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DEVELOPMENT OF CLINICAL JUDGMENT FOR HISPANIC AND

NON-HISPANIC NURSING STUDENTS: A COMPARISON OF TRADITIONAL

AND SIMULATED CLINICAL EXPERIENCES

by

EVE MARIE RODRIGUEZ

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
School of Nursing

Danita Alfred, PhD., Committee Chair

College of Nursing and Health Sciences

The University of Texas at Tyler

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This is to certify that the Doctoral Dissertation of
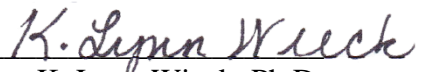

EVE MARIE RODRIGUEZ

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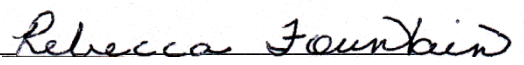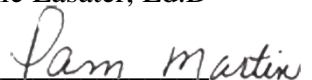Approvals:

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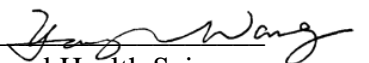Dissertation Chair: Danita Alfred, Ph.D.

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Abstract

Nurse educators are responsible for preparing future nurses for safe clinical practice. In this global world where healthcare concerns change daily, development of strong clinical judgment skills is critical. Expert clinical judgment can undergird the nurse's knowledge, compassion, and caring and support safe clinical practice. Nurse educators strive to prepare future nurses to be able to practice safely and effectively in a variety of clinical care areas utilizing sound clinical judgment skills to ensure good patient outcomes. This study explored the impact of simulation on the acquisition of clinical judgment skills by nursing students. An important aspect of the study is a focus on the growing population of Hispanic students and our sparse knowledge of differential learning needs. Limited clinical sites have forced educators to utilize alternative education measures such as high fidelity simulation (HFS) as a means to compensate. However, there are still questions regarding the true effects of HFS. There is a lack of evidence supporting whether it is an effective method of instruction for Hispanic students to develop clinical judgment skills. The overall aim for this research was to provide evidence to educators regarding the best method of instruction to enhance clinical judgment skills of nursing students with a particular emphasis on Hispanic students. The portfolio is divided into four chapters, an overview of the research study, a review of literature on clinical judgment and HFS, a report of the results of a mixed methods study evaluating differentiation in clinical judgment skills based on the method of clinical instruction for Hispanic and Non-Hispanic nursing students, and a summary and conclusion section.

Chapter 1

Overview of the Research Study

Preventable adverse events are a leading cause of death in the United States. The inability to recognize potential complications and to activate rapid response teams in a timely fashion can result in death or hospital-acquired complications (Anthony & Presuss, 2002). Medication errors account for 7,000 deaths a year and 99,000 individuals die annually due to hospital-acquired infections (Graban, 2009). An estimated 15,000 Medicare patients die annually because of the care received in the hospital (Rubin, 2010). Although nurses are not solely responsible for these concerns, they must do their part to prevent avoidable complications. The public's expectation is that nurses are competent to deliver safe care in the clinical setting.

Nurses must possess fundamental competencies that ensure safe patient care, without errors, because the results of their actions can lead to harm and even death. For this reason, it is necessary to identify the best educational practices that will foster good clinical judgment in novice nurses. Clinical placement and sites are a continuing issue for educators. For this reason, educators use alternative clinical opportunities like high fidelity simulation experiences. High fidelity simulation integrates the use of technology to provide real life clinical opportunities by utilizing mannequins that have breath sounds, heart sounds, and vocal capabilities. Use of high fidelity simulation (HFS) enhances knowledge, clinical decision-making, confidence, and/or self-efficacy (Abdo & Ravert, 2006; Bearnson & Wiker, 2005; Burns, O'Donnell, & Artman, 2010). However, there is still uncertainty as to the impact of HFS on clinical judgment skills this poses a concern

for educators because the overall goal of program completion is to be adequately prepared to attain licensure and practice safely in a clinical setting.

Educators also face the growing diversity in the classroom. The United States Census Bureau (2014) estimates the national Hispanic population at 17 % and the Texas Hispanic population at 38%. With the growing diversity, it is difficult for educators to ensure that the teaching tools used are effective to meet every student's needs. Hispanic students often face issues that impede their learning such as financial hardship, lack of mentorships, and lack of faculty support (Amaro, Abriam, & Yoder, 2006). Diversity continues to grow, and Hispanic nursing students are a significant portion of students in nursing programs. It is important to determine if HFS is appropriate to use with this type of student and if it aids in the development of clinical judgment.

The goals of the dissertation that served as a framework for this study were:

- to determine the state of the science of the impact of HFS on development of clinical judgment,
- to determine if HFS aids in the development of clinical judgment skills,
- to identify whether HFS is an effective and acceptable method of instruction for nursing students, and
- to determine if Hispanic nursing students develop clinical judgment in the same manner as their Non-Hispanic colleagues.

Introduction of Articles

The first manuscript entitled, "The State of Simulation" provides a sketch of the progression of high fidelity simulation over the course of ten years. The review of

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literature from 2004-2014 was searched, based on the key words, high fidelity simulation, clinical judgment, and nursing. High fidelity simulation in literature is a source of enhancing critical thinking, confidence, satisfaction, efficacy, and communication skills. These recurring themes served as a foundation to the understanding of HFS.

Tanner (2006) developed a model of clinical judgment to understand the concept of clinical judgment. Subsequent to the model, Lasater (2007) developed and operationalized the model concepts in the form of a rubric. These major contributions by Tanner and Lasater advanced understanding of the nursing student's development of clinical judgment. The initial applications of the Lasater Clinical Judgment Rubric (LCJR) were with HFS. Educators in nursing programs and healthcare facilities utilize HFS to provide clinical opportunities and use the LCJR tool to gauge skill level of nurses and nursing students. HFS is a recognized method that supports the development of clinical judgment (Blum, Borglund, & Parcells, 2010; Johnson, et al., 2012); however, there is no definitive research regarding the ratio of time for HFS and traditional clinical experience. Therefore, the review of literature provided a means of identifying a gap that supports the need for research on evaluating different methods of clinical instruction and its true impact on the development of clinical judgment in Hispanic nursing students.

The second manuscript entitled, Development of Clinical Judgment for Hispanic Nursing Students: A Comparison of Traditional and Simulated Clinical Experiences, explored the difference between the type of clinical experience provided to nursing students and its impact on their clinical judgment. Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, (2014) funded a prospective, multi-site randomized controlled trial to

evaluate for outcomes of simulation used as an alternative to traditional clinical hours in an undergraduate nursing program. Ten nursing programs participated in the study. Participants at each site randomly assigned into the three types of clinical instruction: 100% traditional, 75% traditional and 25% simulation, and 50% traditional and 50% simulation. The study timeline was for two years during the student's clinical courses. At the completion of the courses, students evaluated for clinical competency and knowledge. Upon completion of the program, nurse managers evaluated students in their workplace. The findings revealed no significant differences between the groups based on type of clinical experience for competency or knowledge. These findings suggest even though the NCSBN has contributed to knowledge of HFS, there is still uncertainty regarding the effectiveness of different clinical learning experiences on the clinical judgment development of Hispanic nursing students.

A mixed method research study was conducted to evaluate clinical judgment of nursing students in three clinical groups: simulation only (100%), combination (50% simulation and 50% hospital based clinical), and traditional clinical experience (100% hospital based clinical). Students shared perceptions of their experience by means of focus group interviews. The primary purpose of conducting a two-fold study was to determine if the quantitative and qualitative results were consistent with each other.

The results of this study indicate that there are no significant differences in the pattern of clinical judgment development for Hispanic and Non-Hispanic students. Students' development of clinical judgment held a similar pattern across the three types of clinical. Students' perceptions of the experience confirmed that all types of clinical

experience enhanced some aspects of their clinical judgment. To resolve the skepticism of educators, this study shows that groups that receive HFS are receiving an adequate clinical experience. Across the three types of clinical experience it is as an acceptable option for clinical learning and development of clinical judgment.

Chapter 2

Abstract

Clinical judgment includes nursing actions deemed appropriate by the patient's response to care activities. Development of students to make sound clinical decisions is the basis of nursing education. The growing demand for nurses has forced educators to produce graduate nurses prepared with clinical judgment skills that promote and result in quality healthcare outcomes. In order to meet the demand, educators are utilizing alternative methods to meet clinical and course objectives. High fidelity simulation is a means of utilizing mannequins to present students with a clinical situation in which they can learn nursing judgment and practice clinical performance. To understand the contribution high fidelity simulation has on clinical skills, knowledge acquisition, critical thinking skills, and clinical judgment, a review of literature identified the state of simulation in relation to helping students develop clinical judgment. Findings support the idea that clinical judgment skills after simulation experiences are enhanced or improved; however, there is a scarcity of outcomes research to determine if simulation affects nurse success in actual clinical practice.

Key words: High fidelity simulation, nursing education, and clinical judgment

Using High Fidelity Simulation Experiences to Promote Clinical Judgment in

Nursing: The State of the Science

Clinical judgment in nursing refers to the outcome of critical thinking or clinical reasoning (Alfaro-LeFevre, 2011) and is a direct reflection of a nurse's thought process during the delivery of patient care. The mandate to provide safe and effective nursing care places clinical judgment high on the list of mandatory skills for nurses. In spite of the focus on sound clinical judgment, errors do occur. Over a decade ago, a seminal report delivered the message that as many as 100,000 people die each year in the U.S. hospitals due to preventable errors (Institute of Medicine, 2006). The Institute of Medicine (2004) states that nurses are likely to prevent and identify complications by initiating an appropriate response in a timely manner; a nurse's role is significantly important in terms of the patient's life. Not responding appropriately leads to a failure to rescue which contributes to the mortality rates of patients in the hospital. Ideally, nurses will have a "rapid response" to any alterations in-patient's condition due to complications that may result in death of the patient.

Medical error accounts for 44,000-98,000 deaths a year in the hospital (McDonald, Weiner, & Hui, 2008). Error potential poses a significant problem for nurses to use sound clinical judgment to deliver competent and safe care in the clinical setting. Preparing nurses to use sound clinical judgment has evolved over the years but has focused primarily on taking students into mentored experiences and providing opportunities for total patient care in the actual hospital setting, not intentionally setting

the stage for clinical judgment development (Gubrud-Howe & Schoessler, 2008). A

shortage of clinical sites for nursing students has prompted alternatives, including using

practice on high fidelity simulation mannequins, as a complement to actual clinical

practice. This paper reviews the state of nursing science regarding the use of simulation

methods to help nursing students develop clinical judgment skills. The review of

literature will inform educators on current research to evaluate the relationship of

simulation and student application of judgment and performance in the clinical setting.

Background and Significance

Over the past decade, several factors have converged to make nursing education a

priority. Passage of the Affordable Care Act in 2009, the movement of the Baby Boomer

generation into old age, and a renewed focus on health behaviors related to wellness have

created a need for health providers who can plan, implement, and evaluate care. By

2022, the Bureau of Labor Statistics (2014) projects that more than 525,000

additional RNs work in acute care hospitals, long-term care facilities, community

health centers, nursing schools, and other areas. This projected nationwide shortage is

forcing educators to look at alternative measures to assist students to learn the

fundamental concepts in nursing.

High fidelity simulation has been widely used throughout the United States to

provide educators with an opportunity to utilize mannequins that are able to provide

realistic heart and lung sounds, pulses, chest movement, and speaking abilities to allow

educators to evaluate student clinical performance (Seropian, Brown, Gavilanes, &

Driggers, 2004). As a teaching and evaluation alternative, high fidelity simulation has

become a solution to barriers that include lack of clinical sites and insufficient faculty

numbers. Demands on nurses are increasing as complex patients with higher acuity

levels survive longer due to enhanced technology and advanced care techniques. Higher

levels of skill and judgment are required in the hospital setting. Educators must assess

and evaluate current and traditional teaching strategies to determine if the strategies are

working to prepare nurses for current and future workforce needs. In terms of

preparation, clinical judgment is a necessity for nurses. Clinical judgment is the

interpretation or conclusion about a patient's needs, concerns, or health problems and/or

the decision to take action, use or modify standard approaches or improvise new ones as

deemed appropriate by the patient's responses (Tanner, 2006). This overview of the use

of simulation to help develop clinical judgment skills in nursing students will contribute

to the national discussion of clinical alternatives and relevance of nursing education to

the health priorities of this nation.

Search Methodology

Sample Description

The review of literature focused on high fidelity simulation and clinical judgment

skills between the periods of 2004-2014. This timeframe coincides with the beginning of

regulatory recognition of clinical simulation by the National Council of State Boards of

Nursing who issued their position paper on clinical education recognizing innovative

teaching strategies to complement clinical experiences for nursing students prepared for

entry into practice (NCSBN, 2005). Discussion of the progression of HFS and the known

knowledge of its potential benefits were included as a part of the review of literature.

The databases used were EBSCO, CINAHL, Ovid, and Academic Search. The search

terms used both individually and in combination were nursing, high fidelity simulation,

and clinical judgment. The initial search to determine the state of HFS using the

keywords "high fidelity simulation" and "nursing," revealed consistent terms with the

keywords to include knowledge acquisition, critical thinking, and skills acquisition.

Databases used to search for literature had the same limits: publication year ranged from

2004-2014 and found in published English speaking professional nursing journals. The

number of articles found in the initial review based on the search terms "high fidelity

simulation" and/or "clinical judgment" was as follows: EBSCO (2,357), CINAHL (30),

Medline (17), and OvidSP (23).

To guide the review of literature, definitions for high fidelity simulation and

clinical judgment served as the basis for determining if the literature represented the

concepts studied. High fidelity simulation is a structured student learning experience by

utilizing computerized mannequins (Hicks, Coke, & Li, 2009). Benner, Tanner, and

Chesla (2009) refer to clinical judgment as "the way in which nurses come to understand

the problems, issues, or concerns of patients, to attend to salient information and to

respond in concerned and involved ways" (p. 200). To focus the literature review to meet

the purpose of this paper, only articles that measured clinical judgment within a high

fidelity simulation context considered. A few research studies discussed individual

attributes of clinical judgment, but in order to attain an adequate understanding of the

overall complexity of clinical judgment only literature with HFS and clinical judgment

was used in this paper. Multiple articles were evaluated that recognize patient

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deterioration in the clinical setting and symptom recognition, both attributes of clinical judgment, but they fail to capture the overall essence of the concept of clinical judgment. These narrowly focused articles were not included in the review. By limiting the articles based on measuring clinical judgment within a high fidelity simulation context, the number of articles decreased to 25.

Discussion of Findings

The discussion of the findings regarding high fidelity simulation and clinical judgment will first identify areas known of the state of HFS and the outcomes involved. Then discussion of the concept of clinical judgment and HFS will provide an understanding of HFS in terms of clinical judgment.

The State of High Fidelity Simulation in Nursing

Over the course of ten years, the knowledge of high fidelity simulation (HFS) has grown tremendously. Research has contributed to modifications in teaching practice by educators nationwide. Achievement of student outcomes is the overall goal for educators. Students and educators are in collaborative relationships to achieve successful completion of course objectives, which reflect graduated steps to clinical competency as the student moves into the registered nurse role. In multiple studies, students report that HFS contributes to their communication skills, confidence, self-efficacy, knowledge, and practice proficiency. McCaughey and Traynor (2010) found that following the clinical experience using HFS, students had positive feelings about clinical effectiveness, professional development, linkage between theory and clinical, preparation for management, and role of a nurse. Students have reported that high fidelity simulation

enhanced their confidence, skills, and preparation to practice (Kaudorra, 2010; Moule, Wilford, Sales, & Lockyer, 2008; Reilly & Sprat, 2007). Other studies have found that HFS enhances and provides opportunity to practice communication skills (Berg, Wong, Vincent, 2010; Kameg, Clochesy, Mitchell, & Suresky, 2010; Marken, Zimmerman, Kennedy, Schremmer, & Smith, 2010; Posmontier, Montgomery, Montgomery, & Morse, 2012; Sleeper & Thompson, 2008). Berg et al. reported that following the use of HFS, students were able to utilize the best-practice SBAR (Situation, Background, Assessment, and Recommendation) technique for framing nurse and other healthcare professionals' hand-off communication to enhance quality and safety in hospital care settings. Hand off communication is an example of clinical judgment because it requires nurses to recognize important information and to respond in some means by communicating it to healthcare professionals involved in the care of the patient. SBAR ensures that the information relayed to the oncoming nurse recognizes the importance and need to execute an intervention. High fidelity simulation provided students with an opportunity to practice the SBAR technique, enhancing student's communication skills. The ability to communicate effectively is critical to sound clinical judgment.

Critical thinking impact.

Critical thinking is essential to building nursing confidence and competence. Shoulders, Follet, and Eason (2014) recognized critical thinking requires individuals to have confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection. Nurses that possess critical thinking skills have the cognitive skills to analyze, apply standards, seek

information, utilize logical reasoning, predict and transform knowledge (Shoulders, Follet, & Eason, 2014). Nurse scientists have sought ways to enhance or increase critical thinking abilities through such means as care plans, care maps, case scenarios, and high and low fidelity simulations. The purpose of clinical experiences in nursing education is to help the student gain knowledge about the care of patients and to practice applying that knowledge in an actual or simulated clinical setting. The importance of gaining skills, confidence, and competence in both knowledge and specific skills application is one of the elements that sets' nursing apart from academic disciplines whose learning happens largely in the classroom.

Knowledge acquisition.

The human body is a complex biological and psychological system requiring a strong underpinning of knowledge and understanding to maintain optimal function. Nursing students must have knowledge of the way the body works (physiology) as well as what can go wrong (pathophysiology). This is a mere example of how clinical judgment relies heavily on knowledge acquisition. Benner, Tanner, and Chelsea (2009) refer to knowledge as the source for recognition and response in a particular situation based on tacit knowing, skilled expertise, application, and knowing the particular patient. This knowledge is essential to health promotion and restoration. Throughout the history of nursing education, the optimal way to help students grasp the knowledge and skills needed has been a challenge.

Knowledge and application of nursing is imperative to practice. For students, there has been evidence to support that high fidelity simulation enhances knowledge

achievement. Online baccalaureate-prepared nurses using high fidelity simulation reported that the experience required aptitude to analyze, apply standards, reason logically, and predict and transform knowledge (Rush, Dyches, Waldrop, & Davis, 2008). Rush et al., (2008) evaluated students prior to and following a high fidelity simulation experience that also showed a greater ability to identify pertinent information relative to the situation and a greater ability to select the best response based on the situation.

In nursing education, a grasp of the underlying knowledge component measured by assessment of critical thinking skills is a goal for educators. Using simulation is a recent addition to the methods used by nursing faculty to help students apply knowledge using critical thinking. Shinnick and Woo (2013a) conducted a study with 154 nursing students whose critical thinking disposition and skills tested pre- and post-high fidelity simulation. The comparison revealed that after the simulation exercise, students' care for patients with congestive heart failure significantly improved. The mean knowledge scores increased by 6.5 points $(p < 0.01)$, indicating that students learned from the experience. However, there were no statistically significant gains in critical thinking scores. Predictors of high critical thinking scores showed for students being older, having higher pretest scores on heart failure, and higher baseline self-efficacy for management of patient fluid levels (Schinnick & Woo, 2013).

Knowledge acquisition has enhanced with other experiential learning opportunities, such as vignettes. However, the risk of assuming that high knowledge scores can translate into high critical thinking scores is apparent. Nursing is not a finite

science, so knowledge tests are imperfect. Fero, O'Donnell, Zullo, Dabbs, Kitutu,

Samosky, & Hoffman (2010) conducted a quasi-experimental study with 36 nursing

student who received both a high fidelity simulation experience and a video vignette for

analysis. The expectations were for students to achieve the following behaviors:

recognizes clinical problem, reports essential clinical data, initiates nursing interventions,

anticipates medical orders, provides decision rationale, and sets appropriate priorities.

The California Critical Thinking Disposition Inventory (CCTDI), a measure of one's

critical thinking disposition, and the California Critical Thinking Skills Inventory

(CCTSI), a measure of one's ability to draw conclusions, were used to measure student

thinking and performance skills. Seventy-five percent of the students did not meet the

expectations on the video vignette and 88.9% of the students did not meet the

expectations on the HFS experience. There was no overall difference in performance.

Students performing better on the overall HFS also had higher scores on the CCTDI, $V =$

0.423, $p = .047$. The high performance on HFS was indicative of greater critical thinking

but not of the ability to draw conclusions.

Ravert (2008) conducted a similar study with three groups: two experimental

groups participated in regular education classes plus either a 1-hour enhancement session

($N = 13$) or a 1-hour HFS session ($N = 12$). A control group ($N = 15$) received only the

regular education classes. Students were evaluated with the California Critical Thinking

Disposition Inventory and California Critical Thinking Skills Test. Students in each

group experienced a moderate post-score mean increase of 5.33 (non-HFS), 9.84 (HFS),

14.90 (control) in critical thinking scores of disposition and skill. For the CCTST scores,

the HFS group's mean score was 7.40 and the non-HFS mean was 9.29. All groups had increased scores; however, there were no statistically significant differences between groups. While it is comforting to see that different teaching modalities demonstrate small or no differences, the issue of whether or not the student is attaining the basic knowledge needed to provide optimal care in the health delivery setting remains.

Some schools are opting to replace some or all of the clinical experience with a simulation-based option. Minimum knowledge is needed to provide care assured regardless of clinical experience method. Oldenburg and Plonczynski (2013) provided traditional clinical and HFS clinical practice to first semester nursing students. The two groups of nursing students consisted of: (1) a traditional clinical group, who primarily received training in the hospital setting with a one-day experience of HFS, and (2) the HFS clinical group, who received training entirely in the simulation lab. Surveys given pre- and post-clinical experience to the baccalaureate-nursing students consisted of questions pertaining to assessment, communication, nursing process, organization, and overall skills. Based on the analysis, there were significant differences between the two different groups following the simulation experience in nursing process, t (93) = 3.23, $p <$ .01, organization t (93) = 3.24, $p < .01$ and overall skills, t (93) = 2.43, $p < .05$. The students that received the HFS experience had a higher confidence score in the above nursing skills than the non-HFS group. The HFS group had a higher mean score prior to the beginning of their second semester medical surgical clinical in nursing school, t (93) = 3.30, $p <0.001$. Within groups across time, there was a statistically significant improvement. The HFS group increased in assessment t (111) =3.75, $p < 0.01$,

communication t (111) =3.69, p <0.01, nursing process t (111) =4.70, and total mean scores t (111) =4.83, p <0.01. There was a significant increase in organization across both times t (111) =2.33, p <0.05. Both methods seem to be effective in helping the student gain the knowledge needed to perform safely in the clinical setting.

Investigation of knowledge acquisition and the role simulation plays in student understanding is positive. Schlairet and Pollock (2010) examined a sample of 74 students who received both simulation and traditional experiences. The study was a 2x2-crossover design containing the two interventions in which the same subjects acted as their own control. The study evaluated the students at two different times, and posttest administered at both times. Random assignment into traditional-simulation or simulation-traditional group was done. Simulated clinical experience was found to be as effective as traditional clinical experience in helping the students acquire the knowledge needed for clinical practice. The results indicated significant differences in knowledge acquisition from baseline to post-test one, t=-2.48, p=0.015, df=70 with means increasing for both the HFS group and traditional clinical group. Posttest 1 in comparison to 2 results were significantly different, t=-2.24, p=0.028, df=70. The observed differences between pre- and post-test knowledge improvement in HFS and the traditional group were observed to be statistically significant, t=-3.54, p=0.001, df=69 indicating that knowledge improved with both methods of clinical skills experience.

Skills acquisition.

In addition to gaining a strong knowledge base as students learn how to be safe and competent nurses, the acquisition and application of clinical skills encompassing

psychomotor and non-technical abilities is essential for students to make clinical

judgments. Benner, Tanner, and Chesla (2009) recognize that practical knowledge

supports clinical judgment. Individuals gain experience through practical knowledge

with particular patient populations. Nurses apply the practical knowledge to responding

to changes in patient situations. The expectation required to develop clinical judgment

supports the need to provide opportunities for students to attain and practice skills to be

able to make clinical decisions in true practice settings. A variety of actual clinical issues

or patient problems are often the basis for assessing student readiness and proficiency in

skills application. Intravenous insertion is a skill taught and evaluated in nursing school.

When students have no prior experience to draw from, they require more skill practice

and application opportunities. There is much debate about whether simulation is

sufficiently realistic to provide the needed skill-set for safe practice. Reinhardt, Mullins,

Blieck, and Schultz (2012) conducted a randomized controlled trial on high fidelity

computer assisted simulation to evaluate intravenous insertion skills confidence and

performance. The study consisted of 94 baccalaureate-nursing students, randomly

assigned into three groups: Group 1 control used the latex arm task trainer only; Group 2

interventions used the high fidelity computer assisted simulation device first, then the

latex arm task trainer; and Group 3 used the latex trainer first, then the high fidelity

computer assisted device. There was no statistically significant difference in the

students' skill based on the method of instruction, $F (2, 76) =0.327, p=.7$. Clinical skills

proficiency seems to be amenable to a variety of clinical learning methods.

Clinical performance has enhanced with high fidelity simulation. Sportsman, Schumacher, and Hamilton (2011) followed associate degree and baccalaureate degree students for three years as they received progressive exposure to simulation in a regional center featuring state-of-the-art simulation opportunities. The substitution of scenario-based HFS for regular on-site clinical did not negatively affect exit examination scores and student self-evaluation of clinical competency. The authors noted that substituting simulation experiences when clinical sites are scarce was a viable option.

One of the vital skills in nursing is the ability to recognize changes in patients to provide early intervention when patient conditions begin to deteriorate. Merriman, Stayt, and Ricketts (2014) studied first year medical surgical students to assess the use of simulation in their ability to recognize changes in patients' conditions. In this randomized controlled trial with single blinded assessments, 34 participants were randomly assigned to the intervention (clinical simulation laboratory) and control (classroom based teaching) groups. Prior to the intervention, both groups were given a pretest, the Objective Structured Clinical Examination (OSCE) which was an algorithm used to score how well each student performed on a clinical assessment of a deteriorating patient. Pre- and post-scores were compared. There was no significant difference between the groups' mean scores prior to the intervention. However, there was a significant difference ($p<.05$) in mean scores following the intervention: $M=19$ ($SD=3.2$) in comparison to the control group $M=16$, ($SD=3.7$) indicating that the simulation group had higher mean assessment skills than the classroom group based on the OSCE. The simulation group was also significantly more satisfied with their clinical experience ($p<$

0.01). A growing focus on student retention has made student satisfaction with learning methods more central to nursing education objectives.

Not all students feel satisfied with simulation experiences however Luctkar-Flude, Wilson-Keates, and Larocque (2012) devised a three-arm randomized controlled trial to examine the respiratory assessment skills of 44 undergraduate nursing students. Students were divided into three groups, HFS ($N=14$), standardized patient scenario ($N=14$), and community volunteer models ($N=16$) and then compared on their ability to do a respiratory assessment. The results indicated that the overall performance scores of the HFS group mean (M=32.9, $SD=4.2$) were significantly higher ($p<0.01$) than students who practiced on community volunteers ($M=28.9$, $SD=4.5$) or students who utilized a standardized patient classroom learning scenario ($M=27.4$, $SD=4.9$). Overall, all three groups were satisfied with the experience. However, the students who practiced on community volunteers reported greater satisfaction in the experience in comparison to the HFS and classroom-learning scenario. In addition to observation and assessment of patient conditions, medication administration is also a high-risk skill set where nursing students must gain proficiency before entering the clinical arena. Since the potential for devastating outcomes exists if errors made, a great deal of time and energy put into preparing students for medication safety is necessary. Benner, Tanner, and Chesla (2009) recognized that clinical judgment requires more than knowledge, and the importance of the practical implications of the knowledge in terms of the response to the patient situation. The concept of clinical judgment is essentially important to medication safety. To administer medication safely, students need to understand the purpose of the

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medication, what to assess prior to administration, and recognize side and adverse effects to ensure patient safety. Sears, Goldsworthy, and Goodman (2010) randomly assigned 54 students to three different groups in a post-test only study to determine whether the use of simulation could help reduce medication errors. Twenty-eight students were assigned to maternal nursing and twenty-six to medical surgical nursing experience. Each course had a treatment and control group. The treatment consisted of simulation experience via scenarios for the first half of clinical rotation and the remainder of the time in a hospital setting. The control group had traditional clinical experience. Both groups evaluated on medication administration skills resulting in fewer errors for the simulation group. The control group of 30 students had 24 errors and the simulation group of 24 students had seven errors which is a significant difference $p<0.05$. This finding reflects no pre-test given to determine equivalency of the groups. Nevertheless, the heightened focus on medication safety makes any method that may result in error reduction an attractive option.

The state of high fidelity simulation has evolved over the years as a viable way to enhance knowledge and teach the clinical skill set needed to provide safe and optimal care. HFS has validated to be an effective instructional tool to assist with critical thinking skills, confidence, communication, self-efficacy, knowledge application, and clinical performance. The key to safe nursing practice is the ability to use sound judgment in making clinical decisions.

Using Simulation to Develop Clinical Judgment in Nursing Students

Adequately preparing nursing students to be able to develop clinical judgment skills and perform in a clinical setting without posing harm to a patient is a goal sought by educators nationwide. To evaluate students' performance and to measure clinical judgment, researchers developed a tool to formally measure and use as a means of providing student feedback to refine their practice. Lasater (2007) conducted a mixed method study to evaluate a proposed instrument to measure clinical judgment, the Lasater Clinical Judgment Rubric (LCJR). The tool is based on the four phases of Tanner's (2006) Clinical Judgment Model and consists of four aspects of clinical judgment and 11 dimensions of those four aspects. The LCJR piloted during a high fidelity simulation exercise with a group of 39 medical surgical students in 52 simulation scenarios. The intent of the pilot study was to evaluate and refine the tool. Lasater utilized the tool in the mixed methods study with a group of 47 students, each student evaluated in a simulated clinical experience, and eight of the students later participated in focus groups. Students were anxious for feedback about their clinical judgment in simulation and validated the rubric's contents during the focus group.

Cato, Lasater, and Peeples (2009) utilized the LCJR as a reflective exercise for students to use following a simulation experience as they focused on the experience and provided examples of the use of clinical judgment. Further studies were conducted to reevaluate and modify the LCJR. Ashcraft, et al. (2013) modified the tool to provide educators with the ability to provide a grade for the student's performance in simulation.

However, there remains uncertainty as to whether HFS can truly enhance the development of clinical judgment; this skepticism has led to further studies.

Bambini, Washburn, and Perkins (2009) conducted a quasi-experimental study with a 112 nursing students in the maternal child rotation. Students given a simulation experience parallel to the focus areas most commonly found in the clinical area identified: postpartum assessment and newborn education. Following the simulation experience, the students given an opportunity to demonstrate the skills in practice setting revealed an enhanced ability to prioritize skills, determine appropriate interventions, and identify abnormal lab findings. Student's confidence significantly increased following the simulation experience on postpartum exam (p<0.01). Guhde (2010) had similar findings with 83 junior students. Students completed surveys that revealed they utilized critical thinking, awareness of the patient assessment, and they felt it was a good learning experience. The goal of facilitating critical thinking as a part of making sound clinical judgments appeared to be occurring in these simulated experiences.

Measurement of clinical judgment continues to be a challenge, and the Lasater instrument (2007) evaluated for efficacy. Blum, Borglund, and Pacells, (2010) conducted a quasi-experimental study with 53 baccalaureate nursing students enrolled in traditional clinical or simulation-enhanced clinical. Based on the Lasater Clinical Judgment Rubric there is no significant difference in the clinical judgment scores of the students who received simulation.

A comparison study of baccalaureate (*N*=26) and associate (*N*=62) students used the Lasater Clinical Judgment Rubric (Jensen, 2013). Baccalaureate students (*M* =

34.33) scored higher on total LCJR than the Associate students ($M = 30.90$). Faculty evaluated the students during a simulation exercise, and students had an opportunity to self-report clinical judgment. In that comparison, student LCJR scores ($M = 33.04$) were significantly higher than faculty LCJR scores ($M = 31.81$). Confidence in the Lasater instrument to measure clinical judgment is increasing.

The LCJR evaluated for efficacy of the reflection or debriefing aspect of the student/faculty interaction. Mariani, Cantrell, Meakim, Prieto, and Dreifuerst (2013) conducted a mixed methods study designed to test 86 junior level baccalaureate-nursing students randomly assigned in the control and intervention group. The purpose of the study was to compare clinical judgment skills of students that received structured debriefing following a high fidelity simulation experience. The Lasater Clinical Judgment Rubric was used to evaluate the students. Based on the scores, there was no significant difference between groups. Even though the results were not significant, the group that received the structured debriefing had higher mean scores than the control group. In addition, a similar study evaluated 275 students' experiences with high fidelity simulation in nursing schools from the United States and United Kingdom (Johnson, et al., 2012). Students were randomly assigned to the control and treatment groups and evaluated by faculty based on the Lasater Clinical Judgment Rubric and self-evaluation of simulation activities. Each group participated in the HFS, but the treatment group was able to view an expert role model video prior to simulation experience. Overall, there were positive effects noted for the U.S. and U.K. students that were able to view the video prior to the simulation to provide care to an elderly surgical patient. A subset of

the sample was used to evaluate students in the team leader role for clinical judgment. The findings indicated that there were significant differences with the control and treatment groups for the U.K. and U.S. for the aspects of noticing, interpreting, responding, and reflecting based on treatment and control groups (p=0.00). This multi-site international study provides evidence that simulation, particularly when enhanced with role modeling, is an effective method for enhancing and strengthening the student's development of clinical judgment.

Clinical judgment was measured in students placed in a clinical setting specific to special tasks. One such task involved their ability to address emergencies and unusual events. Endacott, Buykk, Cooper, Kinsman, and McConnell-Henry (2010) evaluated clinical judgment in nursing students during their last year of the nursing program. The study consisted of 51 participants in their final semester that had received instruction on shock. Students received 1 to 5 hours in the simulation lab with a high fidelity simulation experience pertaining to sepsis and hypovolemic shock. Students were videotaped and interviewed based on their experiences, then themes identified regarding student's ability to utilize clinical judgment skills to recognize alterations in patient status. The themes found were initial response (ability to identify abnormal and activate an appropriate response), differentiation recognition of cues (inability to recognize cues), accumulation of signs (single sign does not prompt an action), and diversionary activity (recommended actions unnecessary rather than appropriate action). These themes, though not based on the Tanner (2007) Model of Clinical Judgment, are conceptually similar. The results indicated that students failed to identify and provide an intervention when the patient's

condition was deteriorating. However, the use of video review of simulation experiences helped to identify cues and actions that were missed, and led the authors to note that facilitated reflection of filmed performance was important to comprehensive analysis of clinical judgment in this study.

Using Simulation to Develop Clinical Judgment in Hospital-based Nurses

Upon completion of a nursing program and attainment of licensure, the need to evaluate clinical judgment does not subside. Nurses in clinical settings are expected to be able to make appropriate decisions based on patient needs and expected outcomes. Therefore, employers need to be able to assess whether or not a nurse is adequately prepared to use sound clinical judgment to guide decisions. High-fidelity simulation was used in studies to determine whether a bedside nurse possesses the clinical judgment skills necessary to practice safely and effectively. It also identified additional education needs and further training that promote good patient outcomes.

Studies of clinical judgment in the workplace have often compared practicing nurses to students seeking entry into practice. Yang, Thompson, and Bland (2012) compared a written testing method to a HFS scenario to determine if there were differences in measurement of clinical judgment. The study consisted of 34 registered nurses in critical care and 64 nursing students. The written test given prior to the simulation required a response and rating of the participant's confidence of the judgment made by selection of the response. HFS experience followed the paper test. The results indicated that individuals in the HFS experience were less accurate than on paper test (p=0.0002). Improving the realism of the situation through simulation also led to lower

confidence levels. They concluded that using HFS to make the scenarios more real might not actually improve clinical judgment evaluation.

The question of how effective the use of HFS is for practicing nurses is also cogent in a pilot study by Lavoie, Pepin, and Boyer (2013). Five novice nurses participating in an intensive care unit internship program were given an HFS experience. The interns received 100 hours of didactic instruction and 60 hours of preceptor clinical hours. The HFS experience consisted of a scenario and debriefing of the experience. Upon completion of the HFS experience, participants reported a tremendous value to the debriefing portion of the experience, which enhanced their clinical judgment, organization, prioritization, and assessment skills. The study findings support the need for students to develop clinical judgment by reinforcing that it is necessary for nurses to make deliberate decisions based on the data available and the needs of the patient in terms of life sustaining measures, health prevention, and health promotion. The act of debriefing or reflection may be more relevant to nurses in the clinical setting than trying to improve realism through HFS. Biteman (2011) discussed home health and the need to assess nurses' clinical judgment abilities. Evaluating experienced nurses and novice nurses making the transition to the home health arena before actual placement in solitary home-based practice is necessary to maintain a safe patient environment. This evaluation may be enhanced by using HFS, which can provide a skill trial prior to performing in a home setting. In this sphere, HFS may assist the nurse through the transition from hospital to home setting.

HFS may be used to extend the possibilities of nurse education and staff development by providing consistent and controlled patient scenarios. The ability to repeat the experience can be beneficial in a learning situation. Askew et al., (2012) utilized HFS to assess oncology nurse's clinical judgment abilities. The study consisted of 45 nurses, 40% of the nurses had five years or less of nursing experience. Two simulation experiences were offered and debriefing conducted. The second opportunity allowed the nurses to correct their actions and improve practice. For nurses who were unable to demonstrate clinical judgment skills, the repeat scenario allowed them another opportunity to modify practice. Nurses felt an increase in confidence following the repeat exercise. In addition, nurse administrators and educators utilized the HFS experience to develop and offer additional educational opportunities to strengthen the nurses' abilities. Whereas realism is not as important in a hospital-based learning situation, the ability to provide controlled and duplicated scenarios does seem to have benefits.

Buckley and Gordon (2011) conducted a follow-up survey of 50 medical surgical nurses after they participated in a HFS. The survey was to evaluate clinical judgment after the HFS experience at three months. The survey results indicated that following the simulation experience, thirty participants responded to a patient emergency. Nurses reported that since the simulation experience, technical and non-technical skills improved. Eighty-seven percent of the nurses were able to respond in a systematic fashion and hand over care to the emergency team in an organized manner had improved since the HFS experience. Assessment and management of respiratory emergencies had

improved after the simulation experience. The most influential part of the HFS

experience was the debriefing. Eighty seven percent of the nurses reported that

debriefing helped understanding. These studies seem to indicate that the benefits of HFS

for promoting clinical judgment in bedside nurses is not from the realism inspired by the

technology since they provide care to actual patients each day. The benefits appear to be

from the opportunity to look back at the situation in a reflective way with guidance about

judgments made. The technology served as a way to have consistent scenarios. The

reality aspect of high-fidelity simulation as a replacement for the actual clinical setting

meets the needs of nursing education, and, for hospital-based nurses, HFS debriefing is

beneficial to practice.

<div align="center">Results</div>

A review of the literature demonstrates that HFS enhances student

communication, confidence, self-efficacy, knowledge, and practice. After experience

with HFS, students have reported gains on these skills. Though these skills are important

to nursing, there is a need for a nurse to be able to think through any given situation,

which validated through studies that HFS supports critical thinking skills development.

Class instruction requires understanding and integration into practice, and studies have

validated that this is achievable with HFS instruction. These skills are essential to

nursing practice, but there continues to be a gap in nurses' ability to recognize deviations

from normal, leading to patient death. Due to the increased number of deaths because of

error, nurse educators have become aware of the need to help students recognize

deviations from normal in the development of clinical judgment skills. With the scarcity

of clinical sites for students to gain valuable clinical experience, it is clear that studies showing that HFS is as effective as on-site clinical offers a partial solution to the quandary of how to help students develop sound clinical judgment. Several themes emerged based on the state of HFS in terms of clinical judgment to help faculty identify its role and value in nursing education programs.

HFS Provides a Context to Evaluate Clinical Judgment

Clinical judgment skills are a part of everyday nursing practice. Nursing students need to be able to recognize alterations in patient status and execute an intervention that is appropriate based on the patient situation. It is difficult for educators to evaluate this skill on paper; rather, faculty may use simulation to provide feedback and strengthen clinical judgment skills for nursing students and registered nurses (Blum, Borglund, & Pacells, 2010; Jensen, 2013; Kelly, Forber, Conlon, Roche, & Stasa 2013; Yang, Thompson, & Bland, 2012).

Instruments Are Available For Evaluating Clinical Judgment

An obstacle to using HFS to improve nursing student clinical judgment has been the lack of an evaluation instrument. This led to the concept further studied to identify the defining attributes and potential measurement parameters. Lasater (2007) designed a tool used to measure students on clinical judgment. Others have sought to modify this instrument based on their individual needs; however, there was no longer an issue of how to best assess clinical judgment in undergraduate and practicing nurses in the community.

Debriefing Enhances Clinical Judgment Skills

A HFS experience provides an opportunity for a real life situation through a mannequin to mimic patient situations. While this provides a patient contact for the student to practice skills, debriefing and reflection aspects were the most insightful component of the HFS experience (Lasater, 2007; Mariani et al., 2013). Debriefing served as a basis for students to reflectively think about the patient situation and receive feedback from the instructor. Debriefing has the ability to assist in the development of clinical judgment. Educators and students collaborate in identifying and connecting concepts, which leads to better understanding. Not only has this been distinguished as a method useful for nursing students, but registered nurses have identified debriefing as a resource that contributes to ongoing clinical judgment development (Lavoie et al., 2013).

HFS Improves Recognizing, Interpreting, and Responding Skills

The ongoing issue of preparing nurses to be able to recognize deviations from normal in a timely manner poses a huge concern for healthcare and educators. HFS has been validated as a method to help prioritize, apply assessment findings, and respond to alterations in patient status (Bambini et al. 2009; Blum et al. 2010; Buckley & Gordon, 2011; Endacott, Scholes, Cooper, McConnell-Henry, Porter, Missen, Kinsman, & Champion, 2010; Guhde, 2010; Jensen, 2013; Johnson et al.; Lindsey & Jenkins, 2013). HFS can introduce the concept of rapid response and failure to rescue so that students are exposed to these issues prior to working in healthcare. This would aid in decreasing medical error and mortality rates attributed to healthcare errors. Literature supports that student clinical judgment skills enhanced as a means of being able to utilize the skills of

noticing, interpreting, and responding to patient situations. Even though the result may

not be positive in the simulation experience, debriefing allows the opportunity for

students to improve their practice to avoid inability to recognize deviations from the

normal on patients (Lavoie, Pepin, & Boyer, 2013). Registered nurses in a variety of

clinical settings were introduced to HFS experience as a means of preparing for a rapid

response event. Buckley and Gordon (2011) reported that registered nurses have found

that the HFS experience has prepared and assisted in developing their ability to recognize

alterations in patients and respond in an organized manner.

HFS Assesses for Continuing Education Needs

Nurses in the clinical setting face the challenge of maintaining and improving

their clinical judgment abilities with real circumstances. It is a huge responsibility for

healthcare systems to validate whether or not a nurse is adequately prepared to work in a

specialty setting. Based on the literature, HFS use ensures a nurse is able to utilize

clinical judgment skills when entering the clinical nursing role for the first time,

maintaining a clinical edge after many years of practice, or moving to a new clinical area

(Askew et al., 2012; Biteman, 2011; Buckley & Gordon, 2011; Endacott et al., 2010;

Sittner, Schmaderer, Zimmermann, Hertzog, & George, 2009). Staff educators and nurse

managers have utilized this method of evaluation, not only to identify further educational

needs but also to identify nurses with strong clinical judgment skills who can serve as

models and mentors for new gradate nurses.

Conclusion

In conclusion, clinical judgment is a crucial skill that the nurse brings to the patient encounter. It is evident in the literature that clinical judgment is a vital skill for novice and expert nurses as well as students in the process of becoming nurses. It is essential to nursing practice and patient safety to be continually evaluating educational practices to make certain that instructional methods used are appropriate to measure a valuable attribute to nursing. Using modern technology, like high fidelity simulation, to enhance the nurse's skill set is a win-win for patients, hospitals, and nurses in delivering excellent nursing care for optimal patient outcomes.

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Chapter 3

Abstract

Problem

The nurse educator is charged with preparation of a future workforce that is both knowledgeable and safe. The growing need for nurses coincides with an explosion of educational technology, extremes in patient complexity, lack of traditional clinical space, and unprecedented immigration from Mexico and South America. The problem of this study is to test the effectiveness of high fidelity simulation compared to traditional clinical skill education to determine whether HFS is effective as a teaching method for Hispanic nursing students.

Objective

The purpose of this study is to evaluate the effectiveness of high fidelity simulation in promoting nursing students' development of clinical judgment skills. The study aim will consider both Hispanic and non-Hispanic nursing students.

Research Question/Hypotheses

Is there a difference in clinical judgment skills based on the clinical experience? Do Hispanic nursing students differ from non-Hispanic students in their optimal methods of clinical instruction?

Methods

The study is a mixed method design to evaluate quantitative differences in the type of clinical instruction in terms of clinical judgment skills and qualitatively evaluate

if students' responses to the varied clinical method support a positive perception of simulation.

Findings

Students from all three types of clinical instruction (high fidelity simulation, combination, and traditional) increased mean scores of clinical judgment over time and in a similar pattern. Differences between the three types of instruction were minimal in relation to student acquisition of clinical judgment skills. There were no differences between Hispanic and non-Hispanic students. Students' perceptions of the experiences were positive, providing insight and support for educators to use the different methods interchangeably for an optimal learning experience.

Development of Clinical Judgment **for Hispanic and Non-Hispanic Nursing Students:**

A Comparison of Traditional and Simulated Clinical Experiences

There is an estimated need for one million additional nurses by 2016 (American Association of Colleges of Nursing, 2012). This projected nursing shortage nationwide is forcing educators to look at alternative ways for students to develop fundamental nursing skills to meet the quickly growing healthcare demands in a time when educators are in short supply. In the landmark Institute of Medicine (IOM) report, key findings address the demand for nurses and a reduction in medical errors (Institute of Medicine & Robert Wood Johnson Foundation, 2011). The report emphasizes the need to improve the educational system to ensure that nurses provide safe and quality care in different settings.

Utilization of technology to enhance learning is one of the IOM recommendations for evaluating the required competencies of nursing practice. An example of a required competency evaluated by faculty is clinical judgment, a fundamental aspect of nursing. High fidelity simulation (HFS) is an example of one alternative used to strengthen clinical judgment. It involves the use of state-of-the-art mannequins, capable of breath sounds, chest movement, vocalizations, and blinking, that simulate human responses (Seropian, Brown, Gavilanes, & Driggers, 2004). Mannequins mimic conditions that require application of the nursing process. Educators strive to ensure that nursing students are thoroughly prepared and able to demonstrate application of the concepts learned in school to real-life situations using sound clinical judgment. The primary avenue for development of clinical judgment has traditionally been practice with live

patients in the hospital setting. To prepare more nursing students for practice, educators increasingly utilize simulation to meet clinical training needs when clinical sites and faculty resources are scarce. Simulation is used as an educational supplement to reinforce theory content (Luctkar-Flude, Wilson-Keates, & Larocque, 2012). Use of HFS experiences has shown promise as another effective means for students to develop clinical judgment. Evaluation of HFS as a teaching methodology is an important step toward ensuring that nursing students have the skills and judgment to provide safe and appropriate patient care.

As the melting pot of the world, the United States hosts a variety of cultural backgrounds and languages within its educational institutions. Colleges and universities across the country educate within their nursing programs students from diverse ethnic backgrounds. The United States Census Bureau (2014) reports that an estimated 38% of the Texas population is comprised of individuals of Hispanic backgrounds; the growing number of Hispanic population makes it essential to determine learning differences. Though literature is replete with studies reflecting the increasing diversity in the U.S., there is a deficit of diverse ethnic backgrounds in the evaluation of learning strategies.

Purpose

For a variety of reasons, nursing schools are not equipped to handle the looming nursing shortage. One of the major obstacles is the lack of traditional clinical placements available. In a practice discipline, opportunities for supervised clinical experiences are critical to the development of safe practitioners. Simulation, particularly high fidelity human-like simulation, can be integrated into clinical to bypass that obstacle. High

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fidelity simulation involves the use of a technologically advanced mannequin to provide students with life-like patient experiences by means of providing vocal interaction, audible heart and lung sounds, and palpable pulses (Seropian, Brown, Gavilanes, & Driggers, 2004). Nursing schools across the nation have spent millions of dollars to build and equip simulation hospitals and centers. However, evidence of the efficacy of simulation as a replacement for traditional clinical experience is not well documented. Continuing to fund this form of education without adequate evidence about the effectiveness of clinical simulation as a major teaching method to evaluate clinical judgment puts future nurses at risk for harming the patients during care. The National Council of the State Board of Nursing (2014) recently released gross findings of a two-year multi-site randomized controlled trial comparing different amounts of clinical time spent in simulation. Three groups of students were assigned to one of three clinical methods, 100% traditional clinical, 25% HFS with 75% traditional clinical, and 50% HFS with 50% traditional clinical. There were no significant differences between the three groups in terms of knowledge and competency. This research study unveiled an area of further investigation concerning diversity and clinical judgment. The purpose of this research was to evaluate the effectiveness of simulation alone or in combination with traditional clinical experiences on the development of clinical judgment for all nursing students and for Hispanic nursing students specifically.

<center>**Literature Support**</center>

Clinical Judgment and High Fidelity Simulation

Students typically have difficulty applying knowledge and arriving at the

appropriate decision. High fidelity simulation (HFS) can improve the student's critical

thinking skills and clinical performance, which encompasses communication, nursing

process, confidence, self-efficacy, nursing skills, and critical thinking. Following a high

fidelity simulation, enhanced communication was identified as a strength in students

which is vital to healthcare practice (Berg, Wong, Vincent, 2010; Kameg, Clochesy,

Mitchell, & Suresky, 2010; Marken, Zimmerman, Kennedy, Schremmer, & Smith, 2010;

Posmontier, Montgomery & Morse, 2012; Sleeper &Thompson, 2008). Overall student

confidence and self-efficacy in nursing practice was evident based on simulation

experiences. (Kameg et al., 2010; Kaudorra, 2010; McCaughey & Traynor, 2010; Moule,

Wilford, Sales, & Lockyer, 2008; Reilly & Sprat, 2007; and Sportsman, Schumacker, &

Hamilton, 2011). Nursing psychomotor skills improved through the utilization of

simulation (Reinhardt, Mullins, Blieck, & Schultz, 2012; Sears, Goldsworthy, &

Goodman, 2010). Critical thinking skills have been shown to improve in students that

have had a simulation experience (Bambini, Washburn, & Perkins, 2009; Blum,

Borglund, & Parcells, 2010; Fero, et al., 2010; Guhde, 2010; Jensen, 2013; Kelly,

Forber, Conlon, Roche, & Stasa 2013; Ravert, 2008; Rush, Dyches, Waldrop, & Davis,

2008; Schumacher, 2005; and Shinnick &Woo, 2013a). Students who participated in

HFS activities reported a better understanding of the traditional nursing process of

assessment, planning, interventions, and evaluation (Oldenburg & Plonczynski, 2013)

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and showed improved clinical judgment skills (Bambini, Washburn, & Perkins, 2009; Jensen, 2013; Johnson, et al., 2012; Lindsey and Jenkins, 2013; Mariani, Cantrell, Meakim, Prieto, & Dreifuerst, 2013; Merriman, Stayt, & Ricketts, 2014). Students' overall performance (Luctkar-Flude, Wilson-Keates, & Larocque, 2012) and understanding of content (Beischel, 2013; Schlairet & Pollock, 2010) was enhanced following a simulation experience.

Hispanic Student Learning Needs

Hispanic students strive for successful learning outcomes by overcoming a variety of obstacles that impede the journey of learning and achievement in the U.S. From kindergarten through twelfth grade, these students have encountered learning barriers that include level of income, education, and linguistic acculturation (Becerra, 2012). They have expressed that providing real life situations (Berg, Petron, & Greybeck, 2012), role-playing (Olson, 2012), and work in small groups (Razawi, Muslim, Razali, Husin, & Samad, 2011) has improved their learning needs. Hispanic students have demonstrated a positive effect in learning by utilizing cooperative learning techniques that include creating a unified group (interdependence), face to face interaction, individual accountability, social skills, and processing (Morgan & Keitz, 2010), problem based learning (West & Simmons, 2014), and receiving immediate feedback (Martin & Mottet, 2011). Hispanic pharmacy students achieved successful learning outcomes by utilizing the Keller method, which consists of separating content into modules, and allowing students an opportunity to test and retest to achieve competency (Fike, McCall, Rael, Smith, & Lockman, 2010).

Hispanic nursing students report financial stresses, lack of mentors (San Miguel, Townsend, & Waters, 2013), and lack of faculty support are common barriers interfering with the achievement of program outcomes (Alicea-Planas, 2008; Amaro, Abriam, & Yoder, 2006; Bond, Gray, Baxley, Cason, Denke, & Moon, 2010; Cason, Bond, Gleason-Wynn, Coggin, Trevino, & Lopez, 2008; Evans, 2008; Moceri, 2010; Neubrander & Hall, 2011; Robins & Hoke, 2013; Velez-McEvoy, 2010). Nursing students are more successful in nursing education when the curriculum utilizes the scaffolding clinical model as a culturally competent means of instruction (Lujan & Vasquez, 2010). Hispanic nursing students have to overcome barriers that include language, writing skills, isolation, and self- esteem (Velez-McEvoy, 2010).

Gaps in Literature

It is important that nurses be prepared to use clinical judgment skills that are in the best interest of the patient. Literature supported the use of HFS to enhance clinical judgment but research regarding the relative value of HFS as a clinical teaching methodology compared to traditional and mixed clinical teaching methodologies is incomplete. The studies cited did not consistently consider cultural backgrounds or, more particularly, Hispanic students. This study contributes to knowledge regarding simulation as an effective clinical methodology and teaching tool for nursing students, particularly Hispanic nursing students.

<div align="center">

Theoretical Framework

</div>

Tanner's 2006 Clinical Judgment Model (TCJM) provided a basis for investigation of the potential relationship between use of high fidelity simulation teaching

modalities and the development of positive clinical judgment skills in student nurses. Tanner asserts that clinical judgment is influenced by what the nurse brings to the clinical situation, the nurse's knowledge of the patient and the patient's patterns of response, engagement with the patient, and the context and culture of the care setting. The nurse uses clinical reasoning as the basis for making a clinical judgment. Clinical reasoning characterized by both deliberative and experiential responses aids in making sound decisions. Tanner's Clinical Judgment Model (Appendix B) depicts four aspects of the process that comprise clinical judgment: (1) noticing, (2) interpreting, (3) responding, and (4) reflecting (Tanner, 2006). "Noticing" requires the nurse to understand the present clinical situation and circumstance and to recognize that additional intervention is necessary. "Interpreting" allows the nurse to utilize available information to reason analytically, intuitively, and narratively. "Responding" involves the application of knowledge to perform or not perform an action. "Reflecting" is the ability to evaluate the patient response while acting and identifying if further action is necessary. Clinical judgment is a direct reflection of a nurse's thought process; thus, it can be difficult to evaluate. However, the TCJM is the ideal model for the evaluation of the development of clinical judgment for this study. The TCJM identifies the essential aspects of clinical judgment that result in safe, quality care. The outcome variable of this study is clinical judgment, exemplified by the Tanner model and measured by the Lasater Clinical Judgment Rubric (Lasater, 2007). The LCJR is based on the Tanner model (Appendix C).

<center>**Definitions**</center>

Variables for this study are conceptually and operationally defined. Variable definitions are first concept based then operationalized.

Clinical Judgment

Conceptual definition.

The conceptual definition for clinical judgment is the interpretation or conclusion about a patient's needs, concerns, or health problems and/or the decision to take action, use or modify standard approaches or improvise new ones as deemed appropriate by the patient's responses (Tanner, 2006)

Operational definition.

Clinical judgment based on the student's score on the Lasater Clinical Judgment Rubric (LCJR) and applied to this study. In order to measure aspects of clinical judgment in a specific moment, the Lasater Clinical Judgment Rubric (LCJR) was used for this study. The LCJR developed based on the Tanner's Clinical Judgment Model (TCJM), using an evidence-based process. The Lasater Clinical Judgment Rubric (Appendix C) expands Tanner's four aspects of clinical judgment (noticing, interpreting, responding, and reflecting) with 11 dimensions. Together, the 4 aspects and 11 dimensions scored to stratify a student's level of clinical judgment.

"Noticing" refers to the nurse's ability or inability to fulfill the functions and expectations of the nurse (Tanner, 2006). Lasater (2007a) measures "noticing," by quantifying the student's ability to assess, notice deviance from expected patterns, and seek information. "Interpreting" occurs when one or more reasoning patterns is

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triggered, and the nurse interprets the meaning of the data to determine the appropriate course of action (Lasater, 2007a). "Interpreting" involves the demonstration of characteristics exhibited by the student to prioritize data, and make sense of the data. "Responding" involves the ability to provide the appropriate course of action (Tanner, 2006), and is defined by characteristics demonstrated by the student involving manner, confidence, communication, planning, and skill (Lasater, 2007a). "Reflecting" is comprised of reflecting on and in action. Reflection-on-action is when the nurse shows that information and knowledge gained from the experience—positive or negative-- contribute to the nurse's clinical knowledge, and reflection in action is the ability of the nurse to read the patient. Reflecting is defined by students' ability to conduct a self - analysis of actions and demonstrate commitment to improvement (Lasater, 2007a). The concepts of the Tanner Model and the LCJR aligned (Appendix D)

The student's level of clinical judgment scored on a four-point scale: exemplary (4), accomplished (3), developing (2), and beginning (1). Expectations of the ability of the student to make clinical judgments are based on the rubric score. The basis of the LCJR is to provide a trajectory for the student's development of clinical judgment.

Hispanic students

Conceptual definition.

A Hispanic individual is a person that categorizes him/herself as Spanish, Hispanic, or Latino (United States Census Bureau, n.d).

Operational definition.

Students who self-report of Hispanic ethnicity/culture on the demographic survey denote the operational definition for Hispanic.

Non-Hispanic students

Conceptual definition.

A Non-Hispanic individual is a person that does not categorize him/herself as a Spanish, Hispanic, or Latino (United States Census Bureau, n.d).

Operational definition.

Students who do not self-report the Hispanic ethnicity/culture on the demographic survey denote the operational definition of Non-Hispanic.

High fidelity simulation

Conceptual definition.

High fidelity simulation is an educational technique used to provide opportunities for interactive immersion into a clinical experience that mimics reality without predisposing patients to injury (Maran & Glavin, 2003).

Operational definition.

High fidelity simulation operationally defined by utilizing high fidelity simulators in a faculty controlled clinical laboratory environment for the entire course of the clinical experience.

Traditional Clinical

Conceptual definition.

Traditional clinical experiences consist of a master's or doctoral prepared nurse instructor overseeing 8-10 students in a clinical setting to ensure that each individual student is meeting the course's learning objectives (Owenby, Schumann, Dune, & Kohn, 2012).

Operational definition.

The operational definition of traditional clinical experience will be a faculty led experience in an actual patient setting which typically is in the hospital, for the entire course of the clinical experience.

Combined clinical

Conceptual definition.

Clinical consisting of equal experience in both hospital and simulation lab setting.

Operational definition.

The combined high fidelity simulation will consist of a blended clinical course consisting of an equivalent time in the hospital and laboratory setting.

Methodology

Design

The study design was a sequential explanatory mixed method design with emphasis on the quantitative and qualitative approaches. The quantitative arm consisted of three groups: traditional, simulation, and combined traditional and simulation clinical instruction. The development of clinical judgment repeatedly evaluated. Focus group

discussion and semi-structured interviews with themes extracted served as the qualitative arm of the study. The rationale for conducting a mixed method study was to examine the consistency between the quantitative results, revealed by the LCJR, and the perceptions of the students following their individual clinical experiences.

Research Questions/Hypotheses

The research questions/hypotheses addressed in this study included:

1. (QUAN) Hispanic nursing students who receive simulation only clinical, combined simulation/traditional clinical or traditional clinical experiences differ in development of clinical judgment (based on group assignment).

2. (QUAN) Non-Hispanic nursing students who receive simulation only clinical, combined simulation/traditional clinical or traditional clinical experiences differ in development of clinical judgment (based on group assignment).

3. (QUAN) Hispanic and non-Hispanic nursing students who receive simulation only clinical, combined simulation/traditional clinical or traditional clinical experiences will differ from each other in development of clinical judgment (based on origin).

4. (QUAL) How do students describe their clinical experiences and the impact of those experiences on the development of clinical judgment?

Sample

The inclusion criteria for the sample population consisted of nursing students who successfully completed the first two semesters of coursework in the generic track for the associate-degree nursing program. The generic track is a program designed for students with no prior medical experience and no licensure. Participants were required to be in

good academic standing with the College. Participants were over the age of 18, and included both males and females. Students were grouped according to self-reported ethnicity/culture, either Hispanic or Non-Hispanic. Participants were randomly assigned to clinical groups by using a table of random numbers to place participants in one of the three groups (simulation only, traditional clinical, and combination).

Data Collection/Setting

Observational data was collected for the quantitative strand of the study. Structured observations of students based on the LCJR that contains pre-coded responses (Appendix C).

The data collectors were clinical faculty members. Prior to beginning the clinical course, data collectors were provided with a copy of the LCJR and an insert describing each aspect and dimension of clinical judgment to ensure understanding of the verbiage and characteristics used to define clinical judgment (Appendix E). Instructions on how to use the tool for each clinical experience was provided to ensure that the tool was used consistently in all three groups (Appendix E).

In addition to the written material, data collectors provided an opportunity to practice scoring the LCJR and to compare scores with another data collector to assure inter-rater reliability. Three data collectors received the training, but only two were used for the first six-weeks of the study. The two data collectors viewed a video of a student in HFS and scored the LCJR. The two data collectors discussed and resolved scoring differences. The percent agreement between the data collectors was 88%. The data collectors repeated the process for video two and video three with percent agreement

between the 2 collectors at 90%, and 91% respectively. Two data collectors evaluated the students and scored all of the LCJR rubrics for the first half of the semester (30 students divided into three clinical groups, HFS, combination, and traditional). At the conclusion of the first half of the semester, these two data collectors viewed a fourth video and completed the LCJR with a 92% agreement.

In the second half of the semester, the original two data collectors collected all of the data for the simulation only clinical group and for the traditional clinical group. A third data collector assisted by collecting data for the simulation portion of the combination group clinical. One of the original faculty collected the data for the hospital portion of the combination group clinical. The new data collector received the same training that the original data collectors had and compared scores for video one, two, and three with one of the original data collectors. Agreement between the training scores was 76%, 83%, and 95% respectively.

Procedures

The clinical instructor evaluated each student using the LCJR following each clinical experience. Students were evaluated one time for each of four weeks (weeks 3 – 6); the instructor recorded the mean score and proof of score by submitting the rubric to the researcher. An excel spreadsheet with the sub-scores and mean scores was maintained as well as a hard copy of the LCJR computation. At the completion of the clinical course, the average scores were calculated and compared among the different groups.

Following completion of all content and quantitative measures for the first session of the semester, the researcher hosted focus group meetings that were open to students enrolled in the pediatric course. For the second session, the focus groups repeated. The interview consisted of 15 questions; the interviewer also had five probing questions to attain information that is more detailed. A written topic guide ensured all the information obtained from the participants was in their own words and aided the interviewer in gathering data (Appendix F). The interviewer used probing questions to assist in attaining rich data from respondents and to gather detail. The focus groups met on campus in a classroom. Only the interviewer and focus group were present during the interview. All focus group sessions were audio recorded and transcribed verbatim. Upon completion of the focus groups, student statements were organized thematically. Once data was transcribed, random members of two out of six focus groups reviewed the transcripts for accuracy.

The setting of the study was dependent upon which group assignment the student placed for their clinical experience. For the simulation only group, students were in the simulation lab at San Antonio College. The lab consists of 20 high fidelity mannequins with control rooms to record each session. The combination and traditional group had hospital-based experiences. Units consisted of medical-surgical, intermediate care, intensive care, and outpatient surgery. However, the combination group had exposure to the HFS lab as well as the hospital setting.

Protection of Human Subjects

The IRB at San Antonio College and the University of Texas at Tyler granted permission to conduct the study. In order to respect confidentiality of the subjects, a three-digit number was assigned to each student that only the researcher and student knew. Data was stored on a secure computer database to ensure confidentiality. Written informed consent (Appendix G) was obtained from each study participant. The researcher explained the consent form and addressed questions from the subjects. The consents were collected and stored by a third party until the course was completed and student grades submitted. The consents are now stored in a locked file cabinet in the researcher's office and will be maintained in a secure manner for five years as prescribed by the IRB. A second consent form was obtained from focus group participants, and participants were asked for permission to record the session. To ensure confidentiality, students were asked to withhold sharing information about other participants in the focus group or about any subjects discussed by the group.

Instrument

The Lasater Clinical Judgment Rubric (Appendix C) derived from the Tanner Clinical Judgment Model (TCJM). The rubric serves as a tool for instructors to measure and provide feedback on students' thoughts and actions. Key concepts of clinical judgment were outlined based upon the rubric. Lasater (2007a) developed the rubric to measure clinical judgment in one single occurrence. Based on the Tanner Model, context of care, background of the nurse and nurse-patient relationship are three factors that affect noticing. Lasater (2011) recognizes that due to inability to measure the three

factors (context of care, background of the nurse, and the nurse-patient relationship) by using the LCJR, the tool cannot in totality measure clinical judgment. The LCJR, however, can provide a measure of that point in time but is not a full measure of clinical judgment. The rubric examines eleven dimensions representing the four aspects of the TCJM: noticing, interpreting, responding, and reflecting. Based on each dimension, scores were awarded to determine level of clinical judgment development: a score of 1 is beginning, 2 is developing, 3 is accomplished, and 4 is exemplary (Lasater, 2007a). Eleven to 44 total points are earned in the rubric. The total possible score earned by each aspect is as follows: noticing (12 points), interpreting (8 points), responding (16 points), and reflecting (8 points). The total score earned for all the aspects was used to conduct data analysis. The higher the score, the more the student has utilized the clinical judgment aspects to arrive at a decision during the clinical experience. Context of care, background of the nurse, and nurse-patient relationship are three factors from the Tanner Model that impact noticing. Lasater (2011) recognized that due to the inability to measure these three factors of the Tanner Model, the tool could not in totality measure clinical judgment. The LCJR however can provide a measure of the four aspects of clinical judgment at one point in time but is not a full measure of clinical judgment.

Adamson, Gubrud-Howe, Sideras, and Lasater, (2012) examined three different studies that used the LCJR to assess development of clinical judgment in a simulated patient care setting. To capture the state of clinical judgment in a variety of simulated settings, data from the three studies supported both the reliability and validity of the

instrument. In two of the studies, reliability was consistently $r \geq .90$ or higher, and in the third study, reliability ranged from $r = .57$ to 1.00.

For the qualitative component of the study, the data was collected by means of focus groups utilizing pre-planned interview questions and probing questions (Appendix F). However, free flow of conversations related to the interview questions was encouraged.

Intervention

Each group was given a schedule based on modules. The six modules used correspond with the content covered in the theory portion of the course: Growth and Development, Asthma, Ventricular Septal Defect, Cerebral Palsy, Necrotizing Enterocolitis, and Glomerular Nephrotic Syndrome (Appendix H). The six modules were used as a guide for all three groups to follow based on theory schedule. Each group had a patient experience that is similar to the module topic. Even though there are six modules in the Pediatric Nursing course, only four of the modules were used to formally evaluate the students based on the LCJR for study measurement, which were modules 3, 4, 5, and 6 (Appendix H). For the traditional group, clinical experience was at a local pediatric hospital on a variety of different units. The two experimental groups were the high fidelity simulation group that had the entire clinical experience in the lab with HFS mannequins and the combination group that received both HFS and hospital experience. Each group had a clinical post conference to allow each student an opportunity to reflect on patient experience.

Data Analysis

Quantitative data analysis was performed utilizing the International Business Machines (IBM) Statistical Package for the Social Sciences (SPSS) program. The dependent variable was clinical judgment, and the independent variables were the treatment (simulation, traditional clinical, or combination group) and ethnic/cultural origin (Hispanic or Non-Hispanic). Four scores over the course of the semester were recorded for each participant. The primary tests of significance included the mixed ANOVA and the ANCOVA. The predetermined significance was set at $p \leq .05$.

For the qualitative arm of the study, the data analysis consisted of a three-step process often used for phenomenological studies but appropriate for general qualitative research using focus groups: intuiting, analyzing, and describing (Streubert & Carpenter, 2011). To begin the first step of intuiting, the researcher acted as the instrument to obtain data about the lived experiences of each student during the clinical experience. An interview guide with initial and probing questions was used to maintain attention and continuity between the different focus groups (Appendix F). Throughout the interview, the researcher used field notes regarding the content mentioned by students during the interview. Each focus group meeting was also audio- recorded to use for transcription.

The second step of analysis involved the researcher listening to the descriptions of students and reading the field notes and transcripts to identify common themes or core categories (memos). Memos provided the researcher with the opportunity to identify recurring motifs within the data. The final step was describing, which involved the researcher identifying and classifying critical elements of common experiences pertaining

to the pediatric clinical. Selective coding allowed the researcher to identify the main

concerns of the students in relation to their clinical judgment skills and HFS experience.

Trustworthiness was supported by having a second reviewer examines the process used

and decisions made. Additionally, two member checks of the six sessions with select

focus group members were done to insure that the experiences were accurately reflected

in the descriptions provided.

Research Findings

Demographics

The final sample (N=60) consisted of nursing students. Sixty-four students were

invited to participate in the study but only 60 consented. The sample was predominantly

female ($N = 54$) and between 21 and 30 years old ($N = 30$). The final sample consisted of

30 Hispanic and 30 non-Hispanic students. A chi-square test calculated to evaluate

differences in demographics between groups. The results indicated that there are no

significant differences between groups based on demographics (see Table 1).

Internal consistency reliability of the LCJR for the study was assessed on a

weekly basis. Cronbach's Alpha scores remained consistently high across the four weeks

of clinical evaluation (week 3 = .93, week 4 = .93, week 5 = .93, and week 6 = .90).

Quantitative Results

In order to answer the research questions/hypotheses based on the data obtained,

the four weeks of mean LCJR scores were examined for normality. There were some

missing cases noted weekly due to students assigned to observation areas in the hospital

or due to clinical absences. This data was considered missing not at random due to the

pattern of missing data being a result of planned observation time or a reasonable clinical absence. A respected manner of dealing with this type of missing data is to use a hot-deck imputation. This type of imputation compares cases based on common characteristics used to order the data in such a way that missing data is estimated from like donor cases. Means, standard deviation, skew, and the K-S and Shaprio-Wilk tests of normality recorded in Table 2 and mean scores by week and clinical group depicted in Table 3.

Even after replacing missing values, the data are not normally distributed. Therefore, the significant results of the parametric tests were validated using non-parametric tests.

Research hypothesis 1.

Hispanic-nursing students who receive simulation only clinical, combined simulation/traditional clinical or traditional clinical experiences differ in development of clinical judgment (based on group assignment).In order to test research Hypothesis 1, a mixed design ANOVA was used. The data did not meet the assumption of sphericity requiring correction to the degrees of freedom. The Greenhouse-Geisser correction was used and resulted in a significant main effect of time (week) on the sum score F (2.306, 62.273) = 41.17, $p < 0.001$, $\eta_p^2 = .60$. All groups increased in mean scores over time (see Table 3). The tests of within-subjects contrasts revealed significant increases between Week 4 and Week 5 F (1, 27) = 7.87. $p = .009$, $\eta_p^2 = .226$ and between Week 5 and Week 6 F (1, 27) = 56.62, $p < .001$, $\eta_p^2 = .673$. There was also a significant interaction between time and group between Week 5 and Week 6 F (2, 27) = 4.77, $p < .017$, $\eta_p^2 =$

.261. The sharp increase in the Combination group's scores on the interaction graph exemplifies the increase in scores over time, Figure 1.

Within subject, differences over time were validated using Friedman's ANOVA, a non-parametric test for differences between several related groups. The sum scores of the students for clinical judgment significantly changed over the four week time-period X^2 (3) = 53.22, $p < 0.001$. A follow-up Wilcoxon test revealed results consistent with the within subjects contrasts noted above (See Table 4). The main effect of group was not significant F (2, 27) = 1.73, $p = .196$.

Research hypothesis 2.

Non-Hispanic nursing students, who receive simulation only clinical, combined simulation/traditional clinical or traditional clinical experiences differ in development of clinical judgment (based on group assignment).

To determine if Non-Hispanic nursing students who receive simulation only clinical, combined simulation/traditional clinical or traditional clinical experiences differ in development of clinical judgment over time, a mixed design ANOVA was used. There was a significant main effect of time for Non-Hispanic students F (3, 81) =35.411, $p < 0.001$, η_p^2 = .567). Mean scores increased over time for each clinical group (See Table 5). The tests of within-subjects contrasts revealed significant increases between Week 4 and Week 5 F (1, 27) = 4.99. $p = .034$, η_p^2 = .156 and between Week 5 and Week 6 F (1, 27) = 66.30, $p < .001$, η_p^2 = .711. There was no significant interaction between time and any clinical group (Figure 2).

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Friedman's ANOVA validated within subject differences over time. The sum

scores of the Non-Hispanic students for clinical judgment significantly changed over the

four week time-period X^2 (3) = 43.14, $p < 0.001$. A follow-up Wilcoxon test revealed

results consistent with within subjects contrasts noted above (See Table 6).

Figure 2 depicts the mean over time for each of the clinical groups. The main

effect of group was significant F (2, 27) = 3.633. $p = .040$, $\eta_p^2 = .212$. Between group

differences verified using the Kruskal-Wallis test, a non-parametric test of differences

between independent groups. The main effect of group was significant for Week 6 LCJR

scores X^2 (2) = 11.71, $p < 0.003$. Pairwise comparisons revealed significant differences

within Week 6 between the simulation and traditional groups ($p = .003$).

Research hypothesis 3.

Hispanic and non-Hispanic nursing students who received simulation only

clinical, combined simulation/traditional clinical, or traditional clinical experiences, will

differ from each other in development of clinical judgment (based on origin). In order to

determine if there is a difference, an ANCOVA test was conducted. The initial LCJR

score (Week 3) was used as the covariate and the final LCJR (Week 6) was used as the

main effect. The covariate was significant F (1, 57) = 9.229, $p = .004$. However, the

main effect of origin (Hispanic or Non-Hispanic) was not significant F (1, 57) = 1.177, p

= .282, indicating that ethnic/cultural origin had no significant effect on development of

clinical judgment (Figure 3).

Additional analysis.

In light of the significant covariate in Research Question 3, change scores between Week 3 and Week 6 tested for between group differences in multiple combinations. Change score differences between clinical groups (HFS, combination, and traditional) were not significant for Hispanic students $F (2, 27) = .397, p = .676$ and for non-Hispanic students $F (2, 27) = .135, p = .874$. Change score differences by origin (Hispanic and non-Hispanic) were not significant for the HFS group $F (1, 18) = .177, p = .679$; the combination group $F (1, 20) = .343, p = .565$; and the traditional group $F (1, 16) = .001, p = .971$.

Qualitative Results

The qualitative results reported based on themes recognized in the focus groups of the perceptions of the students' clinical experience. Themes are identified and examples of students' perceptions by means of quotes are provided to gain insight of the students' overall interpretation of the experience.

Research question 4.

How do students describe their clinical experiences and the impact of those experiences on the development of clinical judgment?

Data for the second arm of the study was collected in student focus groups following completion of the assigned clinical experience. An interview guide (Appendix F) helped maintain interview consistency across the six groups. Sixty participants consented to share their experiences. The students' responses to the questions were analyzed using the three-step process of intuiting, analyzing, and describing. Qualitative

descriptions from students were organized as themes according to the four aspects of the

Tanner Clinical Judgment Model, noticing, interpreting, responding, and reflecting. Each

theme was described and followed by a selection of the more descriptive direct quotes

supporting the theme.

Theme 1: noticing.

Noticing is a perceptual grasp of the situation at hand (Tanner 2006). In the

hospital setting, students reported that nurses either facilitate the learning experience or

serve as a barrier to learning. The nurse assignment directly impacted the students'

abilities to function in the nursing role.

- Students in the combination and traditional clinical felt resistance from the nurses

  that impeded their learning experience.

A non-Hispanic student reported that "When I follow a nurse that isn't willing to

teach or isn't student friendly, a student or myself is not going to learn because one feels

like a nuisance more than a student wanting to learn and gain experience."

- Students from the combination and traditional clinical reported a feeling of a

  weight restricting them from learning opportunities.

"It has been very frustrating for me that the nurse one is assigned to determines

whether one may have a good experience. I literally had a nurse that told me to sit

there...like my instructor came up and I was like, I am reading my book because my nurse

told me to sit here, and she would get me when she needed me. I was like okay…well

that's the day that I spend like 7 hours literally reading my book and it was hard."

- Students reported that when nurses were receptive to them, they shared experiences and rationales to support their decisions. Through observations, students were able to attain knowledge of nursing skills and decision-making. Students consistently reported observational activity as a mode of learning, however, only if there was no resistance from the nurse the student was working with during the care.

"I learn from observing rather than physically doing it…in the hospital I was able to apply what I learned seeing it as the person is actually doing it. I was able to see the nurse make her own clinical judgment, withholding medication because a level was too low or too high. She told me why and explained it to me; I will remember that from then on."

Theme 2: interpreting.

Interpreting is developing a sufficient understanding of the situation to respond (Tanner 2006). Pediatric clinical experience requires blending the concepts of medical-surgical and mental health nursing because the same conditions in adult medical surgical occur in children. In addition, pediatric nursing involves families and children in terms of illness, which encompasses the ability to work with families psychosocially. Students in all three groups of clinical (traditional, combination, and HFS only) had the opportunity to prepare for the psychosocial and physiological aspects involved in the care of chronically or terminally ill children by communicating and interacting with patients and families.

- Students were able to witness fear and anxiety of parents and draw from that experience. "In the NICU a baby with Teratology of Fallot needed surgery, and the mom told me she was worried that this was the last time she would see her child…that's the reality that is what you are going to see as a nurse and being able to witness that and experience that it was a good learning experience for me."

- Students used physiology attained in the lecture course to aid in their decision-making in clinical.

"We had to prioritize…knowing the physiology and what to look for. After I read, I learned what to look for. If I see it, I connected it together."

- Assuming care for the patient in simulation lab allowed the students the opportunity to apply their knowledge of pediatric concepts.

"I was able to practice skills that I wouldn't be able to in a real setting...I was allowed in simulation to take care of a patient from the beginning to the end of the situation. I learned to give medication safely and what to watch for…it helped connect what we are learning in lecture."

- Hospital-based clinical students reported multiple instances that exemplified understanding of basic core competencies in nursing.

"I saw a very small child, she wasn't even my patient, but my nurse was helping another patient while the other nurse was at lunch…so I attended to the patient that was complaining of the itching…so I gave the patient a cold towel and told the nurse about the itching."

Theme 3: responding.

Responding involves deciding on a course of action deemed appropriate for the situation. (Tanner 2006). Students in all three groups of clinical (HFS only, combination, and traditional clinical) provided responses that reflected skillful execution of necessary care.

- Students that received high fidelity clinical experiences felt that they were able to work independently in the simulation setting and initiate actions on their own. Students expressed that they were able to recognize medication errors and notified physicians.

"I had experiences in simulation where dosages were incorrect, not enough, or too much for the patient. We pretty much caught all those medication errors. We called the doctor… to notify of the dosages the patient was getting."

- Responding to alterations in patient status in a prompt fashion made students feel confident and competent. In the high fidelity simulation experience students reported that they achieved a positive outcome.

"Today during CPR we were able to resuscitate the child, and it was fine. I think on that level, today was probably the proudest because we have come so far. I mean we took steps and were able to connect those dots a lot quicker than that first time."

- Recognizing alterations in patient status and being able to interpret diagnostic findings made students feel prepared and knowledgeable.

"I felt really cool getting that X-ray back in the simulation lab…and we were all able to explain what it was and we were all like its congestive heart failure and I was able to look at it and call the doctor to get different orders. It felt really good."
Another instance reported by the student that prompted her to intervene with the patient was "A patient got really dizzy…she was working with the therapist and said she was feeling dizzy…she had hypertension and was on medication. I said, 'let's check the blood pressure'…turns out it was low, I told the nurse."

- Students in the simulation setting made decisions every clinical day.

"In simulation we had to make decisions every time because we were the ones having to decide. I checked the fontanel on the baby today it was bulging and I felt fetal occipital circumference had increased. I was thinking hydrocephalus and I was able to catch it today. I felt pretty good about that and was able to notify the doctor."

- Students in the hospital clinical felt that they made a difference in communicating and interacting with patients and families.

A patient and family was diagnosed with a chronic condition and they were astounded by the diagnosis but the student reported that "by acknowledging little things and sharing it with dad…such as, commenting that the baby is looking up at dad. I saw that the mom was getting excited and happy about the experience."

Caring for terminally ill children in the hospital for extended periods made students feel like they were a support for the patients and families. "On the oncology floor, you know the parents are stressed out and just talking to them they feel like ok, you know I'm an adult, they have someone to talk to. Being in the room with their child all

alone, it is hard for them, but I think it is important to help the parents. I felt like I did really well communicating with the parents."

Students felt that by being present for the families they were utilizing psychosocial skills. "This patient from El Paso had a tumor...one day he got really sick on the parents. The nurses and doctors were tending to the child and the parents were alone, did not have family in San Antonio. I started talking to them and you could notice a difference in the parents, they just wanted to talk with someone and have support. Nurses are not focusing on the parents; they are there for the patient. During the procedure, I talked to dad and he mellowed out."

- There were multiple opportunities for teaching in the pediatric clinical experience, and students felt prepared because they were able to explain care to family members.

"The teaching opportunities were there…because the child and parents didn't know because it was their only child and they hadn't experienced this before. I felt like I knew something and felt really smart because I got to teach someone something." Students expressed that they were able to recognize areas of teaching and address them. "I taught them that they need to give their kid more water, so he doesn't get constipated or like Miralax. Basic common sense stuff, which is huge to them, so you feel all fulfilled on the personal side."

Theme 4: reflecting.

Reflecting involves attending to patient's responses to the nursing action while in the process of acting (Tanner, 2006). Students in all three groups (traditional, combination,

and HFS only clinical) reflected and expressed self-assessment of learning and opportunities for growth. Each group of clinical students expresses value in all opportunities to make decisions, whether basic or complex.

- Students felt that because there was not an instructor or nurse working next to them in the simulation setting that they had more of an opportunity to think independently

"It helped to not have nurses in simulation lab…that would say you can't do this or do that…we had to think for ourselves. It made us think …about what we do or what can we do as far as interventions."

- Students had opportunities to utilize their judgment and discuss with each other to arrive at the best decision for the patient.

"Recognizing how to prioritize and use time management because we were taking so much time getting medications ready. We get to call the doctor get a telephone order. Things that we don't see like considerations for medication administration, is it compatible with the IV and if the IV that is hung is right…Rather than just following a nurse around, it just makes you aware of things that wouldn't be picked up that can result in a bad outcome or that you need to have done."

- Students reported that every week, the patient condition coincided with theory and this strengthened their understanding of the content.

"In class we just read and listen to lecture. In simulation, we were actually able to see things and apply what we are reading. I think having simulation as my clinical has made me have to take it more serious…not to say that out there you don't have to take it

serious but just doing vital signs and following the nurse around and seeing what she is doing doesn't help. Here we are putting things together as a group and doing it ourselves...you learn a lot more doing hands on."

- Students reported that they felt safer in the simulation environment.

"We did a simulation earlier today with the class, and it was really helpful to come together to talk about things. We were able to ask questions and understand things better than if I ask my nurse what is that for...we have to learn from our mistakes compared to whatever mistakes you make on the floor."

- In the hospital setting, they felt reluctant to ask questions; however, in the simulation lab they felt more at ease to ask questions. Students felt less fearful in the simulation setting to perform independently and collaborate with their peers.

"Here you are the nurse and you don't get in the way of her job...here you can do it. In addition, you are not communicating between your nurses…should I go ask the nurse this...your communicating with each other…as if they are nurses on the floor, so you do not really care. You don't do the right thing, you learn from it and nobody gets hurt."

- Students reported that they were aware of the severity of their decisions and would be cognizant of safety measures to ensure no patient harm.

"We had a lot of medication errors that we had to catch. I work in pediatrics as an LVN, and I tend to administer what the doctor orders or what the pharmacy delivers. We do not double check for the reason that it is a physician's order or pharmacy prepared medication. Therefore, safety-wise, I have improved as a nurse because we had a lot of

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wrong doses that could have severely injured the child in simulation. For this reason, I know that in my practice, I need to double-check everything to avoid harming the patient."

- Students were able to prioritize care in simulation clinical.

"Here in simulation today, we had three patients. We had to figure out how to prioritize. Competence and prioritizing know which patient to see first …knowing signs and symptoms and being able to prioritize this is a skill that we can use for the future courses."

- Both clinical experiences resulted in the increase in students' communication and collaboration skills.

As a nurse, communication is essential and the students felt that they strengthened these abilities with the hospital experience. "I felt like we learned a lot of communication, the one to one on how to talk to a patient…that's what kind of felt uncomfortable before this clinical. Going in there and talking to these children."

Students in the simulation group reported that the clinical experiences helped them to recognize their weakness involving communication and collaboration with health professionals and provided instances to improve communication. "I wish we could communicate better, every time we had an experience I felt as though we need to communicate better. It is vital to be able to communicate with each other if not the patient is harmed."

- Awareness of learning in every environment even with obstacles was increased. Students acknowledged the value in learning from different nurses and the variety of areas in the hospital, even in an observational capacity.

"The more exposure that we have to different hospitals and nurses increases our knowledge of different perspectives and techniques used to handle clinical situations. From different nurses you are able to learn little tricks on how to start an IV, others always have a sixth sense about what to expect in the next five or ten minutes. It's just learning from the different nurses adds to the experience."

Discussion of Findings

The need for new nurses and subsequent demands on nursing schools to produce these new nurses presents a unique set of challenges for nursing faculty. Providing clinical experiences that will help students develop clinical judgment in spite of overcrowded hospitals and lack of faculty inspired the growth of alternative clinical options. This in-depth study provides evidence of the development of clinical judgment across three types of clinical experience with nursing students and helps build faculty confidence in the use of alternative clinical options. Across the three clinical groups, students gained clinical judgment at similar rates and in similar patterns. Likewise, Hispanic and Non-Hispanic students gained clinical judgment across the three clinical groups in patterns and rates that were similar. The LCJR was used to measure students' development of clinical judgment. The consistency and pattern of change scores over time and across groups supports the validity of the LCJR as a measure of clinical judgment development.

Hispanic and Non-Hispanic Students' Development of Clinical Judgment by Type of Clinical Experience

Hispanic and Non-Hispanic students in all clinical groups increased in LCJR scores over time. There was a tremendous growth in scores for weeks four and five as well as five and six. The results for this study are consistent with literature that HFS experiences support the development of clinical judgment over time. Jensen (2013) evaluated clinical judgment for associate and baccalaureate nursing students over a two-semester period. There was a significant increase in LCJR scores from Semester 1 to Semester 2. Though the study evaluated for a different type of student with no consideration of ethnicity, the findings are consistent as far as the potential effects HFS has on clinical judgment skills when used for a long period. This study added the dimension of ethnicity and thereby advanced the science.

Students' LCJR scores improved over time regardless of the method of clinical instruction. Blum, Borglund, and Parcells, (2010) compared clinical judgment scores for students that received high fidelity simulation and traditional experiences and found no difference between groups. This study compared three groups (HFS only, combination, and traditional clinical) and contributes to knowledge related to ratios of HFS to traditional clinical.

Non-Hispanic students in the simulation and combination groups had higher mean LCJR scores than the traditional group. These results are consistent with other studies that identified that students that received HFS in comparison to traditional experiences had enhanced clinical judgment skills (Luctkar-Flude, Wilson-Keates, & Larocque, 2012;

Merriman, Stayt, & Ricketts, 2014). Clinical judgment scores for the Hispanic students

had the same pattern as the Non-Hispanic students' scores but they were not significantly

different.

Hispanic and Non-Hispanic Students Development of Clinical Judgment

With the growing diversity in the nation, it is beneficial to consider the pattern of

clinical judgment development for different ethnic/cultural groups. For the students in

this study, there was no difference in the development of clinical judgment when

comparing Hispanic and Non-Hispanic students. The variable of ethnicity in terms of

development of clinical judgment skills has not been included in previous research.

Impact Of Clinical Experience On Development Of Clinical Judgment

When queried about the impact of the clinical experience on clinical judgment,

students were quick to describe how different clinical experiences, both positive and

negative, were instrumental in its development. Tanner (2006) described the

development of clinical judgment as having four aspects, noticing, interpreting,

responding, and reflecting.

Noticing.

Students in the traditional experience reported that enhanced noticing was

dependent on the nurse assignment and the willingness of the nurse to guide the student

to understand the current situation. Rush et al., (2008) recognized that students in the

HFS clinical needed guidance prior to and following the experience if they were to grow

in the ability to notice and recognize alterations in patient status. This study supports

Rush et al., (2008) and increases understanding of the importance of anticipatory guidance from faculty and nurse mentors to increase students' skills in noticing.

Interpreting.

Students from all three groups reported that the clinical experiences prepared them to interpret findings based on psychosocial and physiological aspects of care in pediatrics. An ability to notice and interpret the psychosocial aspects of chronic illness for the pediatric patient and family is essential to competent nursing care. HFS has been shown to help students interpret what they notice and apply theory to actual practice (McCaughey & Traynor, 2010; Rush et al., 2008; Oldenburg & Plonczynski, 2013; and Shinnick & Woo, 2013a.) Students in this study who had traditional clinical experience discussed the importance of psychosocial information. In comparison to the students in the simulation clinical, students in the traditional and combination mentioned psychosocial issues. Students in the HFS experience found it difficult to relate to the psychosocial aspects involved in the scenario because mannequins did not provide the same kind of reactions that a patient in the traditional clinical setting provide. Therefore, it is important for educators to ensure that they expose students in the HFS experiences with parental reactions and psychosocial issues to strengthen this important aspect of the clinical experience and the potential impact on interpreting.

Responding.

Students in the HFS clinical felt the experience enhanced their ability to respond by being able to independently provide patient care and initiate actions. Rush et al., (2008) found that following an HFS, students were able to identify pertinent information

and arrive at appropriate decisions. By being able to provide care for the patients, all students felt confident and competent. This finding is consistent with other studies of HFS and the enhancement of confidence relative to simulation (Bambini, Washburn, & Perkins, 2009; Blum, Borglund, & Parcells, 2010; Kaudorra, 2010; Moule et al., 2008; Reilly & Sprat, 2007).

However, this study highlights the importance of providing students in traditional settings an opportunity for independent patient care with supervision. The students in the traditional clinical setting failed to report confidence in providing care for patients. This may be a result of nurse instructor/mentor's tendency to assume responsibility of patients in the traditional clinical setting, thereby limiting the opportunity for students to arrive at a decision and provide care. As a result, students feel less confident. Sears, Goldsworthy, and Goodman (2010) utilized HFS to introduce medication administration to students prior to administering medication in a traditional clinical. The findings indicated that students that received HFS experience had fewer errors when administering medication in the traditional clinical setting. Sportsman, Schumacker, and Hamilton, (2011) compared traditional and HFS clinical and found that in terms of self-reporting competence, students that had no HFS experience felt less competent about leadership skills than the students that received HFS experience. However, there was no difference between groups, scores on grade point averages, and exit examination performance.

Being able to recognize alterations in patient status made students feel prepared and knowledgeable. Others reported consistent findings with students that had HFS experience; they felt prepared to practice following the experience. Researchers

recognized the importance for students to feel prepared to practice (Kaudorra, 2010; Moule et al., 2008; Reilly & Sprat, 2007).

Reflecting.

Students reported that the reflecting aspect for the HFS group involved the independence and ability to collaborate with peers during simulation experience. This allowed the students an opportunity to think in action. Students reported value in working with one another to arrive at a decision. In other literature, this finding was lacking. Students also reported that HFS experiences coincided with theory, which facilitates application and understanding. Lasater (2007b) also found that students saw simulation as an integrator of their learning. There is also literature validating this finding quantitatively (Fero, et al., 2010; Lasater, 2007a; Schlairet & Pollock, 2010; Shinnick & Woo, 2013b). Enhancement of communication between healthcare professionals was a consistent advantage of HFS and has been noted in several other studies (Berg et al., 2010; Kameg et al., 2010; Marken, et al., 2010; Posmontier, et al., 2012; Sleeper &Thompson, 2008).

Additional noteworthy findings related to reflection-included feeling:

- safer in the simulation environment to make mistakes and to be able to reflect on those decisions as they relate to patient safety and harm,

- better prepared to prioritize care following simulation experiences,

- that the opportunity to work with different nurses allowed them to learn different ways of arriving at decisions and performing techniques.

Recommendations

High fidelity simulation dates back to educating aviators on aviation concepts and application. Nursing instituted the use of simulation for many reasons including faculty shortages and lack of clinical sites. Even though many schools have begun to use this teaching method, there is little evidence to support how this teaching method affects clinical judgment skills. This study revealed that development of clinical judgment was not dependent on type of clinical experience. Educators should use these findings as they evaluate current practice. Use of both methods of instruction to enhance learning and the development of clinical judgment skills may be the best approach.

Historically educators used the traditional clinical setting only. However, it is evident that there are advantages and disadvantages to both methods that could potentially strengthen the skills of future nurses. For example, the simulation may provide a safe environment for students to avoid potential errors that may impose harm to patients but the traditional clinical provides students with the psychosocial aspects in nursing and the dynamics of the healthcare professionals' collaborative efforts. By integrating both methods of instruction, the student should receive opportunity and experience to strengthen their ability to critically think and make clinical judgments in the best interest of the patient.

Faculty should also consider building relationships with staff nurses who enjoy working with students and support the students' need to learn. By building partnerships, each individual invested in the success of the student's learning and achievement. Staff nurses would also have a mentoring relationship with the educator to seek guidance and

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consult when clarification is necessary. For example, it was apparent in the qualitative arm that students in the traditional clinical setting were lacking the opportunity to reflect and be an active part in the decision making process. Students felt resistance and fear to ask questions in the hospital clinical setting, which is vital for learning. Having stronger partnerships would ensure that the nurse working with the student is working towards the same goal and invested in developing the nursing student's clinical judgment.

Future studies of the development of clinical judgment based on the clinical setting should include diverse ethnic/culture groups. Insuring that appropriate strategies for teaching used for diverse students will increase the diversity in nursing and ultimately the health of our population. Studies with a larger sample of students that can produce findings that are generalizable to all nursing students would be beneficial for educators nationwide. Additionally, studies are needed to evaluate whether students that received HFS for their entire clinical rotation are successful on licensure examination.

Limitations

Limitations of this study involved a small sample and unequal group size. Assumption testing revealed non-normality of the data collected, indicating that the findings generalized with caution only to groups similar to the study sample. The between group differences for the non-Hispanic students were limited to sub-groups of the larger clinical group and were not supported by the analysis of change scores. When change scores were examined instead of repeated measures, there were no significant differences found by clinical group or by origin. Finally, three data collectors, faculty

members, scored the LCJR. Although efforts were made to insure inter-rater reliability, it is possible that faculty members scored consistently higher or lower than one-another.

Conclusion

Study findings corroborated what many nursing schools are currently doing to meet the need for clinical sites. It was evident in the study that students' clinical judgment developed similarly regardless of the clinical assignment. In Texas, there are a significant number of Hispanic individuals, which makes it even more difficult for educators to meet the learning needs. There is uncertainty as to what learning strategies and tools are conducive to students of a diverse population in nursing school. However, this study revealed that there is no difference in the clinical learning of Hispanic students in comparison to Non-Hispanic students. With the growing demand for nurses and diversity, it is essential that nurse educators select instructional methods that support development of nurses that are adequately prepared to make clinical judgments that produce good patient outcomes.

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Chapter 4

Summary and Conclusion

The objectives of this research were to explore the literature for knowledge of clinical judgment skills and high fidelity simulation (HFS). In addition, it evaluated for differences in clinical judgment based on the method of clinical instruction, recognize differences for Hispanic and non-Hispanic nursing students in terms of clinical instruction and clinical judgment, and gain insight of the students' perceptions of their individual clinical experience. The overall objectives for this research provided rich data utilized by educators.

A review of literature based on HFS and clinical judgment from 2004-2014 identified themes that were consistent in the literature. The themes identified HFS evaluates clinical judgment; instruments are available for evaluating clinical judgment; debriefing enhances clinical judgment skills; HFS improves recognizing, interpreting, and responding skills; and HFS can be used to assess continuing education needs. The review of literature depicted the value of HFS to evaluate for clinical judgment skills not only in nursing students but for registered nurses practicing in clinical areas. HFS use in terms of evaluating for clinical judgment has exponentially grown over time and is used in nursing programs and healthcare facilities. The high utilization rate of technology as an adjunct to teaching supports the need to investigate if HFS is an effective tool to use as a formative and summative method of evaluation of clinical judgment for students and nurses. The review of literature also identified that there is little acknowledgement of

Hispanic students' learning needs and whether this method of teaching is conducive for students of this ethnic background.

The American Association of Colleges of Nursing recognizes that the growing demands of an aging Baby Boomer generation will exacerbate the already projected shortage of Registered Nurses over the next two decades causing a crisis in healthcare in the U.S. (American Association of College of Nursing, 2014). There is a rising need for nurses who are prepared to handle the clinical demands and provide safe and effective care to the public, which results in quality outcomes. To further determine if the current processes used in educational institutions are effective in producing nurses capable of using sound clinical judgment, a mixed method design research study was conducted to determine if there are differences in clinical judgment skills based on the type of clinical instruction (HFS only, combination, and traditional clinical). The study also evaluated learning differences for Hispanic and non-Hispanic nursing students in each group. The purpose of evaluating Hispanic students evolved from the U.S Census Bureau report indicating that there are 54 million Hispanic individuals in the nation (Center for Disease Control, 2014). By 2060, the projected increase of Hispanic individuals will be 128.8 million (Center for Disease Control, 2014). This indicates that the population is going to continue to grow which should increase the number of Hispanic students in nursing programs. There continues to be a lack of literature identifying how to best instruct students of this ethnic background.

The focus of this study quantitatively measured aspects of student clinical judgment skills, based on group inclusion to determine if there were differences between

the groups based on type of clinical experience and/or ethnicity. Clinical experience groups included students who did all clinical experiences using high fidelity simulation, students who use both HFS and traditional clinical in the hospital setting, and students who only went to clinical in the traditional setting. Each group was evaluated based on the Lasater Clinical Judgment Rubric. The first finding indicated no difference in learning clinical judgment for Hispanic nursing students based on the type of clinical group. Non-Hispanic student's clinical judgment scores also showed no difference based on the clinical group. The overall sample of nursing students showed no differences in clinical judgment skills based on the LCJR mean scores whether they did all of their clinical using HFS, had clinical instruction that included both HFS and traditional hospital-based clinical, or did all of their clinical in the traditional setting with no HFS. These findings are important for educators because they validate that the use of HFS as a clinical instruction tool bears no difference as far as clinical judgment skills development for students having HFS for their entire or combination clinical experience. In addition, the findings show that each student increased in the LCJR scores over time, which validates that students learned in all three groups developed and enhanced clinical judgment skills throughout the course of the study. Based on ethnicity each clinical group with trended mean scores is depicted in the graph (see Figure 3). The consistency and pattern of scores over time and across groups supports the validity of the LCJR as a measure of clinical judgment development. Interviews of the students provided the qualitative aspect of the study. The focus group findings with the students were consistent with the aspects of the Tanner Model, which are noticing, interpreting,

responding, and reflecting (Tanner, 2006). Each student, regardless of his or her clinical group, reported thoughts pertaining to the four aspects and provided a snapshot of student perceptions of their individual clinical rotations. It was evident that students in the HFS experience had more opportunities to act independently and collaborate with one another to arrive at a decision. The opportunities made available by HFS substituted for the traditional experience of working in the hospital with healthcare professionals. This made no difference in clinical judgment skills across all groups because each group attained value to aid in the development of clinical judgment. Students in the traditional clinical settings had exposure to crucial elements involving healthcare collaborative measures and patient interaction; however, the overall experience in terms of clinical judgment was influenced by the nurse assigned to the student.

The findings from both the quantitative and qualitative arms of the study can provide educators with guidance in structuring the curriculum in the clinical component of courses. The findings reinforce the need for educators to change methods of instruction to incorporate both HFS and traditional clinical experiences. Current policy for Texas Board of Nursing has no limitations as far as number of hours spent in clinical at a hospital setting or simulation lab. This study supports the appropriateness of several approaches to clinical preparation of nursing students, which include HFS alone, HFS in conjunction with some hospital-based clinical or traditional hospital clinical alone when adequate clinical sites are available. However, this study supports the need for educators to have a guideline to use to base number of hours spent in the simulation lab and hospital setting for clinical. By recognizing that there is no difference between the

groups by type of clinical instruction used, faculty can have confidence that simulation will effectively help students build clinical judgment.

Students consistently reported that their hospital-based clinical experiences were dependent on the nurse assigned the day of clinical. This identifies the importance of getting the support of key stakeholders involved with clinical preparation and instruction because it has the ability to influence a crucial part of the development of nursing students' clinical judgment skills. Hospital staff needs proper training and support to make certain students are given the best opportunities to enhance their learning experience. A possible solution to providing hospital staff recognition for their time and effort would be to refer to hospital staff/preceptors as Clinical Teaching Associates. This new title effectively implemented by the Oregon State Board of Nursing, recognized the contributions of teaching and time made by the staff. Educators should recognize the importance of facilitating the learning experience of students and be receptive of environmental factors that can limit a student's learning. To strengthen the findings from this study, a larger sample and equal group size would be beneficial to generalize findings to all nursing students across the country.

In conclusion, the American Nurses Association recognizes that society invested in and relies heavily on nurses to demonstrate competence in healthcare. To meet this standard, the ANA recognizes that it is a shared responsibility of the profession, individual nurses, professional organizations, credentialing and regulatory agencies, employers, and other key stakeholders (American Nursing Association, 2010). This partnership approach essentially recognizes the importance of collaborative efforts of

nurse educators, healthcare facilities, and regulatory agencies in the success of the nursing student. The goal of nursing education remains to provide an optimal learning environment where students learn to engage in safe and quality care to achieve positive health outcomes. Effective practice in the clinical setting using sound clinical judgment to meet the expectations of society will result in better patient outcomes.

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Appendix A. Tables and Figures

Table 1. Demographics

Trait		Group			Total	Chi-Square	P value
		Simulation Only	Combo	Traditional			
Gender	Male	2	3	1	6	.718	.698
	Female	18	19	17	54		
Ethnic Origin	Hispanic	7	10	13	30	2.318	.314
	Non-Hispanic	13	12	5	30		
Employment Status	Do not work	5	12	6	23	4.805	.569
	Work less than 20 hrs	2	2	2	6		
	Full Time	7	3	5	15		
	Part Time	6	5	5	16		
Marital Status	Single	7	8	3	18	4.213	.648
	Married	8	11	2	21		
	Divorced	3	2	3	8		
	Member of unmarried couple	2	1	8	11		
Highest Grade Completed	High School	10	10	8	28	3.457	.750
	Associate Degree	5	10	6	21		
	Bachelor Degree	4	1	3	8		
	Graduate Degree	1	1	1	3		
First Generation	Yes	6	10	8	24	1.254	.534
	No	14	12	10	36		
Age	21-30	9	10	11	30	2.413	.878
	30-38	6	8	4	18		
	40-49	4	3	3	10		
	50-60	1	1	0	2		

Table 1 (continued)

Trait		Group			Total	Chi-Square	P value
		Simulation Only	Combo	Traditional			
Race	Black	1	2	1	4	9.434	.151
	Hispanic	13	12	5	30		
	White	5	4	10	19		
	Asian/Pacific Islander	1	4	2	7		

Appendix A (Continued)

Table 2. Tests of Normality for Student Groups

Hispanic Students and Non-Hispanic Students					
Week	Mean	Standard Deviation	Skew	K-S Test	Shapiro-Wilk
3	23.02	4.023	.595	<.001	<.001
4	22.83	3.627	.820	<.001	<.001
5	24.77	4.073	.392	<.001	<.001
6	30.02	3.457	1.007	<.001	<.001

Table 3. Mean Scores Over Time Based on Clinical Group

Week	Type of Group	Mean
3	Simulation	24.31
	Combination	22.00
	Traditional	21.40
4	Simulation	23.54
	Combination	21.58
	Traditional	22.40
5	Simulation	24.77
	Combination	26.08
	Traditional	23.40
6	Simulation	32.31
	Combination	29.67
	Traditional	27.40

Appendix A (Continued)

Table 4. Wilcoxon Test Results for Hispanic Nursing Students

Week	Sum of ranks	Z	Significance	R
3 and 4	120	-.874	.382	-0.16
4 and 5	218	2.976	.003	0.54
5 and 6	378	4.546	.000	0.83

Appendix A (Continued)

Table 5. Non-Hispanic LCJR Mean Scores Based on Clinical Group

Week	Type of Group	Mean
3	Simulation	25.571
	Combination	23.50
	Traditional	21.538
4	Simulation	25.00
	Combination	23.40
	Traditional	21.846
5	Simulation	25.286
	Combination	25.00
	Traditional	23.615
6	Simulation	32.714
	Combination	30.00
	Traditional	27.615

Appendix A (Continued)

Table 6. Wilcoxon Test Results for Non-Hispanic Nursing Students

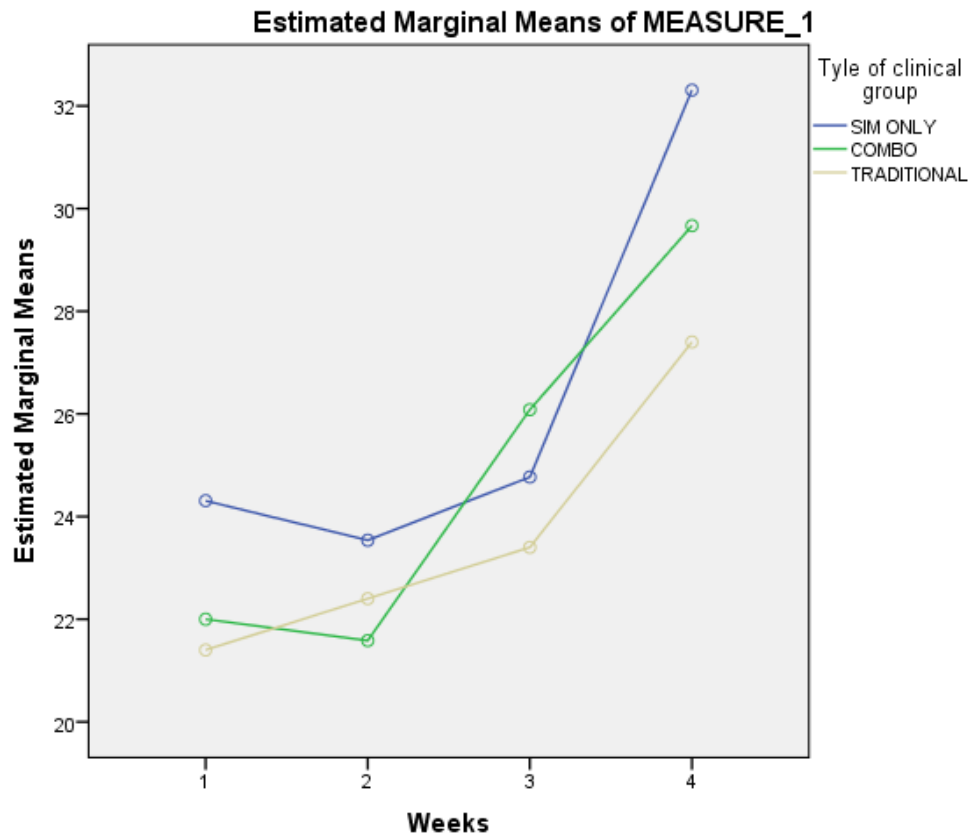| Week	Sum of ranks	Z	Significance	R
3 and 4	126	-0.16	.987	-0.029
4 and 5	282	2.733	.006	0.50
5 and 6	349.50	4.429	.000	0.81

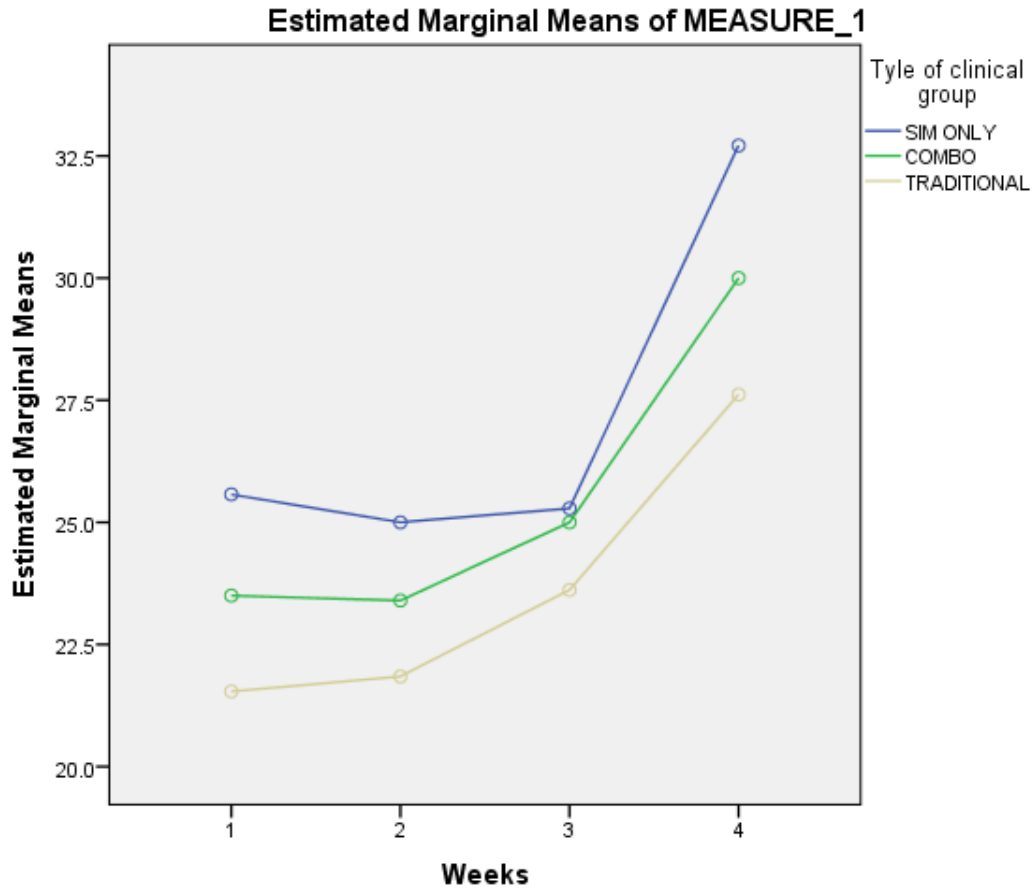Figure 1. LCJR Mean Scores for Hispanic Clinical Groups

Figure 2. Mean Scores for Non-Hispanic Clinical Groups
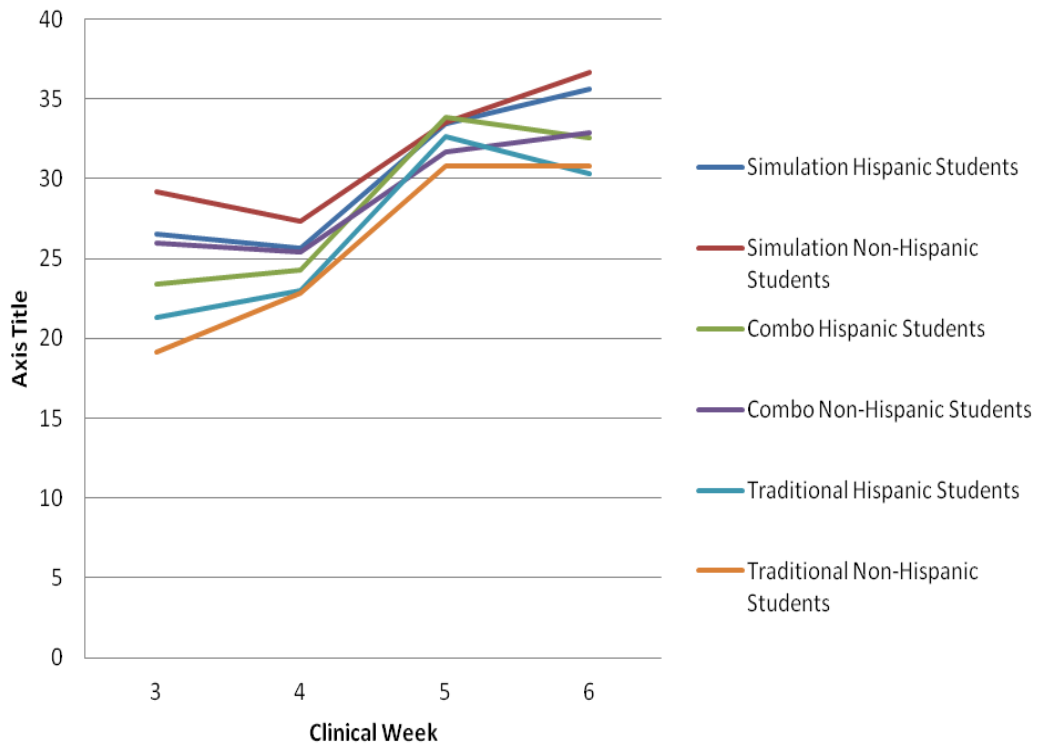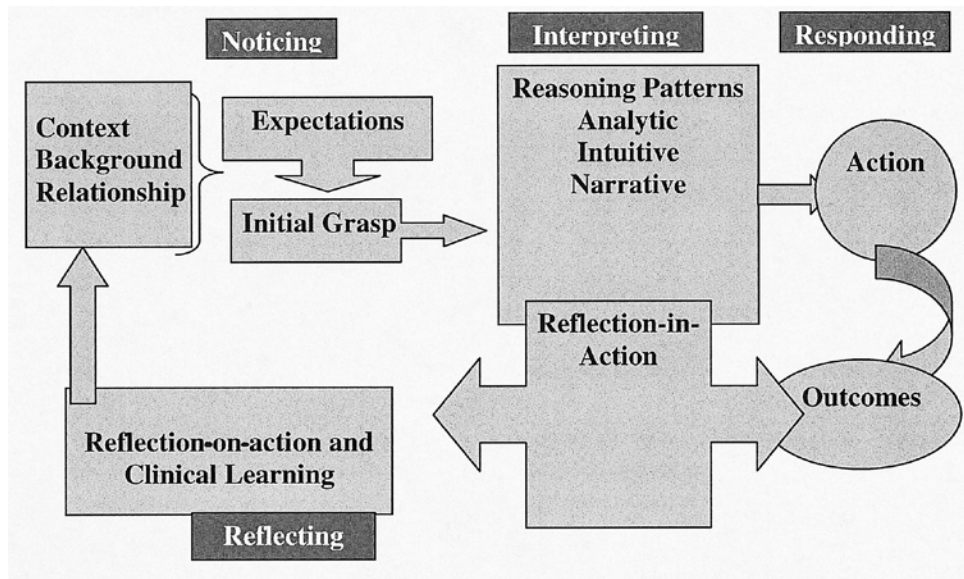
Appendix A (Continued)

Figure 3. Trend of Hispanic and Non-Hispanic Nursing Students Based on Clinicals

Appendix B. Tanner Clinical Judgment Model

Tanner Clinical Judgment Model (2006)

Appendix C. Lasater Clinical Judgment Rubric

Dimension	Exemplary	Accomplished	Developing	Beginning
Noticing	4	3	2	1
Focused Assessment	Focuses observation appropriately; regularly observes and monitors a wide variety of objective and subjective data to uncover any useful information	Regularly observes/monitors a variety of data, including both subjective and objective; most useful information is noticed, may miss the most subtle signs	Attempts to monitor a variety of subjective and objective data, but is overwhelmed by the array of data; focuses on the most obvious data, missing some important information	Confused by the clinical situation and the amount/type of data; observation is not organized and important data is missed, and/or assessment errors are made
Recognizing Deviations from Expected Patterns	Recognizes subtle patterns and deviations from expected patterns in data and uses these to guide the assessment	Recognizes most obvious patterns and deviations in data and uses these to continually assess	Identifies obvious patterns and deviations, missing some important information; unsure how to continue the assessment	Focuses on one thing at a time and misses most patterns/deviations from expectations; misses opportunities to refine the assessment
Information Seeking	Assertively seeks information to plan intervention: carefully collects useful subjective data from observing the client and from interacting with the client and family	Actively seeks subjective information about the client's situation from the client and family to support planning interventions; occasionally does not pursue important leads	Makes limited efforts to seek additional information from the client/family; often seems not to know what information to seek and/or pursues unrelated information	Is ineffective in seeking information; relies mostly on objective data; has difficulty interacting with the client and family and fails to collect important subjective data

Appendix C (Continued)

Effective INTERPRETING	Exemplary 4	Accomplished 3	Developing 2	Beginning 1
Prioritizing Data	Focuses on the most relevant and important data useful for explaining the client's condition	Generally focuses on the most important data and seeks further relevant information, but also may try to attend to less pertinent data	Makes an effort to prioritize data and focus on the most important, but also attends to less relevant/useful data	Has difficulty focusing and appears not to know which data are most important to the diagnosis; attempts to attend to all available data
Making Sense of Data	Even when facing complex, conflicting or confusing data, is able to (1) note and make sense of patterns in the client's data, (2) compare these with known patterns (from the nursing knowledge base, research, personal experience, and intuition), and (3) develop plans for interventions that can be justified in terms of their likelihood of success	In most situations, interprets the client's data patterns and compares with known patterns to develop an intervention plan and accompanying rationale; the exceptions are rare or complicated cases where it is appropriate to seek the guidance of a specialist or more experienced nurse	In simple or common/familiar situations, is able to compare the client's data patterns with those known and to develop/explain intervention plans; has difficulty, however, with even moderately difficult data/situations that are within the expectations for students, inappropriately requires advice or assistance	Even in simple or familiar/common situations has difficulty interpreting or making sense of data; has trouble distinguishing among competing explanations and appropriate interventions, requiring assistance both in diagnosing the problem and in developing an intervention

Appendix C (Continued)

Effective RESPONDING	Exemplary 4	Accomplished 3	Developing 2	Beginning 1
Calm, Confident Manner	Independently evaluates/ analyzes personal clinical performance, noting decision points, elaborating alternatives and accurately evaluating choices against alternatives	Evaluates/analyzes personal clinical performance with minimal prompting, primarily major events/decisions; key decision points are identified and alternatives are considered	Even when prompted, briefly verbalizes the most obvious evaluations; has difficulty imagining alternative choices; is self-protective in evaluating personal choices	Even prompted evaluations are brief, cursory, and not used to improve performance; justifies personal decisions/choices without evaluating them
Clear Communication	Communicates effectively; explains interventions; calms/reassures clients and families; directs and involves team members, explaining and giving directions; checks for understanding	Generally communicates well; explains carefully to clients, gives clear directions to team; could be more effective in establishing rapport	Shows some communication ability (e.g., giving directions); communication with clients/families/te am members is only partly successful; displays caring but not competence	Has difficulty communicating; explanations are confusing, directions are unclear or contradictory, and clients/families are made confused/anxious, not reassured
Well-Planned Intervention/Fle xibility	Interventions are tailored for the individual client; monitors client progress closely and is able to adjust treatment as indicated by the client response	Develops interventions based on relevant patient data; monitors progress regularly but does not expect to have to change treatments	Develops interventions based on the most obvious data; monitors progress, but is unable to make adjustments based on the patient response	Focuses on developing a single intervention addressing a likely solution, but it may be vague, confusing, and/or incomplete; some monitoring may occur

Effective REFLECTING	Exemplary 4	Accomplished 3	Developing 2	Beginning 1
Evaluation/Self-Analysis	Independently evaluates/ analyzes personal clinical performance, noting decision points, elaborating alternatives and accurately evaluating choices against alternatives	Evaluates/analyzes personal clinical performance with minimal prompting, primarily major events/decisions; key decision points are identified and alternatives are considered	Even when prompted, briefly verbalizes the most obvious evaluations; has difficulty imagining alternative choices; is self-protective in evaluating personal choices	Even prompted evaluations are brief, cursory, and not used to improve performance; justifies personal decisions/choices without evaluating them
Commitment to Improvement	Demonstrates commitment to ongoing improvement: reflects on and critically evaluates nursing experiences; accurately identifies strengths/weaknesses and develops specific plans to eliminate weaknesses	Demonstrates a desire to improve nursing performance: reflects on and evaluates experiences; identifies strengths/weaknesses; could be more systematic in evaluating weaknesses	Demonstrates awareness of the need for ongoing improvement and makes some effort to learn from experience and improve performance but tends to state the obvious, and needs external evaluation	Appears uninterested in improving performance or unable to do so; rarely reflects; is uncritical of him/herself, or overly critical (given level of development); is unable to see flaws or need for improvement
Being Skillful	Shows mastery of necessary nursing skills	Displays proficiency in the use of most nursing skills; could improve speed or accuracy	Is hesitant or ineffective in utilizing nursing skills	Is unable to select and/or perform the nursing skills

Lasater Clinical Judgment Rubric (2007)

Appendix D. Variable Definitions

Variable	Definition	
Clinical Judgment	The way in which nurses come to understand the problems, issues, or concerns of patients, to attend to salient information and to respond in concerned and involved ways" (Benner, Tanner, and Chelsea, 2009, p. 200)	
Theoretical Framework	Tanner Clinical Judgment Model	
Instrument	Lasater Clinical Judgment Rubric	Based on Tanner's Clinical Judgment Model, which consists of four aspects with 11 dimensions.
Concept	**Definitions**	**Operational Definition**
Noticing	The ability or inability to fulfill the functions and expectations of the nurse.	Lasater Clinical Judgment Rubric: Noticing Aspect
Indicators		Focused assessment, recognizing deviations from expected patterns, and information seeking.
Interpreting	When one or more reasoning, patterns triggered and the nurse interprets the meaning of the data to determine the appropriate course of action.	Lasater Clinical Judgment Rubric: Interpreting Aspect
Indicators		Prioritizing data and making sense of data
Responding	Involves the ability to determine the appropriate course of action.	Lasater Clinical Judgment Rubric: Responding Aspect
Indicators		Calm confident manner, clear communication, well planned intervention/flexibility, and being skillful.
Reflecting	The students' ability to conduct a self -analysis of actions and demonstrate commitment to improvement	Lasater Clinical Judgment Rubric: Reflecting Aspect
Indicators		Evaluation/Self Analysis and Commitment to Improvement

Appendix E. Directions

In order to measure the concepts of clinical judgment the Lasater Clinical Judgment Rubric (LCJR) was applied to this study. The Lasater Clinical Judgment Rubric involves the four aspects of clinical judgment (recognizing, reflecting, interpreting, and responding) and 11 dimensions that represent the aspects and exemplify level of clinical judgment.

Definitions of Terms for Aspects:

Noticing is the ability to identify something known (Dictionary.com, 2012).

Responding is to react to something by doing something (Bing, 2012).

Interpreting is to be able to explain meaning or significance of something (Bing, 2012).

Reflecting is to think, ponder, or meditate (Dictionary.com, 2012)

Defining Indicators for Each Aspect:

Noticing: student's ability to assess in a focused way, recognize deviance from expected patterns, and pursuance of information.

Interpreting student's ability to prioritize data, and make sense of the data.

Responding is the student's manner, confidence, communication, planning, and skill.

Reflecting is the student's ability to conduct a self -analysis of actions and demonstrate commitment to improvement.

Levels of Clinical Judgment

The student's level of clinical judgment referred to as exemplary, accomplished, developing, and beginning. The scores assigned based on the level:

Appendix E. (Continued)

An exemplary student demonstrates commendable behaviors/skills and serves as a model for excellence (4).

An accomplished student demonstrates behaviors and skills proficiently because of practice and training (3).

A developing student demonstrates the ability to make visible proficiency in the skill and behaviors of a nurse (2).

A beginning student is at the early stages of demonstrating the ability to think and act as a nurse (1).

Directions for Use of LCJR

1. Have a pencil and tool available for each student.

2. Document student three-digit number on the form.

3. Read the definitions and characteristics of the LCJR tool. Note that the scores range from highest to lowest, indicating that a student that is proficient has a higher score.

4. Observe the student during the entire clinical experience. For the aspects of noticing, interpreting, and responding the student was observed during the interaction with the patient and clinical setting. The remaining aspect, reflection should be evaluated in the debriefing portion of the HFS experience or during post-conference.

5. Every clinical experience was documented on the tool. At the completion of the
    day, the scores tallied to provide a mean score.

6. Record sub-scores and mean scores in excel spreadsheet to input into the SPSS
    program.

7. File LCJR tools in corresponding student file folder.

Appendix F. Interview Topic/Questions Guide

Demographic questions

What is your race and ethnicity?

What is your first language?

What is your second language?

How old are you?

Do you have any medical experience?

Interview questions

What was your view of the clinical experience for this course?

Tell me about your encounters with patients during the clinical experience?

Give an example of how you arrived at making decisions during your clinical

experience?

Tell me about an experience where you felt that you noticed a problem with a patient?

What did you do about the problem?

How did you decide on what to do with the problem?

How did you feel when you responded to the problem?

Tell me about how you felt during the experience?

Was there an instance during the clinical experience that you felt you performed well?

Was there an instance during the clinical experience that you felt you wish you could

have done differently?

How do you feel that this clinical experience prepared you?

Appendix F (Continued)

<u>Probing questions</u>

Can you explain what you mean by…?

What happened after….?

How did you feel….?

What helped you ….?

What prompted you to….?

Appendix G. Informed Consent

THE UNIVERSITY OF TEXAS AT TYLER

Informed Consent to Participate in Research

Institutional Review Board #

Approval Date:

1. **Project Title**: Effect of Clinical Outcomes on Clinical Judgment with English Second

   Language Students: A Mixed Method Approach

2. **Principal Investigator:** Eve Rodriguez

3. **Participant's Name:**

To the Participant:

You are being asked to take part in this study at San Antonio College that has been

approved by the IRB at The University of Texas at Tyler

(UT Tyler). This permission form explains:

- Why this research study is being done.

- What you will be doing if you take part in the study.

- Any risks and benefits you can expect if you take part in this study.

After talking with the person who asks you to take part in the study, you should be able

to:

- Understand what the study is about.

- Choose to take part in this study because you understand what will happen

4. Description of Project

The purpose of this study is to determine if High Fidelity Simulation is an effective teaching tool for English Second Language (ESL) nursing students. There is a need for more studies to help determine if simulation is better than traditional classes when teaching ESL students.

5. **Research Procedures**

If you agree to be in this study, we will ask you to do the following things:

- You will be asked to be in a group for your clinical experience in the Fundamentals of Nursing Course.

- You will be observed during the clinical experience.

- You will be asked to meet with the researcher to answer questions on what you thought about the clinical experience.

6. **Side Effects/Risks**

There will be no discomforts or risks of injury for the participant other than those in the normal clinical setting. Minimal risks involve the different exposure to different clinical settings.

7. **Potential Benefits**

Nurse educators will be able to assist other ESL students to adapt and learn nursing with the best teaching approach.

Understanding of Participants

8.   I have been given a chance to ask any questions about this research study. The

researcher has answered my questions.

9.   If I sign this consent form I know it means that:

- I am taking part in this study because I want to. I chose to take part in this study

 after having been told about the study and how it will affect me.

- I know that I am free to not be in this study. If I choose to not take part in the

 study, then nothing will happen to me as a result of my choice.

- I know that I have been told that if I choose to be in the study, then I can stop at

 any time. I know that if I do stop being a part of the study, then nothing will

 happen to me.

- I will be told about any new information that may affect my wanting to continue

 to be part of this study.

- The study may be changed or stopped at any time by the researcher or by The

 University of Texas at Tyler.

- The researcher will get my written permission for any changes that may affect me.

10.   I have been promised that that my name will not be in any reports about this study

unless I give my permission.

Appendix G (Continued)

11.   I also understand that any information collected during this study may be shared <u>as long as no identifying information such as my name, address, or other contact information is provided</u>). This information can include health information. Information may be shared with:

- Organization giving money to be able to conduct this study

- Other researchers interested in putting together your information with information from other studies

- Information shared through presentations or publications

12.   I understand The UT Tyler Institutional Review Board (the group that makes sure that research is done correctly and that procedures are in place to protect the safety of research participants) may look at the research documents. These documents may have information that identifies me on them. This is a part of their monitoring procedure. I also understand that my personal information will not be shared with anyone.

13.   I have been told about any possible risks that can happen with my taking part in this research project.

14.   I also understand that I will not be given money for any patents or discoveries that may result from my taking part in this research.

15. If I have any questions concerning my participation in this project, I will contact

the principal researcher: Eve Rodriguez at (210) 723-2184 or email

(erodriguez5@patriots.uttyler.edu).

16. If I have any questions concerning my rights as a research subject, I will contact

Dr. Gloria Duke, Chair of the IRB, at (903) 566-7023, gduke@uttyler.edu,

or the University's Office of Sponsored Research:

The University of Texas at Tyler

c/o Office of Sponsored Research

3900 University Blvd

Tyler, TX 75799

I understand that I may contact Dr. Duke with questions about research-related

injuries.

17. <u>CONSENT/PERMISSION FOR PARTICIPATION IN THIS RESEARCH</u>

<u>STUDY</u>

I have read and understood what has been explained to me. I give my permission

to take part in this study as it is explained to me. I give the study researcher

permission to register me in this study. I have received a signed copy of this

consent form.

_____   _____

 Signature of Participant   Date

_____   _____

Signature of Person Responsible (e.g., legal guardian)

Relationship to Participant

_____

 Witness to Signature

18.   I have discussed this project with the participant, using language that is

understandable and appropriate. I believe that I have fully informed this

participant of the nature of this study and its possible benefits and risks. I believe

the participant understood this explanation.

_____   _____

Researcher/Principal Investigator   Date

Appendix H. Course Modules

	Group 1	Group 2	Group 3
	Simulation only	**Combination**	**Traditional**
Module 1: Clinical Orientation/Expectations	Clinical Orientation	Clinical Orientation	Clinical Orientation
Module 2: Grown and Development	Scenario 1: Growth and Development	Growth and Development	Growth and Development Hospital Clinical
Module 3: Respiratory	Scenario 2: Asthma	Scenario 2: Asthma	Respiratory Hospital Clinical Setting
Module 4: Cardiac	Scenario3:Ventricular Septal Defect (VSD)	Cardiac Hospital Clinical Setting	Cardiac Hospital Clinical Setting
Module 5: Musculoskeletal	Scenario 4: Cerebral Palsy (CP)	Scenario 4: CP	Musculoskeletal Hospital Clinical Setting
Module 6: Prematurity	Scenario 5: Necrotizing Entercolitis (NEC)	NEC Hospital Clinical Setting	Prematurity Hospital Clinical Setting

*Theory Course content coincides with clinical focus areas for each module.

Biographical Sketch

NAME	POSITION TITLE
Eve Marie Rodriguez	Doctoral Candidate, University of Texas at Tyler

EDUCATION/TRAINING:

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
University of Incarnate Word, San Antonio Texas	BSN	12/02	Nursing
University of Texas Health Science Center, San Antonio	MSN	12/07	Nursing
University of Texas at Tyler	PhD	12/14	Nursing

A. Personal Statement

The objective of the research study was to evaluate the effectiveness of high fidelity simulation (HFS) on clinical judgment skills for Hispanic and Non-Hispanic nursing students. It is evident as an educator in an associate degree-nursing program that there has been an increased use of HFS to meet clinical needs due to the increased number of students enrolled, inadequate faculty, and lack of clinical sites. Knowledge gained as a doctoral student at the University of Texas at Tyler influenced the need for further study of this issue through mixed method design. The intent of the study was to provide insight on the effectiveness of HFS in comparison to traditional clinical instruction on the development of clinical judgment. The study provided recommendations for clinical curriculum design and instructional modifications to educate ethnically diverse nurses to be able to make clinically sound decisions.

B.   Positions and Honors

Positions and Employment

Fall 2014	Assistant Professor, College of Nursing, San Antonio College, San Antonio, TX
2009-2014	Staff RN Pool, Neonatal Intensive Care Unit, Christus Children's Hospital, San Antonio, Texas
2006-2008	Case Manager II, Superior Health Plan, San Antonio, TX
2005-2006	Perinatal Educator, Women's Services, Southwest General Hospital, San Antonio, TX
2002-2005	RN II, Neonatal Intensive Care Unit, Methodist Children's Hospital, San Antonio, TX

Professional Memberships

2002-2014	Sigma Theta Tau Honor Society