nursing care. Yet schools of nursing face obstacles in finding adequate clinical space, adequate faculty, preceptors, and availability of experiences particularly in specialty clinical areas such as labor and delivery. The purpose of this study was to determine if clinical experiences in labor and delivery influence knowledge gained by students. There is limited research on student learning in the clinical area particularly related to the amount of time needed and what types of experiences are necessary. This chapter discusses the study results and the relationship between the theory and previous literature in the area of clinical teaching in labor and delivery area. Limitations to the study and implications for nursing education will be discussed and future research options will be examined.

Research question 1 examined the clinical observation experience in labor and delivery and how it affects student knowledge. Results indicated that there was little change in knowledge as measured by a paper and pencil quiz. One possible explanation for the results is that evidence of learning may not be manifested by behavioral change or thought processes until some time has passed during which the student reflects on experiences. One study found only 50% of new graduates feel they are adequately prepared to enter the workforce. Additionally, 75% of novice nurses reported committing a medication error (Saintsing, Gibson, & Pennington, 2011). Although the current study

participants were not new graduates, limited change between pre-test and post-test score results could support findings in the literature.

Research question 2 was related to the amount of time spent in clinical and its effect on student knowledge. Although there was no difference in gains on the post-test for participants, this study identified that a two-hour time period was inadequate to achieve understanding of the needed information in this clinical area. Although the only significant difference in scores was between the two-hour clinical group and the eight-hour clinical group, valuable information has been extrapolated from the data. A follow-up study with larger numbers of participants from several schools of nursing may provide additional information about clinical time.

Bandura's Social Learning theory was a valuable framework for this study. Bandura's theory has four major components that all provide a support system for this study. First, attention must be paid by the observer to the role model for learning to occur. In this study the group of students who spent two hours in clinical rotation did not have enough time to build a relationship or connection with the staff nurse. This may contribute to the lack of attention the student afforded to the staff nurse in the clinical environment and might contribute to the decrease in score results from pre-test to post-test. Bandura's theory also discussed the importance of retention of information. In this study the retention of knowledge was tested immediately after conclusion of the experience. If more time had been allowed between completion of the clinical experience and the post-test, retention might have been better assessed. Due to the limited number of hours spent in clinical, Bandura's third step, repetition, also might not be achievable. Greater opportunities for practice of skills and observations might occur with a longer

clinical rotation in labor and delivery. The last step of Bandura's learning theory was motivation. If the student lacks motivation, the skill will not be practiced and therefore will not be learned. A strong, positive relationship between the student, the faculty and the staff nurse will promote this motivation in the student. Decreased time in clinical may prevent this relationship from forming. Bandura's Social Learning Theory was a valuable framework for this study and will aid researchers in future studies to examine the difficulties with the transfer of knowledge in the clinical setting.

In addition to Bandura's Social Learning Theory, Kolb's Experiential Learning Theory (2010) may provide insight into future studies. Kolb believed learning is a continuous process. "Knowledge is created by transforming experience into existing cognitive frameworks, thus changing the way a person thinks and behaves" (Lisko & O'Dell, 2010 p. 106). Kolb's theory explained how experiences must be transformed through participation and abstract conceptualization. He stated that internal reflection must be involved to transform the experience into knowledge. Kolb's theory provided some insight into this study. Since the nursing students completed the post-test immediately following their clinical day, the reflection and abstract conceptualization may not have taken place. If the post-test was administered a few days after the completion of the rotation, the students may have had time to assimilate the information and reflect on the experience thus performing higher on the post-test. Further research is necessary to examine how Kolb's theory would relate to the nursing student's knowledge with additional time for reflection and abstract conceptualization.

Research question 3 discussed whether age affected students learning. Although it was suspected that students with previous learning experiences might learn more quickly,

in this study age did not predict knowledge gains. Kolb's Learning Styles Theory (Bastable, 2014 p. 146) may explain why age was not a factor in this study. Kolb described four types of learners: concrete experience learners, abstract conceptualization learners, reflective observation learners, and active experimentation learners. Concrete learners rely on feelings and benefit from experiences where they can be sensitive to others' needs to acquire knowledge. Abstract conceptualization learners instead rely on logic and ideas rather than feelings to acquire knowledge. Reflective observation learners view things from different perspectives and learn by objectivity, careful judgment, personal thoughts, and most importantly by watching. Active experimentation learners prefer to experiment and learn by doing. They like to change the situation to see how manipulation affects results (Bastable, 2014). Each learner has a combination of learning styles. This theory explained that age may not play as much of a role in the gain of knowledge as does the individual's combination of learning styles.

Research question 4 related to the particular hospital and its effect on student learning. No significant differences were found in scores. In each of the three hospitals where the nursing students participated in the clinical rotation, there was some limit on the student nurses' participation in nursing care at varying levels. Although some hospitals encouraged a more hands-on atmosphere, this study's results showed no significant difference in knowledge gained. Benner (2010) stated "experiential learning depends on an environment where feedback on performance is rich and opportunities for articulation and reflecting on the experiences are deliberately planned" (p.43). Without clinical instructors or preceptor supplementing and facilitating these learning opportunities, students are unable to translate the experiences in clinical into knowledge

gain. This was further supported in many the students answers to the study's open-ended questions. Students in all three hospitals commented on having a slow day in clinical and feeling as if they only had minimal learning experiences. Still others commented that they "saw a delivery" but didn't elaborate on any knowledge gained during the observational experience. Students have reported that they worry they will be in the way of the nurse, doctors, respiratory therapist, and other healthcare professionals during this high-risk situation. Student nurses are hesitant to be involved in this learning situation and instead stand in the room and watch the nurse care for the patient. Due to these circumstances the student may be unable to translate the learning experience into gained knowledge. Similar findings were reported in Robertson, Andrews-Hall and Fassett (2007). The students may have felt the effects of hospital understaffing and felt that they were burdens, which in turn caused them not to gain as much from their experiences.

Research question 5 was concerned with students in a traditional BSN program compared to an accelerated program and the effects on knowledge in labor and delivery. There were no significant results found in comparing the program types. These results may also be a result of the type of learner rather than the age or experience of the learner as explained in Kolb's Learning Theory. Even though the accelerated student nurses have a previous degree which may contribute to more life experiences, the learning style of each learner may be more important to the knowledge gained during the experience. In order for learning to be effective, a variety of teaching strategies may be needed to address students' preferred learning style (Bastable, 2014).

To further explain the results, the researcher included an open-ended question on both the pre-test and post-test. On the pre-test the question asked the student to write

about what they expected to learn during the day in labor and delivery. The post-test asked the student to write a few sentences about what they learned during the day in labor and delivery. One student from the two-hour group wrote on the post-test, “I did not feel that I learned very much”, and she attributed it to the short time spent on the labor and delivery unit. Two other students commented on the day being slow and not being able to “see much.” These students were in twelve and eight-hour clinical shifts so time was not a limitation for these students to be able to effectively learn. Other factors may play a role in these students’ comments. Limitation on the preceptors training in education modalities and ways to supplement the classroom theory may exist. Additionally, the clinical faculty being responsible for seven or eight students in several different areas may have prevented them from optimizing the use of slower times for learning opportunities.

In reviewing the open-ended questions on the pre-test and post-test, insight from the students’ perspective was beneficial. On the pre-test, ten of the participants reported hoping to learn how to interpret fetal heart monitoring strips. Out of all forty-five students only five reported gaining knowledge about fetal heart monitor strips on the post-test. Additionally, fifteen students indicated on the pre-test the desire to learn more about assessment skills for the mother or the newborn. Only twelve students reported improving these assessment skills at the end of their clinical experience. Student responses to the open-ended questions, regarding their perceived lack of learning seems to parallel the lower than expected results on the post-test scores.

Limitations

Several limitations exist for this study. The sample was a convenience sample of 45 students which may not be representative of the population. A larger randomized sample may provide greater power and generalizability of results. The second limitation is the lack of diversity with the participants. All participants attended one baccalaureate degree school of nursing in the southeastern United States. Having a variety of students from various schools across the country is recommended for future studies. The students' environment during the tests was also a limitation. Many of the tests were administered to students in the staff break room. This room can be very noisy and subject to multiple distractions. For some students these interruptions may have influenced their performance on the test and decreased their ability to concentrate. Because the test was administered at the beginning of the clinical day and the end of the clinical day, some students may have felt rushed to complete the test thus not performing as well as they might have under other circumstances. Another potential influence on results was the possibility that students may have discussed the questions with other students during the clinical day possibly altering the outcomes on the post-test. Future studies should control for that possibility by creating parallel forms of the instrument and administering the test at a different time and location. Several of the open-ended questions both on the pre-test and post-test were not completed. Three students did not complete the open-ended questions on the pre-test, while seven students did not answer the open-ended questions on the post-test. This may have been a result of the students feeling rushed to complete the test and thus not devoting adequate time to completing the instrument.

Another limitation to this study was the instrument. The questions pertaining to labor and delivery lacked reliability information as they were extracted from a larger test bank of women's health questions. Further testing of the instrument is needed to test reliability of the bank of questions together as a test of labor and delivery knowledge.

Recommendations for nursing practice

Although this study found statistical significance in knowledge between the two-hour clinical group and the eight-hour clinical group, there is some concern that in all of the study participants, there were relatively minor gains in student knowledge through the clinical day as indicated by the test results. Future efforts should be geared toward designing and testing clinical teaching methods that more substantially add to the students' knowledge and capabilities in this clinical setting.

Education: Nursing schools must examine the traditional clinical model and assess if the students are obtaining the necessary knowledge to meet learning objectives and provide safe care to the laboring mother and her unborn child. Alternative teaching modalities should be examined including a smaller faculty-to-student ratio and training of staff nurses to better understand the classroom learning objectives. Partnership between academia and hospitals and staff nurse preceptors may help to assist them in their role of teaching students and new graduates.

Hospitals: Although it is the responsibility of the nursing school to prepare the student nurse for practice, the hospital plays an important role in this process as well. Hospital administration should examine hospital policies currently in use that are limiting the student nurse's participation during the clinical day. Administrators are concerned with patient safety and have set regulations limiting the role of a student during the clinical

rotation in labor and delivery. Limiting the student nurse to minimal participation does not allow them the hands-on learning experience that is so vital to safe practice. It should be argued, that opportunities to practice hands-on skills as a student under close supervision of the staff nurse and clinical faculty would be safer for the patients than observational alone. A new graduate nurse, who has not gained appropriate knowledge during the clinical rotation because of minimal hands-on experiences, may quickly be assigned upon graduating to care for the patients without guidance from a veteran nurse. The safety and well-being of the patient might be at greater risk without this support system during their clinical experiences in school.

Collaboration, between schools of nursing and hospitals to effectively work with staff nurses preparing to be preceptors in a more formal education program, assists not only the student nurse, but would be highly useful for new graduate residency programs. Useful information for the staff nurse might include teaching methods, learning objectives, and strategies to link classroom theory with the practical experience of clinical. Schools of nursing can effectively partner with clinical agencies to provide learning resources and activities in support of staff nurses in the role of educator.

Recommendations for Future Research

Further research needs to be conducted with a larger sample size in multiple nursing education programs to determine knowledge gains. Valid and reliable instruments and methods to measure cognitive skills are also necessary to more accurately assess knowledge changes. Nursing schools and hospitals should examine interventions that may lead to improved knowledge gain in the clinical rotation. Examining smaller faculty-to-student ratios, training staff nurses to be more effective

preceptors, and lengthening the time students spend in clinical are all considerations to improving the experience for the nursing student. Interventions should be considered and studied that may enhance the clinical day. A future study might include an intervention during the clinical rotation day to see if another teaching method besides the traditional model is more effective. For example, medical students make rounds with a faculty instructor through labor and delivery discussing important issues each patient on the labor and delivery unit may be experiencing. This may be a valuable tool in promoting a gain in knowledge in the nursing school clinical education as well. Nursing educators should examine other teaching methods and design research studies to test these interventions. Changing the traditional nursing clinical education model in labor and delivery should be examined to allow maximum knowledge attainment by the nursing student.

Conclusion

Several conclusions may be drawn from the results of this study. Nursing students' scores changed minimally between pre-test and post-test. Although it may appear that little knowledge was gained during the clinical day, there may be many other factors involved such as methods of measurement and the need for students to have time for reflection and critical analysis about the experiences. Further research should explore the effects of longer clinical experiences and alternative experiences such as simulation on students' cognitive gains. Successful preparation of student nurses for safe patient care in a curriculum filled with competing priorities continues to challenge nurse educators. For specialty clinical settings with time limitations, such as labor and delivery, there is an even more pressing need to develop strategies to increase knowledge and retention.

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APPENDIX A

PRE-TEST

Pre-test

Directions: Read the questions and decide on the best answer. Circle the answer that best answers the question.

- 1) A nurse caring for a client 1 hr. after delivery finds the perineal pad saturated with bright red blood. Which of the following actions should the nurse anticipate taking first?
 - A) Add oxytocin (Pitocin) to the IV
 - B) Obtain the client's vital signs
 - C) Assist the client to void
 - D) Massage the client's fundus

- 2) A nurse is caring for a client who has preeclampsia and is receiving 2 g magnesium sulfate IV bolus. Which of the following findings indicated the need to notify the provider?
 - A) Facial Flushing
 - B) Respiratory rate of 14/min
 - C) Urine output of 150 mL over 4 hr
 - D) Absence of deep tendon reflexes

- 3) A nurse is caring for a client who has been prescribed Rh immune globulin (RhoGam). Which of the following statements by the client should indicate to the nurse a correct understanding of the medication?
 - A) "The medication is to prevent blood incompatibilities in my next pregnancy."
 - B) "The medication will make sure that I do not become anemic."
 - C) "My baby will receive a dose of the medication after birth."
 - D) "I will receive two doses of the medication after my baby is born."

- 4) A nurse is assigning a 1-min Apgar score to a 41-week gestation newborn. Apgar findings include: heart rate of 120/min; slow, weak cry; flaccid; grimaces with bulb suctioning; and acrocynosis. Based on these results, the nurse should assign a score of:
 - A) 4
 - B) 5
 - C) 6
 - D) 7

- 5) A nurse is admitting a client who is at 38 weeks gestation and states her uterine contractions are every 4 min. The nurse notes variable decelerations on the fetal rate tracing. Which of the following interventions is the highest priority?
- A) Administer oxygen via face mask at 8 L/min
 - B) Reposition the client on her side
 - C) Perform a vaginal examination
 - D) Initiate an amnioinfusion
- 6) A client in labor receives an epidural anesthetic. While resting in supine position, the client has a hypotensive episode. Which of the following interventions should the nurse perform first?
- A) Administer oxygen at 10-12L/min by face mask
 - B) Turn the client to a lateral position
 - C) Elevate the client's legs
 - D) Notify the nurse anesthetist
- 7) A nurse is caring for a client who has received epidural anesthesia during her labor. Which of the following findings should the nurse report to the provider?
- A) The client experiences nausea
 - B) The client's fetal heart tracing shows early decelerations
 - C) The client reports ringing in her ears
 - D) The client reports feeling cold
- 8) A nurse is caring for a client who has just delivered a newborn. The nurse is preparing to administer oxytocin (Pitocin). Which of the following findings is an indication for the use of oxytocin?
- A) Cervical laceration
 - B) Excess vaginal bleeding
 - C) Increased afterbirth cramping
 - D) Increased maternal temperature
- 9) A charge nurse on the labor and delivery unit is receiving report on four clients in various stages of labor. The charge nurse should plan to first assess the client who is experiencing which of the following types of decelerations?
- A) Early
 - B) Variable
 - C) Late
 - D) Prolonged

- 10) A nurse is caring for a client who has a history of rheumatic heart disease, but no physical symptoms prior to pregnancy. The client begins to experience dyspnea, orthopnea, and pulmonary edema. Which of the following physiological alterations explains this change?
- A) Increased maternal weight
 - B) Increased blood volume
 - C) Change in hematocrit levels
 - D) Change in heart size
- 11) A nurse is assisting a client in the second stage of labor. Which of the following actions by the nurse is appropriate in assisting the client with effleurage?
- A) Instruct the client's partner to apply firm, sacral pressure during contractions
 - B) Provide a heat blanket to the client's lower back
 - C) Have the client stroke the abdomen using circular motions during contractions
 - D) Assist the client in selecting a location for her focal point object
- 12) A client at 18 weeks of gestation has had an abnormal maternal serum alpha-fetoprotein and elects to have an amniocentesis for diagnostic confirmation. Which of the following statements by the client should the nurse recognize as indicating a complication?
- A) "I'm really tired after this test."
 - B) "I am really thirsty and want some water."
 - C) "I feel my baby moving after the procedure."
 - D) "My stomach seems tight since the doctor left."
- 13) A nurse is caring for a client who is using jet hydrotherapy during labor. The nurse is aware that which of the following methods of monitoring the fetal heart rate is contraindicated for this client?
- A) A Doppler device
 - B) A fetoscope
 - C) A wireless external monitor device
 - D) An internal electrode
- 14) A client who is at 29 weeks of gestation presents to the clinic for a non-stress test. After obtaining a baseline fetal heart rate (FHR) of 140 to 150/min, the nurse observes the FHR accelerating to 165-170/min for 15 seconds three times over 20 min. The nurse reports these results as:
- A) Positive
 - B) Negative
 - C) Reactive
 - D) Nonreactive

- 15) A nurse is planning care for a client who is to undergo a non-stress test. Which of the following should the nurse include in the plan of care?
- A) Maintain the client NPO throughout the procedure
 - B) Place the client in supine position
 - C) Instruct the client to massage the abdomen to stimulate movement
 - D) Instruct the client to press the provided button each time fetal movement is detected
- 16) A nurse is caring for a client who is at 40 weeks of gestation and has a positive contraction stress test. The nurse should plan to prepare the client for which of the following diagnostic tests?
- A) Biophysical profile
 - B) Aminocentesis
 - C) Cordocentesis
 - D) Kleihauer-Betke test
- 17) A client who is pregnant arrives at the labor and delivery unit reporting leakage of fluid from the vagina. The nurse determines that the client has probably ruptured membranes when assessment reveals that:
- A) A moderate bloody show is present
 - B) The ferning test is positive
 - C) The Nitrazine paper turns olive green
 - D) A thick, white vaginal discharge is present
- 18) A nurse is caring for a client who is at 25 weeks of gestation and in preterm labor. The nurse should recognize which of the following purposes for administering betamethasone (Celestone) to the client?
- A) Improve fetal cardiac function
 - B) Increase fetal lung maturity
 - C) Decrease maternal anxiety
 - D) Reduce the contraction rate of the mother
- 19) A nurse is caring for a client who has just delivered a newborn vaginally. The placenta has just been delivered when the client becomes nonresponsive. Which of the following actions should the nurse take first?
- A) Determine respiratory function
 - B) Increase IV fluid rate
 - C) Access emergency medications from cart
 - D) Collect a maternal blood sample for coagulopathy studies

- 20) A client is in the transitional phase of labor is using breathing techniques to manage her pain. Which of the following actions by the client should indicate to the nurse that the client's plan of care should be altered?
- A) The client can talk, but not walk through contractions.
 - B) The client increases her rate of breathing to relax.
 - C) The client requests to move from the chair to the bed.
 - D) The client reports tingling sensations in her fingers.

Please write a few sentences about what you expect to learn today in Labor and Delivery.

APPENDIX B

POST-TEST

Post-test

Directions: Read the questions and decide on the best answer. Circle the answer that best answers the question.

- 1) A nurse caring for a client 1 hr. after delivery finds the perineal pad saturated with bright red blood. Which of the following actions should the nurse anticipate taking first?
 - A) Add oxytocin (Pitocin) to the IV
 - B) Obtain the client's vital signs
 - C) Assist the client to void
 - D) Massage the client's fundus

- 2) A nurse is caring for a client who has preeclampsia and is receiving 2 g magnesium sulfate IV bolus. Which of the following findings indicated the need to notify the provider?
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 - D) The client reports tingling sensations in her fingers.

Please write a few sentences about what you learned today in Labor and Delivery. Give examples.

APPENDIX C
PERMISSION TO USE ATI QUESTIONS

August 12, 2013

To Whom It May Concern:

Assessment Technologies Institute TM, LLC (ATI) has received a request from Katherine Barnett to use results from ATI's Maternal Newborn Practice Assessment Form B administered at Kennesaw State University in research conducted to fill the requirements of the Master's in Nursing Education degree. ATI grants permission for such use with the following stipulations:

- 1) It is understood that the Kennesaw State University nursing program has purchased a license to administer the Maternal Newborn Practice Assessment Form B.
- 2) Score data from these assessments are the property of Kennesaw State University.
- 3) Administration of the assessments and reporting of findings must preserve the secure nature of the non-proctored exams; that is, items may be administered in a manner consistent with the practice nature of the exam, but should not be reproduced or reported in the research findings, as they remain the intellectual property of ATI.
- 4) It is understood that Ms. Barnett is an instructor at Kennesaw State University with instructor-level privileges and access to data commensurate with this status. Access to and use of student scores will be in a manner which preserves the confidentiality of examinee information.
- 5) It is further understood that any data use is done with the permission of Kennesaw State University, appropriate IRB approval, and any necessary informed consent from participating students.
- 6) Any use of ATI-produced graphics in the reporting of study results must receive written permission from ATI.
- 7) ATI respectfully requests permission to review study findings relevant to its assessment products prior to publication to ensure accuracy of score interpretation.

Sincerely,
Michelle Dunham, PhD
Research Specialist

APPENDIX D
DEMOGRAPHIC QUESTIONNAIRE

Demographics

Please fill in the blank.

- 1) What is your current age? _____
- 2) Are you male or female?

- 3) Are you in the accelerated nursing program?

- 4) Which hospital are you in for your clinical rotation? _____
- 5) Is your shift 8 hours or 12 hours?

APPENDIX E

KENNESAW STATE UNIVERSITY (IRB) APPROVAL

8/14/2013

Katherine Barnett, Student

KSU WellStar School of Nursing

RE: Your application dated 8/14/2013, Study #14-034: The student nurse's change in knowledge in labor and delivery

Dear Ms. Barnett:

I have reviewed your application for the new study listed above. This study qualifies as exempt from continuing review under DHHS (OHRP) Title 45 CFR Part 46.101(b)(2) - educational tests, surveys, interviews, public observations. The consent procedures described are in effect. You are free to conduct your study.

Please note that all proposed revisions to an exempt study require IRB review prior to implementation to ensure that the study continues to fall within an exempted category of research. A copy of revised documents with a description of planned changes should be submitted to irb@kennesaw.edu for review and approval by the IRB.

Thank you for keeping the board informed of your activities. Contact the IRB at irb@kennesaw.edu or at [\(678\) 797-2268](tel:(678)797-2268) begin of the skype highlighting (678) 797-2268 FREE end of the skype highlighting if you have any questions or require further information.

Sincerely,

Christine Ziegler, Ph.D.

Institutional Review Board Chair

APPENDIX F
CONSENT TO PARTICIPATE

SIGNED CONSENT FORM

Title of Research Study:

The student nurse's change in knowledge during a clinical rotation in labor and delivery.

Researcher's Contact Information:

Kathy Barnett, RN, phone: 404-218-2132, email: kbarne52@students.kennesaw.edu

Introduction

You are being invited to take part in a research study conducted by Kathy Barnett of Kennesaw State University. Before you decide to participate in this study, you should read this form and ask questions about anything that you do not understand.

Description of Project

The purpose of the study is to determine if the baccalaureate degree student nurse's clinical experience in labor and delivery affects his or her knowledge of labor and delivery nursing care.

Explanation of Procedures

Each nursing student will complete a demographic questionnaire and a pre-test on the morning of his or her clinical rotation in labor and delivery. At the end of the day in labor and delivery, each nursing student will complete a post-test. The clinical faculty will distribute the questionnaires in envelopes. Each student will seal his or her test in the envelope to provide for confidentiality. The clinical faculty will collect the sealed envelopes to be mailed to the primary investigator.

Time Required

The expected time for the demographic questionnaire and pretest will take approximately twenty- five minutes. The post-test will take approximately twenty minutes to complete.

Risks or Discomforts

There are no risks or anticipated discomforts with this study.

Benefits

Although there will be no direct benefits to you for participating in the study, the researcher may learn more about clinical rotation in labor and delivery and may increase test taking skills.

Compensation

There is no compensation nor classroom credit for participating in this study.

Confidentiality

The results of this participation will be confidential. The primary investigator will match each student's name to a number. All paperwork will be identified with a number so that there are no identifying names on the tests. The participants will seal their envelopes at the end of each test so that confidentiality is maintained. The primary investigator will keep all instruments in a locked cabinet and only the primary researcher will have access to the information.

Inclusion Criteria for Participation

To be eligible for participation in this study, the nursing student must be enrolled in 3318, the parent-child class and be completing his or her rotation in labor and delivery between the months of August and October. The nursing student must be at least eighteen years old to participate.

Signed Consent

I agree and give my consent to participate in this research project. I understand that participation is voluntary and that I may withdraw my consent at any time without penalty.

Signature of Participant or Authorized Representative, Date

Signature of Investigator, Date

PLEASE SIGN BOTH COPIES OF THIS FORM, KEEP ONE AND RETURN THE OTHER TO THE INVESTIGATOR

Research at Kennesaw State University that involves human participants is carried out under the oversight of an Institutional Review Board. Questions or problems regarding these activities should be addressed to the Institutional Review Board, Kennesaw State University, 1000 Chastain Road, #0112, Kennesaw, GA 30144-5591, (678) 797-2268.