Effectiveness of Simulation-Based Case Studies in Undergraduate Nursing Students

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Abstract

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An ever-changing healthcare landscape requires today’s nurses to have a solid foundation in knowledge and clinical judgment to provide safe care to patients. Nurse educators must implement teaching strategies that help develop the knowledge and clinical judgment that nursing students will need upon graduation and entry into healthcare. Simulation-based experiences have been shown to help develop clinical judgment when used as part of a clinical practicum. However, few studies have examined the effectiveness of simulation-based experiences as a classroom teaching strategy. A quasi-experimental study was conducted to examine knowledge acquisition, clinical judgment, and general self-efficacy in undergraduate nursing students who participated in simulation-based case studies as a classroom teaching strategy versus those students who attended a traditional lecture. Students in the intervention group rotated through four simulation-based case study stations. Results indicated that there was not a significant difference in knowledge, clinical judgment, or general self-efficacy found between nursing students participating in simulation-based case studies versus those attending a traditional lecture. Additionally, relationships between demographic characteristics and clinical judgment scores in undergraduate nursing students were explored. There were no statistically significant relationships found between demographic characteristics and clinical judgment in this sample. Further analysis indicated that both teaching strategies are effective in promoting knowledge acquisition, clinical judgment, and general self-efficacy. The findings of this study demonstrate that both participation in simulation-based case studies and attending a traditional
lecture are effective classroom teaching strategies in promoting knowledge acquisition, clinical judgment, and general self-efficacy in nursing students. Nurse educators are encouraged to continue to explore simulation-based experiences as a teaching strategy in the classroom.
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K.T.B
Dedication

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Chapter 1: Introduction to the Dissertation

Nursing education continues to evolve as nurse educators move toward using innovative, active teaching strategies in the classroom. These innovative teaching strategies help develop the skills and qualities nursing students will need to be safe graduate nurses in an ever-changing healthcare landscape. Upon completion of undergraduate nursing school, student nurses are expected to have sound clinical judgment, problem-solving, and critical thinking skills to perform tasks required by entry-level nurses (National Council of State Boards of Nursing, 2018). Nursing education curricula must have teaching strategies that lead to the development of these important student learning outcomes.

Some of the innovative teaching strategies that nurse educators are utilizing include simulation-based experiences (SBE) and case studies. Both SBE and case studies have been shown to develop clinical judgment (Bussard, 2018; Lasater, 2007; Victor 2017; Victor Chmil et al., 2015), enhance knowledge acquisition (Carter & Welch, 2016; Chu et al., 2019; Gibbs et al., 2014; Herron et al., 2019; Hu et al., 2018; Lancaster, 2014; McCormick et al., 2013; Ramirez, 2018; Rode et al., 2016), and increase self-efficacy in nursing students (Cardoza & Hood, 2012; Chu et al., 2019; Dunn et al., 2014; Kimhi et al., 2016; Lin, 2016; Shinnick & Woo, 2014). Riley-Baker et al. (2020) demonstrated that students who participated in an unfolding case study in the simulation lab were successful in demonstrating communication skills, performing physical assessments, and providing safe nursing care. Therefore, it is plausible that combining SBE and case studies in the classroom has great promise in promoting undergraduate student nurse competencies.

The focus of nursing education has changed from teaching to learning and trends in nursing education have replaced the traditional lecture with active student learning (Glendon &
Simulation is defined by Lioce et al. (2020) as “a technique that creates a situation or environment to allow persons to experience a representation of a real event for practice, learning, evaluation, testing, or to gain an understanding of systems or human actions” (p. 44). Simulation in the classroom allows the nurse educator to use an active teaching strategy to promote hands-on learning in a didactic course. Simulation in the classroom also has the advantage of allowing a larger group of students to experience the simulation at one time. By combining simulation with case studies in the classroom, patient care scenarios can unfold in real-time with no linear path. Student nurses are encouraged to think through the nursing process, which helps them develop clinical judgment skills (Kaylor & Strickland, 2014) and increase critical thinking and problem-solving skills (Frost et al., 2017).

In this dissertation, SBE is combined with case studies and introduced as an active teaching strategy used in the classroom. This combination of SBE and case studies as a classroom teaching strategy is being called simulation-based case studies. For this dissertation study, simulation-based case studies are defined as an active teaching strategy that uses traditional paper and pencil case studies combined with a simulator that allows the nurse educator to integrate clinical practice in the didactic classroom setting. In this teaching strategy, simulation-based stations are set up in the classroom. Each station has a case study scenario and a manikin/simulator that is set up with equipment and assessment parameters to correspond to the case study. Students, in large groups, can assess the simulator and see what a patient with the identified disease process would look like in the clinical setting. The case study guides the students through the nursing process by prompting them to identify abnormal assessment findings, prioritize nursing interventions, and evaluate the implementation of interventions. After participating in the simulation-based case studies, students are debriefed in a large group in the
classroom setting facilitated by a nursing instructor. This dissertation examines the effect of using simulation-based case studies in the classroom on clinical judgment, knowledge acquisition, and self-efficacy in baccalaureate nursing students enrolled in a medical-surgical course.

**Specific Aims**

The development and implementation of simulated-based case studies in nursing education provide nurse educators with an active teaching strategy in the classroom that may help develop clinical judgment as well as increase knowledge acquisition and general self-efficacy in undergraduate baccalaureate nursing students. This teaching strategy also brings clinical experiences to the classroom, which helps further close the classroom-to-clinical practice gap that continues to persist in nursing. This dissertation has four specific aims that examined the effect of using simulation-based case studies in the classroom on clinical judgment, knowledge acquisition, and general self-efficacy in baccalaureate nursing students enrolled in a medical-surgical course. It also examined relationships between student demographics and clinical judgment. Each specific aim is listed below with a corresponding research question or a hypothesis.

**Aim 1**

Examine the effect of simulation-based case studies in a medical-surgical undergraduate nursing course on nursing students’ clinical judgment.

**Hypothesis**

Undergraduate nursing students enrolled in a medical-surgical course who participate in simulation-based case studies will have higher clinical judgment scores compared to nursing students who attend a traditional lecture.
Aim 2

Examine the difference in knowledge acquisition in undergraduate nursing students enrolled in a medical-surgical course who participate in simulation-based case studies versus those who attend a traditional lecture.

Research Question

Will undergraduate nursing students who participate in simulation-based case studies have a significantly higher mean score on the posttest knowledge acquisition quiz than students who attend the traditional lecture?

Aim 3

Examine the relationship of demographic variables of undergraduate nursing students to levels of clinical judgment scores of undergraduate nursing students enrolled in a medical-surgical course.

Research Question

Is there a relationship between the demographic characteristics of age, gender, race, ethnicity, previous education, or prior certification in healthcare of undergraduate nursing students enrolled in a medical-surgical course and their clinical judgment scores?

Aim 4

Examine the effect of participation in simulation-based case studies in a medical-surgical undergraduate nursing course on nursing students’ general self-efficacy.

Hypothesis

Undergraduate nursing students who participate in simulation-based case studies will report higher general self-efficacy scores than students who attend a traditional lecture.
Organization of Dissertation

This dissertation is organized into five chapters. The first chapter introduces the dissertation study and lists the specific aims of the dissertation as well as the plan for dissemination of the study’s findings. Chapters 2, 3, and 4 will be completed manuscripts written for submission to scholarly journals after the defense.

Chapter 2 presents an investigation of the effect of simulation-based case studies as an active teaching strategy on knowledge acquisition in undergraduate nursing students enrolled in a medical-surgical course and answers the research question below:

Will undergraduate nursing students who participate in simulation-based case studies have a significantly higher mean score on the posttest knowledge acquisition quiz than students who attend the traditional lecture?

Chapter 3 presents an examination of the effect of simulation-based case studies as an active teaching strategy on undergraduate nursing students’ clinical judgment and will examine the following hypothesis:

Undergraduate nursing students enrolled in a medical-surgical course who participate in simulation-based case studies will have higher clinical judgment scores compared to nursing students who attend a traditional lecture.

Chapter 3 also explores the relationship between demographic characteristics of undergraduate nursing students and clinical judgment to answer the following research question:

Is there a relationship between the demographic characteristics of age, gender, race, ethnicity, previous education, or prior experience in healthcare of undergraduate nursing students enrolled in a medical-surgical course and their clinical judgment scores?
Chapter 4 compares the general self-efficacy of undergraduate nursing students enrolled in a medical-surgical course who attended a traditional lecture versus those undergraduate nursing students who participated in simulation-based case studies during class time. It is hypothesized:

Undergraduate nursing students who participate in simulation-based case studies will report higher general self-efficacy scores than students who attend a traditional lecture.

The final chapter will summarize the findings of the dissertation study and explore the implications of the findings in nursing education and future research. Appendices follow Chapter 5.

**Plans for Dissemination**

The manuscripts presented in Chapters 2, 3, and 4 will be submitted to various nursing education journals. Chapter 2 demonstrates the effectiveness of an innovative classroom teaching strategy on knowledge acquisition in nursing education, therefore this manuscript will be submitted to *Teaching and Learning in Nursing*. Chapter 3 will be submitted to *Clinical Simulation in Nursing* as this manuscript demonstrated a novel use of simulation in the classroom. Chapter 4, which discusses the use of the innovative teaching strategy on general self-efficacy of nursing students will be submitted to *Nurse Educator*. In addition, an abstract will be submitted for consideration for a podium or poster presentation at the 2023 Nurse Educator’s Conference and at the NLN/UCF Simulation Conference.
References


Dunn, K. E., Osborne, C., & Link, H. J. (2014). High-fidelity simulation and nursing student self-efficacy: Does training help the little engines know they can? *Nursing Education Perspectives, 35*(6), 403-404. doi: 10.5480/12-1041.1


Chapter 2: Using Simulation-Based Case Studies in the Classroom to Stimulate Knowledge Acquisition in Baccalaureate Nursing Students

Nurse educators have the challenge of preparing nursing students to care for patients in an ever-changing, complex healthcare system. Upon completing nursing school, nursing graduates are expected to have the knowledge, competencies, and skills needed to care for an aging, more diverse population across multiple healthcare settings (Wakefield et al., 2021). To continue to produce nurse graduates who are prepared to meet the challenges of the healthcare landscape, nurse educators must continue to examine how they are teaching nursing students. The American Association of Colleges of Nursing (2019) emphasizes that nurse educators should engage student learners in purposeful, active learning strategies in the classroom to promote the knowledge and skills needed to practice nursing in today’s healthcare arena.

One innovative, active teaching strategy that nurse educators can use in the classroom is simulation. While simulation is traditionally used as a clinical teaching strategy in the simulation lab, Carson and Harder (2016) conducted a literature review that demonstrated the effectiveness of using simulation-based experiences in the classroom. Participation in simulation-based experiences as a teaching strategy in the classroom helped students connect classroom concepts to clinical practice, increased test scores, and increased critical thinking in the clinical setting (Carson & Harder, 2016). Despite these positive findings, few studies examine the effects of using simulation-based experiences in the classroom as an active teaching strategy (Troyan et al., 2020).

Therefore, this study aimed to examine the use of simulation-based case studies as an active teaching strategy in the classroom on knowledge acquisition in undergraduate nursing students enrolled in a medical-surgical course. It is hypothesized that undergraduate nursing
students who participate in simulation-based case studies will score higher on a knowledge quiz than undergraduate nursing students who attend a traditional lecture.

**Background**

**Simulation-Based Experiences in the Classroom**

Multiple studies have shown that simulation-based experiences as a clinical teaching strategy in the simulation lab improve nursing students’ knowledge, skills acquisition, self-efficacy, and competence (Cant & Cooper, 2017). However, Benner et al. (2010) point out that nursing education needs to remove the divide between clinical and classroom teaching and integrate the two. One way to integrate clinical teaching into the classroom is to use simulation-based experiences (SBE) as an active teaching strategy in the classroom.

Simulation in the classroom varies from traditional SBE in the simulation lab because more students can experience the simulation in a shorter time. Traditional SBE is typically used for a clinical course or skills laboratory and has four to six students working through a simulation at a time (Carson & Harder, 2016). In contrast, simulation in the classroom allows active learning to occur in a didactic course and has the advantage of allowing a larger group of students to experience the simulation at one time. Student roles during classroom simulation include the active participant or an observer. Observers may be given assignments to complete during the simulation to engage them in the teaching strategy. These assignments include worksheets, performance checklists, or directed critical thinking exercises (Carson & Harder, 2016). There may also be a difference in evaluation methods used during simulation in the classroom. Traditional simulation is commonly used as a summative evaluation to determine if students meet the student learning outcomes of a unit or a course. Simulation in the classroom
can be used as an active teaching strategy and can be evaluated with formative evaluation methods during the debriefing session or with quizzes (Carson & Harder, 2016).

The effectiveness of using SBE in the classroom has been examined on the acquisition of knowledge (Chang et al., 2013; Hooper et al., 2015; Lancaster, 2014; Norman, 2018; Rode et al., 2016; Walters et al., 2017; White et al., 2013). Based on the articles reviewed, the current state of the literature shows that utilizing active learning strategies in the classroom, such as SBE, is as effective as traditional classroom teaching methods. Hooper et al. (2015), Norman (2018), and White et al. (2013) found no significant differences in knowledge acquisition in students exposed to SBE compared to traditional classroom teaching. Chang et al. (2013) reported statistically significant findings on improvement in English for Nursing Proficiency measurements when students used the SBE of role-playing in comparison to students in a traditional lecture. Lancaster (2014), Rode et al. (2016), and Walters et al. (2017) found that students exposed to SBE in the classroom compared to traditional classroom methods had significantly higher scores on various knowledge measures. Lancaster (2014) reported that students who participated in a serious game simulation in the classroom had significantly higher posttest scores on an 11-item quiz measuring knowledge as compared to pretest scores. Rode et al. (2013) reported that students exposed to classroom simulation scored higher on a final course examination than those who received traditional teaching strategies. Similarly, Walters et al. (2017) reported that students who participated in classroom simulations threaded throughout an adult health alterations course had significantly higher scores on quizzes given in the course and on the first examination in the course than students who were taught using traditional lecture only. Of the above-mentioned studies, most studies were quasi-experimental (Chang et al., 2013; Norman, 2018; Rode et al. 2016). Lancaster (2014) and Rode et al. (2016) were pilot studies. All the
studies used convenience sampling with small sample sizes, which decreases the generalizability of the findings.

**Conceptual Framework**

The NLN Jeffries Simulation Theory was developed to give guidance on how to effectively implement quality simulation experiences in nursing education (Adamson & Rodgers, 2016) and can be used as a model to guide simulation design, guide implementation of simulation scenarios, and assess learner outcomes (Jeffries & Rodgers, 2012). Bowden et al. (2022) applied the concepts of the NLN Jeffries Simulation Theory when developing a simulation experience for students caring for aging patients and found that the seven concepts of the NLN Jeffries Simulation theory aided in the design, implementation, and evaluation of the simulation-based experience. The NLN Jeffries Simulation theory was used by Schneidereith (2021) to develop medication administration simulations for a single cohort of nursing students. The NLN Jeffries Simulation Theory can help nurse educators design and implement simulation-based experiences that are credible and create positive outcomes (Bowden et al., 2022). The NLN Jeffries Simulation Theory was used as the conceptual framework for this study and guided the development of the simulation-based case studies that were used as the teaching strategy of interest.

The seven concepts of the NLN Jeffries Simulation Theory are context, background, simulation design, simulation experience, facilitator and educational strategies, participant characteristics, and outcomes. These concepts describe the components of a well-developed simulation-based experience. Each concept was applied to the development of the simulation-based case studies used as the classroom teaching strategy in this study. The concept of context includes the place and the purpose of the simulation (Jeffries et al., 2015). The classroom
environment and use of simulation as an active teaching strategy influenced the development of the simulation-based case study stations. The simulation-based case studies need to be developed in a way that could be presented in a classroom and that could allow a large group of students to participate in the teaching strategy. This led to the development of simulation-based case study stations that could easily allow large groups of students to interact with the manikins and simulation equipment in the classroom. The concept of context also aided the development of the evaluation methods appropriate to conduct with large groups of students. The objectives of the unit, as well as the use of resources and time, help formulate the background as it was determined that multiple medium-fidelity manikins, varied pieces of medical equipment, and props to simulate reality on the manikins (moulage) were needed at each simulation station in the classroom. When deciding upon simulation design it was determined that the entire class of students would be briefed together, then large groups of 8-10 students would work together using case studies in combination with the medium-fidelity manikins to guide and cue responses expected from students, and a large group debriefing would occur at the end of the simulation-based experience. The simulation experience allowed collaboration and interaction with peers in groups as well as interaction with the manikin and simulation environment. Students participated in this learner-centered teaching strategy as they performed assessments and worked through the case studies accompanying each manikin at their own pace. When examining the role of the facilitator and educational strategies in the use of simulation-based case studies, it was decided that cues and adjustments would not be given during the simulation-based case studies because the teaching strategy was learner-guided. When the impact of participant characteristics was examined, it was determined that the characteristics that may cause the most influence on the
learning experience were anxiety in participating in a group learning exercise and the level of preparedness.

Students were encouraged to prepare for the content covered in the simulation-based case study learning experience by listening to a recorded lecture and completing chapter readings before class time. Students who were not prepared may not have been able to work through the simulation-based case studies as well as those students who were familiar with the content. This could have negatively impacted their learning experience. When examining the use of simulation-based case studies as a teaching strategy and the relationship to participant outcomes for this study, it was hypothesized that simulation-based case studies would increase knowledge acquisition in baccalaureate nursing students. The ultimate goal is that future patient outcomes will be positively affected.

The purpose of this study was to investigate the use of simulation-based case studies in the classroom as a teaching strategy on knowledge acquisition in undergraduate nursing students enrolled in a medical-surgical course. The following research question was developed: Will undergraduate nursing students who participate in simulation-based case studies have a significantly higher mean score on the posttest knowledge acquisition quiz than students who attend a traditional lecture?

**Methods**

**Pilot Study**

A pilot study was done before this dissertation study to test the feasibility of examining the teaching strategy of simulation-based case studies on knowledge acquisition titled *The Effectiveness of Simulation-Based Modules on Knowledge Acquisition in a Medical-Surgical Nursing Course.*
A one-group pretest-posttest quasi-experimental design was used to determine the effectiveness of simulation-based case study modules on knowledge acquisition of caring for an adult patient with gastrointestinal and hepatic diseases. All students (n=77) were provided with a voiceover PowerPoint lecture to review before class time. A 10-question multiple-choice quiz was given at the start of class before engaging in the teaching strategy. Students were divided into groups of four or five students and rotated through four stations set up in the simulation center using medium fidelity manikins representing patients. Two sets of stations were set up which allowed eight groups of students to participate in the stations at a time. To allow all 77 students time to rotate through the stations, students were assigned to the simulation-based case study stations at hour 1 or hour 2 of the class meeting time. Each patient was given assessment findings and a patient chart representative of a GI or hepatic diagnosis. Each station also had a case study explaining the history and additional subjective assessment findings associated with each patient. The students had 15 minutes at each station to assess the patient, including the chart and case study data, and work through four or five case study questions. All groups simultaneously participated in an instructor-led debriefing following their rotation through the four simulation case study stations. Students concluded with the same 10-question multiple-choice quiz given as a posttest.

A paired-samples $t$ test revealed that students scored significantly higher ($t = -9.086; p < .05$) on the posttest (Table 2.1). These findings demonstrated that the use of simulation-based case study modules as an active teaching strategy in the didactic setting is effective in increasing knowledge acquisition.
Study Design

A quasi-experimental two-group pretest-posttest design was implemented to determine whether the use of simulation-based case study modules as an active teaching strategy in the classroom was more effective in promoting knowledge acquisition in undergraduate nursing students than attending a traditional lecture. For ethical reasons to ensure all participants received the same course content, it was decided to use one cohort of students as the control group while the next cohort of students served as the experimental group. This study was done as part of a larger dissertation study.

Participants

Convenience sampling was used to recruit baccalaureate nursing students enrolled in the medical-surgical course in the second semester of the nursing program at a public university in the South-Central region of the United States. All students enrolled in the course were invited to participate; however, students who were repeating the course were excluded from data analysis since prior exposure to the course content could skew results.

Based on power analysis, to get a medium effect at the 0.05 significance level with a power of 0.80, 128 total participants were needed (64 participants per group). To obtain that number of students, the study would run over two consecutive semesters.

Procedure and Intervention

Approval from the institutional review board of both Teachers College (Appendix A) and the study site was obtained (Appendix B). Students were informed both verbally and in writing of the study at the start of the class meeting where the topic was Care of the Patient with Gastrointestinal Problems. Signed written consent was obtained from those students who chose
to participate in the study. Students who chose to opt-out of participating in the study were still included in the teaching strategy as this was their regularly scheduled class meeting.

This study was run over two consecutive semesters starting in the spring semester of 2021. The spring 2021 cohort (Cohort A) served as the control group and was exposed to a traditional lecture as the teaching strategy while attending the class meeting. The fall 2021 cohort (Cohort B) served as the experimental group and participated in simulation-based case studies during their class meeting.

**Cohort A**

At the beginning of the class period, after informed consent was obtained, but before classroom teaching occurred, students participating in the study were instructed to complete a demographic survey and a knowledge pretest. After completing the 17-item knowledge pretest, students in Cohort A attended a traditional lecture titled Care of the Patient with a Gastrointestinal Problem that was led by a nursing instructor. At the end of the lecture session, participants were instructed to complete the knowledge posttest which contained identical questions to those in the pretest. The entire class period lasted approximately 3 hours.

**Cohort B**

Students in Cohort B were provided with the same lecture given to the control group via video recording housed on the course learning management system a week before the class meeting. These students were instructed via an announcement on the course learning management system to listen to the recorded lecture before class to prepare for participation in active teaching strategies. At the start of the class period, after informed consent was obtained, students were instructed to complete the same demographic survey and knowledge pretest that was completed by Cohort A. After completing the pretest, students were prebriefed on the
objectives of the simulation-based case studies and given instructions on how to work through the simulation stations. Four stations reflecting the care of patients with the diagnoses of (1) pancreatitis, (2) hepatitis B, (3) cholecystitis and cholelithiasis, and (4) upper gastrointestinal bleeding related to a peptic ulcer were set up in the classroom. Students were divided into groups of eight to ten and instructed to work together to complete the case study questions at each station. Each station consisted of a simulated manikin, a written case study, and a condensed patient medical record containing provider orders and laboratory values. Below the typed case study were four to six questions that the students were to answer about caring for the simulated patient. Each manikin was programmed with vital signs reflecting the patient in the typed case study. Any additional equipment needed to aid students with assessing each manikin was also at the station. For example, a suction canister with coffee-ground emesis was attached to the nasogastric tube inserted into the manikin at the upper gastrointestinal bleed station. Each group of students had 15-20 minutes at each station to assess the manikin, read the associated case study, look over the patient chart, and answer the case study questions. The case studies and associated questions as well as the equipment used at each station can be found in the simulation scenario template (Appendix C). Due to time restrictions and COVID-19 protocols for social distancing, two sets of simulation-based case study stations were set up in two different classrooms. This allowed all students enrolled in the course to participate in the stations at the same time.

After each group rotated through all four stations, students in the class were brought back together and participated in a large group debriefing session facilitated by a nursing instructor. During this one-hour debriefing session, the nursing instructor reviewed the case study and the associated questions from each station to ensure the students' understanding of each case study
scenario. Questions used during the debriefing session can be found in the simulation scenario template (Appendix C). After the debriefing session, students were instructed to complete the posttest quiz that was identical to the pretest quiz. The classroom session took approximately 2.5 hours.

**Instruments**

Demographic data were obtained by a questionnaire developed by the researcher. Knowledge acquisition was determined with a researcher-designed quiz containing 17 items.

**Demographic Survey**

A six-item demographic survey was developed by the researcher and used to determine the gender, age, ethnicity, race, prior education, and prior healthcare certifications held by the participants (Appendix D). The findings of this survey were used to examine if there were demographic differences between the two cohorts. It should be noted that this study was part of a larger dissertation study that also used the demographic survey to examine potential differences in clinical judgment based on demographic characteristics.

**Knowledge Acquisition Quiz**

A 17-item knowledge acquisition quiz was developed by the researcher that contained 12 multiple-choice items, four true-false items, and one matching item with four premises (Appendix E). This knowledge acquisition quiz was used as both the pretest and posttest and given to students in Cohort A and Cohort B to determine differences in knowledge acquisition. Content validity was determined by three nursing instructors with experience in medical-surgical nursing. The KR-20 of the pretest given for both cohorts in this study is 0.354. An identical posttest was given which had a KR-20 of 0.301 indicating the low reliability of this instrument to measure knowledge acquisition in this sample.
Item analysis was run on each quiz item. The item difficulty index (p value) of the pretest in Cohort A ranged from 0.02 – 0.86 with a mean p value of 0.59. Seven items fell outside of the acceptable p value range of 0.30 – 0.80 (McDonald, 2018). Two items were deemed too difficult and five items were deemed too easy. The item difficulty index (p value) of the pretest in Cohort B ranged from 0.08 – 0.97 with a mean p value of 0.63. Nine items fell outside of the acceptable p value range of 0.30 – 0.80. One item was deemed too difficult with four items being deemed too easy. The mean p value score for the pretest in both cohorts fell below the optimal mean p value score of 0.74 (McDonald, 2018).

The point biserial index (PBI) for the pretest in Cohort A ranged from -0.10 – 0.36 with a mean PBI of 0.20. Six items fell below the recommended PBI of 0.20 (McDonald, 2018) and therefore have low discrimination ability. The PBI in the pretest in Cohort B ranged from -0.05 – 0.38 with a mean PBI of 0.23. Five items fell below the recommended PBI value.

The item difficulty index (p value) of the posttest in Cohort A ranged from 0.32 – 1.0 with a mean p value of 0.74. Seven items in the posttest for Cohort A had p values higher than 0.80. The item difficulty index (p value) of the posttest in Cohort B ranged from 0.19 – 1.0 with a mean p value of 0.865. Twelve items in the posttest for Cohort B fell outside of the recommended p value range (one item below and eleven items above).

The PBI for the posttest in Cohort A ranged from -0.06 – 0.46 with a mean PBI of 0.27. Only three items fell below the recommended PBI value of 0.20. The PBI for the posttest in Cohort B ranged from 0.12 – 0.35 with a mean PBI of 0.23 with six items falling below the recommended PBI value of 0.20. See Table 2.2 for item analysis statistics.

This item analysis may explain the low-reliability score found in the KR-20. McDonald (2018) cautions that test items that are too easy or too difficult and fall outside the acceptable p
value range may decrease the reliability coefficient. As seen in the item analysis, multiple items in the pretest and posttest in both cohorts fell outside of the acceptable $p$ value range.

Homogeneity of the test group may also explain the low-reliability score. However, McDonald (2018) suggests that a degree of homogeneity should be expected with students in a nursing program due to the admission criterion students have to meet.

**Analysis**

Data analysis was performed using IBM SPSS Statistics Version 28. Demographic data were examined using descriptive statistics. Differences in demographic characteristics were examined by Mann-Whitney U (age), chi-square test of homogeneity (ethnicity), and Fisher’s exact test (race, previous degree, and healthcare certifications). Differences in knowledge acquisition between and within groups were examined using a two-way mixed ANOVA. Follow-up analyses were performed to aid in the interpretation of the results.

**Results**

A total of 137 students were enrolled in the medical-surgical course over two semesters (63 students in Cohort A and 74 students in Cohort B). Cohort A had 54 students consent to participate in the study (85.7% participation rate) and Cohort B had 66 students consent to participate in the study (89.2% participation rate) with one student excluded from data analysis due to them repeating the course. The total number of participants in Cohort A was short of the proposed number of participants needed for power (64 participants per group).

**Demographic Variables**

Participant ages ranged from 20 to 38 years (mean = 21.55 years), the majority of students (95.2%) were aged 25 and younger, and the sample was predominately female (85.8%). The majority of the participants identified their race as White/Caucasian (87.6%) which is
consistent with the student population of the school of nursing where the study was conducted. Only 16.8% of students reported having a prior degree and several reported holding a healthcare certification (20%). Those healthcare certifications included Certified Nursing Assistant/Patient Care Technician (17), Emergency Medical Technician (1), and combined Certified Nursing Assistant/Patient Care Technician and Emergency Medical Technician (2). Table 2.3 shows the demographic characteristics reported by the participants and the statistical analysis performed on the demographic characteristics between groups. There were no statistically significant differences found between Cohort A and Cohort B in any demographic characteristics examined.

**Knowledge Acquisition**

Students were given the knowledge acquisition quiz both at the beginning and end of the class meeting. A total of 54 students took the quiz in Cohort A and 66 took the quiz in Cohort B. The quiz items were scored by giving 0.5 points for each correct answer for a maximum score of 10 points. Scores ranged from 3.5 to 9 points on the pretest and 3.5 to 10 points on the posttest. The pretest and posttest means and mean differences appear in Table 2.4. A two-way mixed ANOVA was conducted to explore the impact of the type of teaching strategy (traditional lecture or simulation-based case studies) on knowledge acquisition measured at two time periods (pre-intervention, post-intervention). There was no significant interaction between teaching strategies and time period ($F(1, 118) = .419, p = .519$, partial eta squared = .004). Figure 2.1 shows the lack of interaction between teaching strategies and time period but suggests that there might be pretest differences between the groups.

An independent-samples $t$ test was done to see if there were significant differences in pretest scores between the two cohorts. The independent samples $t$ test found that there were no
significant differences in the pretest scores between students in the two cohorts \( t(1, 118) = 1.912, p = .058 \).

To answer the research question posed in this chapter, mean gains in knowledge from pretest to posttest were examined between the two cohorts using an independent samples \( t \) test. Descriptive statistics for the mean gains in each group appear in Table 2.5. Cohort B does have a slightly higher mean increase in knowledge; however, this increase was not statistically significant \( (t(1, 118) = 0.648, p = 0.519) \).

A repeated-measures ANOVA was used to examine differences between the mean pretest and posttest scores in both cohorts to determine if either teaching strategy generated differences in knowledge acquisition. In Cohort A, there was a statistically significant increase in mean scores from the pretest (5.7) to the posttest (7.3) \( (F(1, 53) = 74.425, \ p < .001) \) Means should be reported for pre and post for those students who were present during the traditional lecture. There was also a statistically significant increase in mean scores from the pretest (6.1) to the posttest (7.9) in Cohort B \( (F(1, 65) = 105.485, \ p < .001) \) for nursing students who were taught using simulation-based case studies. Means should be reported for pre and post.

**Discussion**

The purpose of this study was to determine if students who participate in simulation-based case studies as a classroom teaching strategy would have greater knowledge acquisition than those students who attend a traditional classroom lecture. Overall, it was found that nursing students who participate in simulation-based case studies do not score statistically significantly higher on a knowledge post quiz than the students who attend a traditional lecture.

Findings in previous studies that compared the effect of simulation-based experiences as a classroom teaching strategy to traditional lectures on knowledge acquisition in nursing students
are mixed. White et al. (2013) found that students exposed to traditional lectures scored higher on a knowledge posttest than students who were taught using simulation-based learning. Zulkosky (2012) found that students exposed to lecture and case studies as a classroom teaching strategy scored higher than those exposed to simulation as a classroom teaching strategy. Walters et al. (2017) examined the effect of simulation-based learning in the classroom and found mixed results. Students who participated in simulation-based learning in the classroom scored significantly higher on two out of five exams.

McCormick et al. (2013) found that students who participated in an unfolding simulation scenario as a classroom teaching strategy had higher quiz scores than those who participated in a traditional classroom teaching session. The effectiveness of simulation-based teaching strategies in the classroom was also demonstrated by Miranda et al. (2017) who found that incorporating simulation as a teaching strategy in the classroom increased student knowledge. Hooper et al. (2015) found that students who participated in large group simulations in the classroom had an increase in knowledge. Similarly, Rode et al. (2016) found that students who participated in large group simulations in place of lecture scored significantly higher on the final examination in the course than those who attended traditional classroom sessions.

It is important to note that this study also demonstrated that both simulation-based case studies and traditional lectures are effective in promoting knowledge acquisition in nursing students as students scored significantly higher on the knowledge posttest in both cohorts. These findings are supported by Zulkosky (2012), who demonstrated that students who participated in lecture/case studies in the classroom performed as well or higher on a knowledge quiz than those who participated in simulation in the classroom.
Implications

The results of this study demonstrate that simulation-based teaching can be used in the classroom to promote knowledge acquisition. In addition to the learning that occurs, there are other benefits of incorporating simulation-based teaching strategies into the classroom. More students can experience simulation in the classroom in a shorter amount of time than in a traditional small group setting usually seen in the simulation lab. For example, Cohort B in this study had 66 nursing students who were able to participate in four simulation stations with a group debriefing in under three hours. Traditionally, it would have taken those 66 students 16.5 hours to rotate through one traditional simulation.

Additionally, using simulation-based case studies in the classroom engages multiple learning preferences of students. Students who are visual learners can see the patient and patient chart which may help with understanding. Kinesthetic learners can perform hands-on assessments and interact with the manikin and associated medical equipment to enrich their learning. Those students who are auditory learners will benefit from hearing and participating in discussions with peers while working through the case studies at each station. Reading the typed case study and writing the answers to the associated questions will help engage those students who prefer to learn by reading and writing. This is also noted by Shinnick and Woo (2015) who found that teaching with simulation-based experiences is effective in promoting knowledge for nursing students with different learning preferences. Students with learning preferences who were classified as preferring to learn hands-on, by reflection, or had a balanced learning preference scored significantly higher on a knowledge posttest after participating in a high-fidelity simulation experience (Shinnick & Woo, 2015).
While using simulation-based case studies in the classroom may get more students through a simulation-based experience in a shorter time period than traditional small group simulation, it should be noted that the preparation for the simulation-based case study class meeting was significant. Creating the simulation case study scenarios, the abbreviated patient chart, and debriefing PowerPoint took approximately 20 hours. In addition, preparation for the class session required preparing the simulation stations and moving the equipment into classrooms which took approximately 5 hours. For the students to be prepared to participate in the simulation-based case studies, the lecture had to be recorded and posted on the learning management system along with instructions. This preparation took another 4 hours. In total, it is estimated that preparation for this one class meeting took approximately 30 hours.

**Limitations**

There were several limitations in this study. The use of a convenience sample may limit the generalizability of the findings to other populations. In addition, a true randomized design where students were randomized to a treatment group was unable to be used. However, the findings of the demographic survey demonstrated homogeneity between groups.

The use of an identical knowledge quiz for the pretest and posttest measurement may threaten the internal validity of the study as being exposed to the quiz questions before the learning strategy could influence scores during the posttest period. This threat was lessened by using a control group and giving the quizzes the same way each time.

The low-reliability statistics of the knowledge acquisition quiz may also call the reliability of findings into question. However, the low-reliability coefficient (KR-20) of the knowledge acquisition quiz may be explained by the small variability in quiz scores due to the homogeneity of the abilities of the test group and by the low number of items on the quiz.
Cohort B was exposed to the recorded lecture before taking the knowledge pretest which may have caused differences in knowledge on the pretest quiz. However, an independent samples \( t \) test demonstrated that the differences between groups at pretest were not significant.

**Conclusion**

Nursing education experts continue to call on nurse educators to radically change the way nursing is taught to ensure the knowledge and competence of future nurses. There is an emphasis on bringing clinical experiences into the classroom. Integrating simulation-based experiences as a teaching strategy in the classroom is one way that nurse educators can answer this charge. Since the preparation and implementation of using simulation in the classroom increased the workload on nurse educators, it is important to evaluate the effectiveness of this teaching strategy. This study demonstrated that the use of simulation-based case studies is an effective innovative teaching strategy that nurse educators can use to help stimulate knowledge development in undergraduate nursing students.
References


Table 2.1

*Descriptive Statistics of Pilot Study Quizzes*

<table>
<thead>
<tr>
<th>Quiz</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>77</td>
<td>69.22</td>
<td>15.111</td>
</tr>
<tr>
<td>Posttest</td>
<td>77</td>
<td>85.58</td>
<td>10.821</td>
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</table>
### Table 2.2

**Item Analysis of Knowledge Acquisition Quiz**

<table>
<thead>
<tr>
<th>Question</th>
<th>Cohort A</th>
<th>Cohort B</th>
<th>Cohort B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest</td>
<td>Posttest</td>
<td>Pretest</td>
</tr>
<tr>
<td></td>
<td>p value</td>
<td>PBI</td>
<td>p value</td>
</tr>
<tr>
<td>1</td>
<td>0.32</td>
<td>0.31</td>
<td>0.32</td>
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<tr>
<td>2</td>
<td>0.66</td>
<td>0.27</td>
<td>0.92</td>
</tr>
<tr>
<td>3</td>
<td>0.27</td>
<td>0.24</td>
<td>0.32</td>
</tr>
<tr>
<td>4</td>
<td>0.70</td>
<td>0.16</td>
<td>0.82</td>
</tr>
<tr>
<td>5</td>
<td>0.48</td>
<td>0.28</td>
<td>0.79</td>
</tr>
<tr>
<td>6</td>
<td>0.70</td>
<td>0.05</td>
<td>0.97</td>
</tr>
<tr>
<td>7</td>
<td>0.85</td>
<td>0.36</td>
<td>0.94</td>
</tr>
<tr>
<td>8</td>
<td>0.39</td>
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</tr>
<tr>
<td>9</td>
<td>0.46</td>
<td>0.33</td>
<td>0.61</td>
</tr>
<tr>
<td>10</td>
<td>0.64</td>
<td>0.15</td>
<td>0.69</td>
</tr>
<tr>
<td>11</td>
<td>0.02</td>
<td>-0.10</td>
<td>0.34</td>
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<tr>
<td>12</td>
<td>0.86</td>
<td>0.15</td>
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<td>13</td>
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<td>0.94</td>
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<td>15</td>
<td>0.84</td>
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<td>1.00</td>
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<tr>
<td>16</td>
<td>0.86</td>
<td>0.26</td>
<td>0.71</td>
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<tr>
<td>17</td>
<td>0.44</td>
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<td>0.72</td>
</tr>
</tbody>
</table>

**Note:** PBI = point biserial index; p value (item difficulty index)

Question 8 is a multiple-response item and PBI is not determined. Question 18 was a matching item with 4 premises and was unable to determine the PBI of this item.
<table>
<thead>
<tr>
<th>Demographic Characteristic</th>
<th>Cohort A</th>
<th>Cohort B</th>
<th>Sample</th>
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<tbody>
<tr>
<td></td>
<td>$n$</td>
<td>%</td>
<td>$n$</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>46</td>
<td>88.5</td>
<td>51</td>
</tr>
<tr>
<td>Male</td>
<td>6</td>
<td>11.5</td>
<td>10</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-25</td>
<td>47</td>
<td>95.9</td>
<td>52</td>
</tr>
<tr>
<td>&gt;25</td>
<td>2</td>
<td>4.1</td>
<td>3</td>
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<tr>
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<td>11.5</td>
<td>8</td>
</tr>
<tr>
<td>Non-Hispanic</td>
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<td>88.5</td>
<td>53</td>
</tr>
<tr>
<td>Race</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Black/African American</td>
<td>4</td>
<td>7.7</td>
<td>1</td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>45</td>
<td>86.5</td>
<td>54</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>5.8</td>
<td>4</td>
</tr>
<tr>
<td>Prior Degree</td>
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</tr>
<tr>
<td>Associate Degree</td>
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</tr>
<tr>
<td>Baccalaureate Degree</td>
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<td>4</td>
</tr>
<tr>
<td>None</td>
<td>42</td>
<td>80.8</td>
<td>52</td>
</tr>
<tr>
<td>Medical Certifications</td>
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</tr>
<tr>
<td>CNA/PCT</td>
<td>8</td>
<td>15.7</td>
<td>9</td>
</tr>
<tr>
<td>EMT</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>CNA/PCT and EMT</td>
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<td>0</td>
<td>2</td>
</tr>
<tr>
<td>None</td>
<td>43</td>
<td>84.3</td>
<td>49</td>
</tr>
</tbody>
</table>

*Note:* CNA = Certified Nursing Assistant; PCT = Patient Care Technician; EMT = Emergency Medical Technician.

$n = 113$ (cohort A $n = 52$, cohort B $n = 61$) students completed the demographic survey out of the $n = 121$ students who participated in the study.

*a* Participant age on average was 21.55 years old (SD ± 2.62). Participant age did not differ by group ($U = 1275.5$, $z = -1.284$, $p = .199$).

*b* There are no statistically significant differences in ethnicity by group. Chi-square test of homogeneity was performed ($X^2 = .064$, $p = .800$).

*c* There are no statistically significant differences in race of the participants by group ($p = .277$). Fisher’s exact test was performed due to small sample sizes in some categories for chi-square test of homogeneity.

*d* Based on Fisher’s exact test, there are no significant differences in the previous education of students in each group ($p = .207$).

*e* There are no statistically significant differences in the healthcare certifications held by students in each group using Fisher’s exact test ($p = .389$).
Table 2.4

Descriptive Statistics of Knowledge Quiz

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>A</td>
<td>54</td>
<td>5.704</td>
<td>1.1595</td>
</tr>
<tr>
<td>B</td>
<td>66</td>
<td>6.136</td>
<td>1.2906</td>
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<tr>
<td>Differences</td>
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Figure 2.1

*Difference of Knowledge Quiz Mean Scores by Cohort*

![Graph showing the difference in knowledge quiz mean scores between Cohort A and Cohort B over a pre-post timeline.]
Table 2.5

*Descriptive Statistics of Mean Gains in Knowledge*

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Gain Score</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
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<td>54</td>
<td>1.620</td>
<td>1.3802</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>66</td>
<td>1.788</td>
<td>1.4333</td>
</tr>
<tr>
<td>Difference</td>
<td></td>
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Chapter 3: Developing Clinical Judgment in the Classroom in Undergraduate Nursing Students: A Quasi-Experimental Study

The goal of nursing education is to prepare nursing students to provide safe, competent, quality care to patients. Traditionally, nursing curricula are made up of didactic courses with clinical practica. In the classroom, nurse educators teach nursing students what they need to know to be nurses, while the hands-on application of this knowledge is reserved for the clinical practicum. However, studies suggest that this method of teaching nurses may not be effective in adequately developing the clinical judgment nursing students need upon graduation (Kavanagh & Szweda, 2017). Nurse educators have been challenged to change the way they teach to incorporate clinical-based learning experiences into the classroom (Benner et al., 2010). Wakefield et al. (2021) reinforced this challenge as they stated that nursing students need to be taught using different types of learning experiences to be prepared for the competencies they will need in their role as nurses.

Today’s nurses face challenges such as staffing shortages and patients who are acutely ill (Dickison et al., 2019). These challenges require nurses who can make high-level clinical judgments to provide safe, high-quality nursing care. Kavanagh and Szweda (2017) found that new nurses lacked the clinical judgment needed to provide safe and acceptable nursing care to patients. In light of this, nursing educators must reexamine the way they teach and find innovative ways to incorporate clinical learning into the classroom. Klenke-Borgmann et al. (2021) suggest that using simulation in the classroom can help bridge nursing students from knowledge acquisition to clinical application. Carson and Harder (2016) also promote the use of simulation-based experiences in the classroom to aid in the connection of classroom concepts to clinical application. However, despite the promise that the use of simulation-based experiences
in the classroom has, few studies examine the use of simulation-based experiences in the classroom on clinical judgment. Therefore, this study aims to examine the use of simulation-based case studies as a classroom teaching strategy on the development of clinical judgment in undergraduate nursing students enrolled in a medical-surgical course. It is hypothesized that students who participate in simulation-based case studies in the classroom will have higher clinical judgment scores than students who attend a traditional lecture.

**Background**

**Clinical Judgment in Nursing Education**

Positive patient outcomes rely upon the ability of nurses to make sound clinical decisions based on clinical reasoning and clinical judgment. Tanner (2006) defined clinical judgment as a complex process that nurses use when interpreting patient situations and making decisions on which actions to take. Good clinical judgment calls for nurses who understand both the pathophysiological and diagnostic aspects of patient conditions and how these can affect the emotional, social, and physical abilities of patients and families. Simply stated, clinical judgment is a skill that nurses must possess to provide safe, high-quality care.

The American Association of Colleges of Nursing (2021) listed clinical judgment as one of the sub-competencies that undergraduate nurses must possess upon graduation from nursing school. Tanner (2006) stated that a nurse’s ability to make sound clinical judgments increase as experience is gained over time. Nurse educators guide students in clinical experiences to help develop clinical judgment in nursing students. However, studies show that new entry-level nurses do not have the clinical judgment needed to deliver competent nursing care. Kavanagh and Szweda (2017) found that only 23% of new nurse graduates who had successfully passed the National Council Licensure Exam (NCLEX) possessed the clinical decision-making skills
needed to provide safe patient care. Despite this evidence, most nursing programs still rely on the NCLEX to determine readiness for practice (Dickison et al., 2019). To ensure that nursing students have the clinical judgment needed to provide safe nursing care upon graduation, the National Council of State Board of Nursing (NCSBN) developed the NCSBN Clinical Judgment Model to use to help develop a licensure exam that will effectively measure clinical judgment in nursing graduates (Dickison et al., 2019).

Despite this renewed emphasis on clinical judgment in nursing, few studies have examined the effect of active teaching strategies in the classroom on clinical judgment. Bussard (2018) examined clinical judgment progression in nursing students enrolled in a medical-surgical course from the first to the fourth high-fidelity simulation. This qualitative, descriptive study found themes that indicated there was a significant progression in clinical judgment development. Students enrolled in this study participated in four progressive high-fidelity simulations during a medical-surgical course and clinical judgment was examined from reflective journals the students completed after participation in each high-fidelity simulation. It was noted that students showed progression in clinical judgment development from journal 1 to journal 4 in the areas of patient illness trajectory, correlations and interpretations in patient data, skill acquisition, self-confidence, and communication. Victor-Chmil et al. (2015) found that there was a positive correlation between clinical judgment development and clinical performance in nursing students. Weatherspoon et al. (2015) noted that students who participated in electronic interactive simulations did not have significantly higher clinical reasoning scores than those who participated in traditional case studies. Qualitative studies conducted by Lasater (2007), Bussard (2015), and Lawrence et al. (2018) identified themes of nursing students’ development of clinical judgment during simulation-based experiences. These themes included the opportunity to
integrate theory into practice, to engage in making clinical judgments in a safe environment, to make mistakes and learn from those mistakes, to learn from others, and to increase confidence at the bedside. With the new emphasis on clinical judgment development by NCSBN (2018), it is important to create more high-quality research that examines the effect of active teaching strategies on the development of clinical judgment in undergraduate nursing students.

Therefore, the purpose of this study was to examine the use of simulation-based case studies in the classroom as a teaching strategy on the development of clinical judgment in undergraduate nursing students enrolled in a medical-surgical course. The following research questions were posed:

(1) Will undergraduate nursing students enrolled in a medical-surgical course who participate in simulation-based case studies have higher clinical judgment scores compared to undergraduate nursing students who attend a traditional lecture?

(2) Is there a relationship between the demographic characteristics of age, gender, race, ethnicity, previous education, or prior experience in healthcare of undergraduate nursing students enrolled in a medical-surgical course and their clinical judgment scores?

Theoretical Frameworks

Two theoretical frameworks guided this study. Tanner’s (2006) Clinical Judgment Model (CJM) provided the foundation and guidance for the discussion of the development of clinical judgment in nursing students, while the NLN Jeffries Simulation Theory guided the development of the simulation-based case studies that were used as the teaching strategy of interest in this study.
Clinical Judgment Model

Tanner’s (2006) CJM describes the four aspects of clinical judgment that experienced nurses use when making clinical decisions. These four aspects of noticing, interpreting, responding, and reflecting are based on the results of an extensive literature review done by Tanner (2006) that revealed the following themes: (a) clinical judgment is based on what nurses bring to the situation; (b) sound clinical judgment relies on knowing the patient and their typical response; (c) clinical judgment is influenced by the context of the patient situation and nursing unit culture; (d) a combination of reasoning patterns are used in clinical reasoning, and (e) breakdown in clinical judgment triggers reflection on practice and is vital for improving clinical reasoning skills. Many studies in nursing education have used Tanner’s CJM as a theoretical framework due to the importance of developing clinical judgment in nursing students. Klenke-Borgmann et al. (2021) used Tanner’s CJM as a theoretical framework to evaluate the effect of classroom simulation on the clinical judgment of nursing students. Victor et al. (2017), Bussard (2018), and Lawrence et al. (2018) were guided by Tanner’s CJM when examining the effect of simulation-based experiences on clinical judgment in nursing students.

The first aspect of the CJM is noticing. Noticing occurs when the nurse uses their awareness of the patient’s situation, which comes from knowledge of the patient and similar patients drawn from previous experiences along with textbook knowledge to examine the situation. This initial awareness of the situation sparks the second phase of the CJM, interpreting. Nurses must understand the patient's situation to formulate a response. Tanner (2006) called this response interpreting. Interpreting involves the nurse’s use of clinical reasoning patterns, which can be analytic, intuitive, and narrative in nature. Analytic reasoning occurs when the nurse breaks the situation down and formulates alternative plans while weighing each plan against the
clinical data or possible achievement of outcomes. Intuitive reasoning is a recognition of a pattern characterized by the apprehension of a situation caused by previous experience with a similar situation. Narrative reasoning is the process of making sense of clinical experiences, which allows nurses to turn their experiences into practical knowledge and understanding (Tanner, 2006). After going through the clinical reasoning phase of interpreting, the nurse will make a decision and decide to act or not to act. This act of carrying out the decision is called responding. While still in the process of responding, the last phase of reflecting begins. Reflecting calls for the nurse to assess how the patient is responding to the action carried out by the nurse. Tanner (2006) describes two ways that reflection may occur. Reflection-in-action occurs when the nurse is monitoring the patient's response immediately during and after a nursing intervention and adjusts the interventions based on the patient's response. Reflection-on-action is the completion of the learning cycle which allows the nurse to gain clinical knowledge based on the experience to further develop clinical reasoning and clinical judgment skills.

The use of simulation-based case studies as an active teaching strategy facilitates students working through all four phases of the CJM, encouraging the development of clinical reasoning and clinical judgment skills. Noticing occurs during the beginning of the teaching strategy as students read the case study gaining background information about the patient and performing an assessment of the manikin. Students use the assessment data they obtain to move into the interpreting phase as they begin to use their clinical reasoning skills to decide upon a course of action based on the assessment data they have obtained. The case study guides students through the clinical reasoning process. Focused questions guide students through the responding phase in deciding upon a plan of care for the patient. After the students work through the simulated-based case studies, they complete the reflection phase. The debriefing session, facilitated by a nursing
instructor, allows students to go through the process of reflection-on-action. It is believed that this teaching strategy would increase clinical judgment and guide the student’s actions when they encounter a similar patient experience in the clinical setting.

Tanner (2006) recommends that nurse educators develop opportunities in clinical learning activities that help nursing students recognize the clinical manifestations of what is learned from textbooks along with changes in patient condition, which will help develop clinical reasoning. These clinical learning activities do not have to be restricted to the clinical area. It is important to develop clinical learning activities that help develop clinical reasoning and clinical judgment in the didactic setting. With the continued emphasis on clinical judgment development in undergraduate nursing students (Dickison et al., 2019), it is important to identify effective teaching strategies that will promote the development of clinical judgment. It is proposed that the use of simulation-based case studies as an active teaching strategy will help students develop clinical judgment skills in the classroom setting.

**NLN Jeffries Simulation Theory**

The NLN Jeffries Simulation Theory was developed to give guidance on how to effectively develop and implement high-quality simulation experiences in nursing education (Adamson & Rodgers, 2016). This theory can be used as a model to guide simulation design, guide implementation of simulation scenarios, and assess learner outcomes (Jeffries & Rodgers, 2012). The seven main concepts of the NLN Jeffries Simulation Theory are context, background, design, simulation experience, facilitator and educational strategies, participant, and outcomes (Jeffries et al., 2016). A discussion of each of these concepts and how they guided the development and implementation of the simulation-based case studies used in this study follows.
The first of the seven concepts of the NLN Jeffries Simulation Theory is the concept of context. The overall context of the simulation is important to examine, as many factors may influence the development and evaluation of the simulation. The context of the simulation includes the setting and the purpose of the simulation (Jeffries et al., 2016). In this dissertation study, the context of using simulation-based case studies as an active classroom teaching strategy with large groups of students influenced both the development of the SBE and the methods used to evaluate the effectiveness of the simulation. Therefore, the SBE was conducted in the classroom with students divided into large groups. The purpose of the SBE was instructional as the simulation was being used as an active teaching strategy to facilitate learning and clinical judgment development.

The second concept of the NLN Jeffries Simulation Theory is background. The background must be examined as it helps guide the simulation design. The background is composed of the goals, objectives, and expectations of the simulation, how the simulation fits into the curriculum, and the allocation of resources such as time and materials (Jeffries et al., 2016). The objectives of the unit that was being taught guided the design and decision to use simulation-based case studies as a teaching strategy in the classroom. The use of resources and time also shaped the design as it was determined that multiple medium-fidelity manikins, varied pieces of medical equipment, and moulage were needed at each simulation station. Due to the time limit of a didactic class meeting, a simulation strategy was needed that could rotate a large group of students through multiple simulation-based case study stations in a short period.

The next concept in the NLN Jeffries Simulation Theory that was examined was simulation design. Simulation design refers to the specific parts of the simulation experience that include the learning objectives, fidelity, facilitator responses, participants’ interventions,
participant roles, and briefing/debriefing strategies (Jeffries et al., 2016). The design of the simulation-based case studies used as a teaching strategy in this study was guided by this NLN Jeffries Simulation Theory concept of simulation design. The simulation-based case studies were designed so all students enrolled in the course could participate by working in large groups of 8-10. Case studies were developed to be used in combination with the medium-fidelity manikins to guide and cue responses expected from students. At the start of class, all students were briefed with instructions and a reminder of the learning objectives. After rotating through all four simulation stations, a large group debriefing was facilitated by the instructor.

The fourth concept of the NLN Jeffries Simulation Theory is the overall simulation experience, which is described by Jeffries et al. (2016) as an “experiential, interactive, collaborative, and learner-centered” (p. 41) environment where trust is established by the facilitator and participant. This environment enhances the experience and allows the participant the ability to suspend disbelief and believe in the authenticity of the experience. When applying this concept to the simulation-based case studies, the simulation experience allowed collaboration and interaction with peers in groups as well as interaction with the manikin and simulation environment. Students were entrenched in this learner-centered teaching strategy as they performed assessments and worked through the case studies accompanying each manikin.

According to Jeffries et al. (2016), there is a dynamic interaction between the facilitator and the participant during the simulation experience, therefore, the concepts of facilitator and participant are a big piece of the simulation experience. The facilitator influences the simulation by responding to the participants’ needs during the simulation-based experience by adjusting the educational strategies. This may alter the progression of the experience by providing feedback whether by using cues during the experience or via feedback during the debriefing of the
experience. When examining the role of the facilitator and which educational strategies to use during the simulation-based case studies, it was decided that cues would not be given by the facilitator due to this teaching strategy being learner-guided. Feedback was given by the facilitator during the debriefing session.

Because of the dynamic interaction with the participant during the simulation experience, it is noted that the characteristics of the participant may also influence the SBE. Therefore, the NLN Jeffries Simulation Theory highlights the participant as an important concept in the simulation experience. Participant attributes such as age, gender, level of anxiety, self-confidence, level of preparedness, and role assignment may impact the learning experience (Jeffries et al., 2016). When examining the impact of participant characteristics on their participation in the simulation-based case studies, it was hypothesized that the characteristics that would cause the most influence on the learning experience were anxiety and the level of preparedness. Students were expected to be prepared for the content covered in the simulation-based case study learning experience by listening to a recorded lecture and completing chapter readings before class time. Students who were not prepared may not have been able to work through the simulation-based case studies as well as those students who were familiar with the content.

The final concept of the NLN Jeffries Simulation Theory is outcomes. Jeffries et al. (2016) divide outcomes into three types: participant outcomes, patient outcomes, and system outcomes. The use of simulation-based case studies as a teaching strategy is directly related to the participant outcomes as it was hypothesized that simulation-based case studies increase levels of clinical judgment in baccalaureate nursing students. It can also be stated that overall patient outcomes may be positively affected. By being exposed to potential patient situations, students
had the opportunity to develop clinical reasoning and clinical judgment. This gives them a basis of experience to pull from in the future when encountering patients in the clinical setting.

Together, Tanner’s CJM (2006) and the NLN Jeffries Simulation Theory (Jeffries et al., 2016) helped form the theoretical basis for this study. When examining the conceptual models for both theoretical underpinnings, it is noted that there are similar concepts in each theory, therefore, these theories work well together. In the NLN Jeffries Simulation Theory (Jeffries et al., 2016), the concept of background is important in helping develop the design of the simulation by examining the goals and expectations of the simulation along with how the simulation fits into the curriculum. The background is also important in Tanner’s CJM (2016) because the context of the situation experienced by the nurse helps nurses through the noticing phase of clinical judgment. Nurse educators who understand the importance of background can create realistic simulation goals and designs to form a background that will help nursing students through the noticing phase. NLN Jeffries Simulation Theory’s (Jeffries et al., 2016) concept of the simulation experience is the interactive and experiential learning strategy that allows students to work through Tanner’s (2016) phases of interpreting, responding, and reflection. By using the seven concepts of the NLN Jeffries Simulation theory to develop the simulation-based case study scenarios, it was believed that students would be guided to work through the four phases of clinical judgment development described in Tanner’s CJM.

Methods

Study Design

A two-group, pretest-posttest quasi-experimental design was used to determine if participation in simulation-based case studies was a more effective teaching strategy than attending a traditional lecture in developing clinical judgment in undergraduate nursing students.
For ethical reasons to ensure all students enrolled in the medical-surgical course received the same course content, the students enrolled in the course during the spring of 2021 served as the control group while the students enrolled in the course during the fall of 2021 served as the experimental group. This study was done as a part of a larger dissertation study.

**Participants**

Convenience sampling was used to invite baccalaureate nursing students enrolled in the medical-surgical course taught during their second semester of nursing school. Recruitment occurred over two semesters based on power analysis that 128 participants were needed to get a medium effect at the 0.05 significance level with a power of 0.80. Students repeating the course were allowed to participate; however, they were excluded from data analysis because prior exposure to course content could skew results.

**Intervention**

Approval from the institutional review board from both Teachers College (Appendix A) and the study site (Appendix B) was obtained. Students were informed both verbally and in writing of the study at the start of the class meeting. Signed written consent was obtained from students who chose to participate in the study. Students choosing to opt-out of participating were still included in course activities as this was their regularly scheduled class meeting.

The study took place over two consecutive semesters. The students enrolled in the spring 2021 semester served as the control group (Cohort A) and were exposed to a traditional lecture as the teaching strategy. Students enrolled in the fall 2021 semester (Cohort B) served as the experimental group and participated in simulation-based case studies as the teaching strategy during one class meeting. The principal investigator was the lead instructor during the class meeting for both cohorts.
Cohort A

After obtaining informed consent, students in Cohort A were instructed to complete a demographic survey (Appendix D) and complete the Lasater Clinical Judgment Rubric (LCJR) (Appendix F). After completing these items, students attended the regularly scheduled class meeting where a nursing instructor led a lecture with the topic of Care of the Patient with a Gastrointestinal Problem. At the end of the lecture, students participating in the study were asked to complete the LCJR again.

Cohort B

The same lecture that was given to Cohort A was recorded and posted on the course learning management system one week before the scheduled class meeting. Students in Cohort B were instructed via an announcement on the course learning management system to view the lecture as preparation for the class meeting. At the start of the class meeting, after informed consent was obtained, students were instructed to complete the demographic survey and the LCJR. Students were prebriefed on the objectives of the class meeting and were given instructions on how to work through the four simulation stations set up in the classroom. Students were then divided into small groups of nine to ten and instructed to work together at each station. Four stations were set up in the classroom to reflect patients with diagnoses of upper gastrointestinal bleed related to a peptic ulcer, cholecystitis with choledolithiasis, hepatitis B, and pancreatitis. Each station consisted of a simulation manikin, a written case study, and a condensed medical record containing provider orders and laboratory test results. The manikins were programmed with vital signs to reflect the diagnosis. Additional equipment was staged at each station to give students additional assessment information about the patient. For example, a urinal filled with dark, amber urine was placed at the bedside of the manikin at the Hepatitis B
station. Students were given 15-20 minutes at each station to work through the case study progression questions found below the typed case study. The simulation scenario templates found in Appendix C contain the typed case studies and associated progression questions, the manikin settings, and equipment staged at each station.

After the groups rotated through all four stations, students were brought back into their seats and participated in a one-hour large group debriefing facilitated by a nursing instructor. During the debriefing session, the nursing instructor reviewed each case study and progression questions from each station to ensure student understanding of the case study scenario. Questions used by the facilitator during the debriefing session are listed in the simulation scenario template (Appendix C). At the end of the debriefing, students were instructed to complete the LCJR.

Measures

Demographic characteristics were obtained via a researcher-developed demographic survey. The LCJR was used to measure the clinical judgment of students before and after the teaching strategy in each cohort.

Demographic Survey

A six-item demographic survey developed by the researcher was used to determine age, gender, ethnicity, race, prior education, and prior healthcare certifications (certified nursing assistant/patient care technician, emergency medical technician, licensed vocational/practical nurse, respiratory therapist) held by the participants (Appendix D). This demographic survey was used to determine if demographic differences existed between cohorts and to examine correlations between demographic characteristics and clinical judgment scores in the students.
Lasater Clinical Judgment Rubric

Clinical judgment was measured using the Lasater Clinical Judgment Rubric (Appendix F). The LCJR measures clinical judgment in 11 dimensions (Table 3.1) with each dimension being scored as exemplary, accomplished, developing, or beginning. The LCJR is relevant to use in acute care, long-term care, and community health (Lasater, 2007). Students were given a printed version of the LCJR with instructions before the teaching strategy (lecture or simulation-based case studies) in the Care of the Patients with Gastrointestinal Problems unit and again after the teaching strategy was implemented. Students were instructed to circle the description in each row that they best thought described their abilities in regards to providing nursing care to a patient with a gastrointestinal diagnosis. Victor-Chmil and Larew (2013) measured the reliability of the LCJR by determining the internal consistency at 0.95. Interrater reliability is reported at 0.889 with an intrarater reliability reported at 0.974 (Victor-Chmil & Larew, 2013). Construct validity was demonstrated using intraclass correlations ranging from 0.66-0.96 in the 11 dimensions of the LCJR. Convergent validity was done to check for correlations between critical thinking and clinical judgment, and no statistically significant correlations were found between the two. Content validity was checked by experts in simulation and nursing education (Victor-Chmil & Larew, 2013). Permission to use the LCJR was obtained via email communication with Kathie Lasater, who is the author of the instrument (Appendix G).

Analysis

Data analysis was performed using IBM SPSS Statistics Version 28. Demographic data were examined using descriptive statistics. Table 2.3 displays the differences in demographic characteristics that were examined by Mann-Whitney U (age), chi-square test of homogeneity (ethnicity), and Fisher’s exact test (race, previous degree, and healthcare certifications
Multiple regression was used to determine if age, gender, race, ethnicity, previous education, or prior experience in healthcare were significant predictors of clinical judgment scores.

A two-way mixed ANOVA was conducted to determine if there was a group-by-time interaction between the two cohorts and the scores of the two administrations of the LCJR. Follow-up analyses were performed to aid in the interpretation of the results.

**Results**

There was a total of 137 students enrolled in the medical-surgical course over the two semesters (63 in Cohort A and 74 in Cohort B). Cohort A had 54 students consent to participate (85.7% participation rate) and Cohort B had n = 66 students consent to participate (89.2% participation rate) with one student excluded due to repeating the course. However, some students chose not to complete all surveys, completed the surveys incorrectly, or left items incomplete. Surveys not completed correctly were removed from item analysis leaving 46 students in Cohort A and 59 students in Cohort B (total 105 participants or 76.6% participation). The total number of participants was short of the proposed number of 128 participants needed for power.

**Demographics of Participants**

The ages of participants ranged from 20-38 years (mean 21.55 years) with 95.2% aged 20-25. The majority of participants were female (85.8%) and identified as White/Caucasian (87.6%) which is consistent with the population of the study site. A small number of students (16.8%) reported earning a prior degree and holding a healthcare certification (20%).
differences in cohorts. No significant differences were found between the two cohorts in any demographic characteristic examined.

**Clinical Judgment**

Clinical judgment was determined by obtaining a score from each student in both cohorts. Students completed the LCJR both before and after the teaching strategy used in class to obtain a pre-and post-intervention clinical judgment score. Of the 54 students who consented to participate in Cohort A, 48 students completed the pre-LCJR and 50 students completed the post-LCJR. This left 46 students who completed both the pre-and-post-LCJR. The pre-LCJR scores in Cohort A ranged from 22-44. Scores for the post-LCJR in Cohort A ranged from 23-44. Of the 66 students who consented to participate in Cohort B, 62 students completed the pre-LCJR correctly and 61 students completed the post-LCJR correctly. Of these, 59 students correctly completed both the pre-and-post-LCJR. The pre-LCJR scores in Cohort B ranged from 11-44 and the post-LCJR scores ranged from 22-44. The pretest and posttest means and mean differences appear in Table 3.2.

A two-way mixed ANOVA was conducted to examine the impact of the two teaching strategies of interest in this study on clinical judgment scores measured at two time periods (pre-intervention, post-intervention). There was no significant interaction between the two teaching strategies and time period \( (F (1, 103) = .447, p = .505, \text{ partial eta squared } = .004) \). Figure 3.1 illustrates the findings. To further interpret these results, independent sample \( t \) tests were conducted.

An independent-samples \( t \) test was done to determine if there were significant differences between the two cohorts of students at pretest. The independent samples \( t \) test demonstrated there
were no significant differences in the pretest clinical judgment scores between the two cohorts ($t(1, 108) = 0.921, p = 0.359$).

An independent-samples $t$ test was done to determine if there were significant differences in the mean gains from pretest to posttest between the two cohorts. Descriptive statistics for the mean gains in clinical judgment scores for each cohort appear in Table 3.3. The mean gain in clinical judgment scores is slightly higher in Cohort B; however, those findings are not statistically significant ($F(1, 103) = 0.486; p = 0.568$).

Repeated measures ANOVA was performed to determine if there was a significant difference in pre-to-post-LCJR scores in each cohort. Findings showed a statistically significant increase in clinical judgment scores in each cohort. Clinical judgment scores were significantly higher after attending a traditional lecture ($F(1, 45) = 21.481, p < .001$) and after participation in simulation-based case studies ($F(1, 58) = 32.156, p < .001$).

**Relationship Between Demographic Characteristics and Clinical Judgment**

Relationships between the demographic characteristics of age, ethnicity, race, and previous degree earned and the posttest clinical judgment scores were examined for all participants. Only 24 students in Cohort A entered their randomly assigned identification number into the demographic survey and also completed the post-LCJR. In Cohort B, 55 students completed the demographic survey and the post-LCJR. Due to the small sample size of Cohort A and the small numbers of some categories of demographics, all variables were dichotomized and multiple regression was used. In addition, to capture more students due to missing data, the demographic characteristic of previous healthcare certification was not used in the regression. The overall regression model was not statistically significant ($F(5, 72) = 1.079, p = .379, R^2 = .070$), indicating that demographic characteristics of gender, age, ethnicity, race, and degree held
were not significant predictors of clinical judgment score. Table 3.4 shows the regression results for each demographic characteristic.

**Discussion**

The primary purpose of this study was to examine if participation in simulation-based case studies as a classroom teaching strategy would promote higher clinical judgment scores in undergraduate nursing students than those students who attended a traditional lecture. The hypothesis that participation in simulation-based case studies would produce higher clinical judgment scores than attendance in the traditional lecture was not supported. These findings are similar to those published by Kantar and Sailian (2018) who found no significant differences in clinical judgment development in nursing students who were taught using case study-based strategies versus those using lecture-based strategies in the classroom. However, findings did demonstrate that both participation in simulation-based case studies and attendance at a traditional lecture promoted an increase in clinical judgment. These findings are consistent with findings from Klenke-Borgmann et al. (2021) who found that clinical judgment scores obtained by three trained raters on the LCJR significantly increased after nursing students were exposed to in-class simulation scenarios.

Relationships between demographic characteristics of undergraduate nursing students and clinical judgment scores were also examined. It was found that demographic characteristics were not predictors of clinical judgment scores. This is consistent with findings by Lasater et al. (2019), who found no identifiable patterns when relationships between demographic characteristics and development of clinical judgment were examined.
Implications

The findings from this study address a gap in the literature on the effectiveness of simulation-based classroom teaching strategies on the development of clinical judgment in undergraduate nursing students. As nursing education continues to emphasize the development of clinical judgment in undergraduate nursing students, nurse educators must engage nursing students in classroom teaching strategies that promote clinical judgment. Research has shown that incorporating simulation-based teaching strategies is effective in promoting clinical judgment. As little research has been done on the use of simulation-based experiences as classroom teaching strategies, nurse educators must continue to conduct studies that increase the body of evidence supporting teaching strategies that develop clinical judgment.

This study also attempted to determine relationships between clinical judgment in nursing students and demographic characteristics. While no relationships between demographic characteristics and clinical judgment were demonstrated, nurse educators need to remember that a variety of teaching strategies should be used. Nurse educators should consider that each student carries unique backgrounds and experiences with them that may impact how they develop their clinical judgment skills. Using different teaching strategies in the classroom can help ensure that students with varied learning preferences and backgrounds are reached.

Limitations

This study contains several limitations. The use of a convenience sample from one regional, public university may limit the generalizability of the findings to other populations. In addition, a true randomized design where students were randomized to a treatment group was unable to be used. However, the demographic survey findings demonstrated homogeneity between the two cohorts.
There is concern that allowing students to self-score on the LCJR could decrease the validity of the clinical judgment score; however, Jensen (2013) found there were no significant differences in student self-scoring of the LCJR versus nursing faculty scoring.

The low number of students in Cohort A who completed the demographic survey correctly left a disproportionately small sample size in this group leading to a potential false-negative of the findings of a nonsignificant relationship between demographic characteristics and clinical judgment.

Students in Cohort B were allowed to listen to a recorded lecture before the class meeting as part of the intervention, which may have influenced their clinical judgment before completing the pretest LCJR. However, the independent samples t test indicated that the differences between groups at pretest were not statistically significant.

**Conclusion**

Nursing education is entering a new era. The teaching strategies that have been historically used in nursing education may not be the only teaching strategies that are effective in preparing the next generation of nurses. Nursing students need to be prepared to rely on their clinical judgment skills to care for complex patients in a dynamic and ever-changing healthcare system. Nurse educators are therefore challenged to find new, innovative ways to bring clinical experiences to the classroom. This study’s findings suggest that the integration of simulation-based case studies in the classroom may have some value as an innovative teaching strategy on the development of clinical judgment in undergraduate nursing students. More research should be conducted on the effectiveness of this innovative teaching strategy in promoting clinical judgment.
References


59
Table 3.1

*LCJR 11 Dimensions*

<table>
<thead>
<tr>
<th>Dimensions of LCJR</th>
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<tbody>
<tr>
<td>Focused observation</td>
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<tr>
<td>Recognizing deviations from expected patterns</td>
</tr>
<tr>
<td>Information seeking</td>
</tr>
<tr>
<td>Prioritizing data</td>
</tr>
<tr>
<td>Making sense of data</td>
</tr>
<tr>
<td>Calm, confident manner</td>
</tr>
<tr>
<td>Clear communication</td>
</tr>
<tr>
<td>Well-planned intervention/flexibility</td>
</tr>
<tr>
<td>Being skillful</td>
</tr>
<tr>
<td>Evaluation/self-analysis</td>
</tr>
<tr>
<td>Commitment to improve</td>
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</table>
Table 3.2

*Descriptive Statistics of LCJR*

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<tr>
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<tr>
<td>A</td>
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Figure 3.1

*Difference of Clinical Judgment Mean Scores by Cohort*
Table 3.3

*Descriptive Statistics of Mean Gains in Clinical Judgment Scores*

<table>
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<td>A</td>
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Table 3.4

*Regression Statistics of Demographic Characteristics for Post Clinical Judgment Scores*

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<th>$p$</th>
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Chapter 4: Influence of Lecture Versus Simulation-Based Case Studies in the Classroom on General Self-Efficacy in Baccalaureate Nursing Students

In a short amount of time, baccalaureate nursing students are expected to develop the knowledge, skills, and attitudes needed to provide safe and effective nursing care to patients in clinical settings. Nursing instructors are encouraged to use teaching strategies and methods that will help nursing students reach their full potential as competent student nurses. Self-efficacy is a quality that may help nursing students be successful (Helms & Walker, 2018; Shorey & Lopez, 2021). High levels of self-efficacy in nursing students have been linked to the development of critical thinking and decision making (Cardoza & Hood, 2012; Helms & Walker, 2018), competency in performing nursing skills (Lin, 2016), and reduction of stress and burnout (Bulfone et al., 2016). Higher self-efficacy may also help students have an easier transition from student nurse to registered nurse (George et al., 2017).

Currently, multiple studies demonstrate the positive effect of participation in simulation-based experiences in nursing education on undergraduate nursing students’ self-efficacy; however, few studies examine the effect of classroom teaching strategies in nursing education on nursing student self-efficacy. Therefore, this study examined the effect of two different classroom teaching strategies (simulation-based case studies and traditional lecture) on self-efficacy in baccalaureate nursing students enrolled in a medical-surgical course.

Background

Conceptual Framework

The Self-Efficacy Theory was used as the conceptual framework for this study. Bandura (1977) defined self-efficacy as the belief one has in themselves to successfully perform a task or desired behavior. The Self-Efficacy Theory has four main concepts that are believed to affect
self-efficacy: (1) performance accomplishments, (2) vicarious experiences, (3) verbal persuasion, and (4) emotional arousal. Bandura (1977) proposed that self-efficacy can influence personal accomplishment, coping, and motivation. Self-efficacy has importance in nursing practice as high self-efficacy levels in nurses have been positively correlated to positive nursing performance (Lee & Ko, 2010). Self-efficacy has been examined in many fields including nursing education, psychology, education, athletic training, health education, business, and politics (Bandura, 1997; Shorey & Lopez, 2021).

Self-efficacy is an important trait to examine in undergraduate nursing students, as self-efficacy is needed for nursing students to believe they can successfully care for patients. In a literature review, Shorey and Lopez (2021) propose that self-efficacy in clinical performance and nursing course completion is developed in nursing students directly through participation in clinical experience and vicariously through observation in the classroom, laboratory, and clinical settings. In addition, Shorey and Lopez (2021) claimed that self-efficacy can aid with learning nursing skills, developing critical thinking, and promoting academic success. Bandura’s Self-Efficacy Theory has been used as the theoretical framework by many studies in nursing education that focus on the effect that participation in simulation-based experiences (SBE) has on self-efficacy in undergraduate nursing students (Akhu-Zaheya et al., 2013; Al Gharibi et al., 2021; Arslan et al., 2018; Lin, 2016;). Akhu-Zaheya et al. (2013) examined self-efficacy in nursing students’ ability to perform resuscitation. General self-efficacy was measured in a one-group quasi-experimental study by Al Gharibi et al. (2021) that examined the differences in nursing students’ general self-efficacy after repeating the same SBE. Arslan et al. (2018) measured differences in perceived self-efficacy about performing pediatric nursing skills in nursing students who only attended scheduled classes and clinical rotations versus those nursing
students who also attended simulation-based skills training. In a study by Lin (2016) general self-efficacy was examined in nursing students’ ability to perform fundamental nursing skills when exposed to SBE. Bulfone et al. (2016) used Bandura’s Self-Efficacy Theory to develop and validate a scale measuring nursing student self-efficacy in performing psychomotor skills.

**Self-Efficacy in Nursing Education**

Nursing students in many nursing programs learn in simulated settings before engaging in patient care in clinical settings. Bandura (1977) hypothesized that direct participation in a situation can affect self-efficacy for performing a specific action in a similar situation. Therefore, the direct hands-on learning that nursing students are exposed to in simulated environments can help increase self-efficacy. A review of the literature examining the effect of participation in SBE on self-efficacy in nursing education was conducted. Findings demonstrated that self-efficacy has been measured in two ways: general self-efficacy and self-efficacy related to carrying out specific behaviors in nursing.

General self-efficacy is defined by Scherbaum et al. (2006) as the perception one has in their ability to perform in a variety of different situations. General self-efficacy has been compared to a person’s general belief that they have the competence to deal with any challenges they face (Scherbaum et al., 2006). One tool that has been widely used to measure general self-efficacy in nursing education studies is Schwarzer and Jerusalem’s General Self-Efficacy Scale (1995). The General Self-Efficacy Scale (GSE) does not measure self-efficacy related to one specific task as it measures a person’s ability to handle new and/or difficult tasks in a variety of domains of human functioning (Scherbaum et al., 2006; Schwarzer, 2018). Schwartzer (2018) indicates that perceived self-efficacy is relevant for clinical practice. Criticisms of measuring general self-efficacy include that it does not examine self-efficacy for a specific behavior
(Schawarzer, 2018) and general self-efficacy may be similar to other self-evaluation constructs such as self-esteem (Scherbaum et al., 2006).

Multiple studies in nursing education have examined the effect of SBE on the general self-efficacy of nursing students. Al Gharibi et al. (2021) used a modified version of the GSE to examine repeated participation in SBE on general self-efficacy and found that general self-efficacy was significantly higher after participation in the repeated SBE than before participation in the first SBE. A General Self-Efficacy Scale developed by Sherer et al. was used to evaluate the effects of simulation-based skills training on first-year nursing students’ general self-efficacy (Karabacak et al., 2019). Karabacak et al. (2019) found that general self-efficacy scores were significantly lower after participating in simulation-based skills training. Cardoza and Hood (2012) used the GSE and found that general self-efficacy of the ability to respond to patient conditions during clinical experiences decreased after participation in one SBE but increased after participation in the next two. The researchers believe this finding was due to students having unrealistic beliefs about their clinical performance before participating in the first simulation scenario. Lin (2016) examined the relationship of general self-efficacy in nursing students to anxiety levels and found that higher levels of general self-efficacy are significantly correlated to lower anxiety levels when performing nursing skills. Helms and Walker (2018) examined the perceived general self-efficacy of nursing students when participating in a flipped classroom experience using SBE and found that GSE scores were significantly higher after participating in the flipped classroom experience.

Multiple studies have examined the effect of SBE on self-efficacy related to specific behaviors found in undergraduate nursing students. Kimhi et al. (2016) found that students who participate in 3 days of SBE have significantly higher self-efficacy in performing nursing skills
using the nursing process than before they participated in the SBE. In comparison studies, it was demonstrated that students who participate in high-fidelity simulation experiences have significantly higher self-efficacy scores for performing basic life support in a resuscitative event (Akhu-Zaheya et al., 2013) and in managing a patient with heart failure (Shinnick & Woo, 2014) than students who do not participate in SBE. Significant increases in self-efficacy in caring for patients with mental health diagnoses were also found in students who participated in SBE with standardized patients (Alfes, 2015). Park et al. (2017) and Dunn et al. (2014) examined self-efficacy in nursing students’ ability to communicate with patients and provide nursing care and found significant increases in self-efficacy after participation in a 30-hour simulation practicum (Park et al., 2017) and participation in two simulation scenarios a week for 16 weeks (Dunn et al., 2014).

Overall, the literature demonstrates that students who participate in SBE may have a decrease in general self-efficacy after participation in the first SBE, then demonstrate an increase in general self-efficacy after subsequent participation in SBE (Al Gharibi et al., 2021; Cardoza & Hood, 2012; Karabacak et al., 2019). Self-efficacy related to specific nursing student behaviors increases after participation in SBE. In a literature review, Walsh et al. (2020), stated that self-efficacy is important to study in nursing students, as higher levels of self-efficacy are a key characteristic found in resilient nursing students and are a significant predictor of motivation for learning. Their literature review did not distinguish between types of self-efficacy in nursing students and the previous studies mentioned above demonstrate that participation in SBE positively influences general self-efficacy in nursing students. In addition, other self-efficacy scales found in nursing education literature, measure self-efficacy for specific types of nursing care or skills. There was not a self-efficacy scale found that measured self-efficacy for the
specific type of nursing care that was being taught to the students in this study (caring for a patient with a gastrointestinal disorder). Therefore, this study compares the effect of participation in simulation-based case studies in the classroom versus attending a traditional lecture on baccalaureate nursing students’ general self-efficacy. It is hypothesized that nursing students who participate in simulation-based case studies in the classroom will have higher general self-efficacy scores than nursing students who attend a traditional lecture.

Methods

Study Design

A quasi-experimental two-group posttest-only design was used to examine the differences in general self-efficacy in undergraduate nursing students who attended a traditional lecture in a medical-surgical course versus those who participated in simulation-based case studies. To ensure all participants received the same course content in the same manner, one cohort of students was invited to participate as the control group and the next cohort of students served as the experimental group.

Participants

Convenience sampling was used to recruit baccalaureate nursing students enrolled in the medical-surgical course at a public university in the South-Central region of the United States where the primary researcher was employed. All students registered for the course were invited to participate; however, students repeating the course were excluded from data analysis to not skew results.
**Procedure and Intervention**

Institutional review board approval was obtained from both Teachers College (Appendix A) and the study site (Appendix B). Students were informed both verbally and in writing at the start of the class meeting in which the study was being implemented. Signed written consent was obtained from students who volunteered to participate in the study. Students who chose not to participate in the study were still included in the teaching during the class meeting as this was their regularly scheduled class.

The study was conducted over two consecutive semesters. The spring 2021 cohort (Cohort A) attended a traditional lecture during the class meeting. The fall 2021 cohort (Cohort B) participated in simulation-based case studies. The topic for the class meeting in both cohorts was Care of the Patient with Gastrointestinal Problems.

**Cohort A**

Informed consent was obtained at the start of the class meeting. Students choosing to participate in the study were instructed to complete a demographic survey. Students then attended a traditional lecture titled Care of the Patient with Gastrointestinal Problems led by a nursing instructor. At the end of the lecture session, students participating in the study were instructed to complete the 10-item General Self-Efficacy Scale. The entire class period lasted about 3 hours.

**Cohort B**

Students in Cohort B were instructed to listen to a video recording of the same lecture as Cohort A attended that was housed on the course learning management system in preparation for class. At the start of the class meeting, informed consent was obtained and the students participating in the study were instructed to complete the same demographic survey as Cohort A.
Upon completion of the survey, students were prebriefed on the objectives of the simulation-based case studies and given instructions on how to work through the simulation stations set up in the classroom. The four simulation stations reflected patients with the diagnoses of (1) pancreatitis, (2) cholecystitis and cholelithiasis, (3) upper gastrointestinal bleed related to a peptic ulcer, and (4) hepatitis B. Students were divided into groups of eight to ten students and instructed to work together to complete the case study questions at each station. Each station contained a simulation manikin, a written case study, and a condensed patient medical record. Below the typed case study were four to six questions that the students were to answer about caring for the simulated patient. The manikins were programmed with vital signs reflecting the case study patient and were staged with additional equipment needed to make the scenario more realistic. For example, a nasogastric tube was inserted and connected to a suction canister containing gastric content to reflect the orders for the patient at the pancreatitis station. The students were given 15-20 minutes at each station to perform a patient assessment, read the associated case study and patient chart, and answer the case study questions. Two sets of the stations were set up in two different classrooms to allow the entire class (74 students) to participate at the same time. The objectives, case studies, associated questions, and equipment needed at each station can be found listed in the simulation scenario template (Appendix C).

Once all groups rotated through all four stations, students were brought back together and participated in a large group debriefing facilitated by a nursing instructor. During this one-hour debriefing session, the questions from each case study were reviewed to ensure the students’ understanding of each scenario. Questions used during the debriefing can be found in the simulation scenario template (Appendix C). At the end of the debriefing session, students were
asked to complete the same General Self-Efficacy Scale as Cohort A. The entire classroom session took approximately 2.5 hours to complete.

**Instruments**

Demographic data were obtained by a researcher-developed questionnaire. Self-efficacy was measured using the General Self-Efficacy Scale.

**Demographic Survey**

The six-item demographic survey was developed by the researcher to determine the gender, age, ethnicity, race, prior education, and prior healthcare certifications of participants (Appendix D) to determine demographic differences in the two cohorts. It should be noted that this study was part of a larger dissertation study that also used the demographic survey to examine potential differences in clinical judgment based on demographic characteristics.

**General Self-Efficacy Scale**

Self-efficacy was measured using the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995). The GSE is a self-administered scale that assesses the general sense of perceived self-efficacy of the individual, the belief that they can perform novel or difficult tasks, or cope with adversity (Schwarzer, 2018). The GSE consists of 10 items that are rated with a 4-point Likert-type scale with responses to each item being 1 = not at all true, 2 = hardly true, 3 = moderately true, and 4 = exactly true (Appendix H). Each item refers to successful coping and can be attributed to internal feelings of success. The scale is scored by adding up the sum of the responses for a total score ranging from 10-40. Reliability has been reported with Cronbach’s alpha ranging from 0.76-0.90 in samples from 23 nations (Schwarzer, 2018). Criterion-related validity was demonstrated with positive correlations to favorable emotions, dispositional
optimism, and work satisfaction (Schwarzer, 2018). Permission to use the GSE was obtained from the website of Dr. Ralf Schwarzer, who is a co-creator of the scale (Appendix I).

**Analysis**

Data analysis was performed using IBM SPSS Statistics Version 28. Demographic data were examined using descriptive statistics. Differences in demographic characteristics were examined by Mann-Whitney U (age), Chi-square test of homogeneity (ethnicity), and Fisher’s exact test (race, previous degree, and healthcare certifications held). Mean differences in self-efficacy of the two cohorts were examined using an independent samples t-test.

**Results**

A total of 137 students were enrolled in the medical-surgical course over the two semesters (63 students in Cohort A and 74 students in Cohort B). Cohort A had 54 students consent to participate in the study (85.7% participation rate) and Cohort B had 66 students consent to participate in the study (89.2 % participation rate). In Cohort B, one student was excluded from data analysis due to their repeating the course. Despite consenting to participate in the study, response numbers to the GSE reported in this study were low. Cohort A had 32 students complete the GSE and Cohort B had 56 students complete the GSE. These numbers are lower than the proposed sample of 64 participants per group needed for power. It should be noted that this study was part of a larger dissertation study that asked participants to complete multiple pretests and posttest surveys and instruments throughout the class meeting. Therefore, it is hypothesized that some students may have had survey fatigue and stopped completing surveys. Since the GSE was the last survey that was administered, survey fatigue may explain the decreased number of respondents.
Demographic Variables

The ages of participants ranged from 20 to 38 years (mean = 21.55) with the majority (95.2%) 25 years or younger. The sample predominantly identified their gender as female (85.8%) and their race as White/Caucasian (87.6%). These findings are consistent with the population of the school of nursing where the study was conducted. Table 2.2 shows the demographic characteristics reported by the participants. There were no statistically significant differences found between the students in the two cohorts in any demographic characteristic examined.

General Self-Efficacy

Students in both cohorts completed the GSE at the end of the class meeting. A total of 32 students completed the GSE in Cohort A (59.3% response rate) and 56 completed the GSE in Cohort B (84.8% response rate). Scores for Cohort A ranged from 25 to 38 with a mean of 31.47 (SD = 3.048). Scores for Cohort B ranged from 22 to 38 with a mean of 30.93 (SD = 3.657). An independent-samples *t* test was done to determine any significant differences in mean general self-efficacy scores between the two cohorts. Findings demonstrate that students in Cohort A who attended the traditional lecture had slightly higher self-efficacy scores (difference = 0.54), however, the difference in the mean scores between Cohort A and B was not statistically significant (*t* (1, 86) = .707, *p* = .482).

Discussion

The purpose of this study was to determine if general self-efficacy scores were higher in baccalaureate nursing students who participated in simulation-based case studies versus those who attended a traditional lecture. The hypothesis was not supported, and it was found that
nursing students who attended a traditional lecture had slightly higher general self-efficacy scores than students who participated in simulation-based case studies.

Few studies were found that measured self-efficacy in undergraduate nursing students when participating in classroom teaching methods. El Meghawri and Sleem (2021) used a modified version of the self-efficacy scale from the Motivated Strategies for Learning Questionnaire and found that using concept mapping as a teaching strategy in the classroom significantly increased self-efficacy in learning scores in second-semester nursing students. Helms and Walker (2018) used the GSE and found that a flipped classroom using SBE significantly increased perceived self-efficacy scores in senior nursing students. Using the Baccalaureate Nursing Student Teaching-Learning Self-Efficacy Questionnaire, Goldenberg et al. (2005) found that nursing students’ self-efficacy related to health teaching increased significantly after participating in role-playing with case study simulation sessions in the classroom. Kim (2018) found that there was no significant difference in general self-efficacy scores using a general self-efficacy subscale in nursing students who participated in lecture versus roleplay before engaging in a simulation. The low number of studies found on various classroom teaching strategies’ effect on self-efficacy demonstrates a gap in the research in this area.

There are a couple of studies that support the lower general self-efficacy scores of students participating in simulation-based studies found in this study. Al Gharibi et al. (2021) examined the effect of nursing students participating in repeating simulations and found that general self-efficacy scores decreased from the pretest to the midpoint test using the GSE. It was suggested that this finding is due to student perception that they could perform in the simulation, but once encountering the scenario, they realized they did not know how to perform as they
thought. Similarly, Karabacak et al. (2019) found that students had significantly lower general self-efficacy scores on the GSE after performing in a simulation scenario. Again, students may have believed they could perform at a high level until they were faced with participation in the scenario. Once in the scenario, they may have realized they were not as competent as they thought.

The findings in the above-mentioned studies may help explain the rationale for the slightly lower general self-efficacy scores reported in the nursing students who participated in the simulation-based case studies. Participation in the simulation-based case study may have led students to realize that they did not have the skills needed to successfully care for the patients in the simulation scenarios. Students in the lecture group did not have an opportunity to test their abilities in caring for patients with the gastrointestinal diseases covered in the lecture.

Emotional arousal can also affect self-efficacy. Anxiety and stressful situations can negatively impact both performance and self-efficacy (Bandura, 1977). The use of simulation-based case studies as a classroom teaching strategy was unfamiliar to the participants in the study. This novel teaching strategy combined with working with groups of students may have been overwhelming and caused anxiety in the participants. This could also explain why the students who participated in simulation-based case studies had a lower mean self-efficacy score than those who attended the traditional lecture. It is recommended in future studies to obtain a self-efficacy score on students before participation in either teaching strategy to allow comparisons to be made both among and between groups.

The instrument in this study measured general self-efficacy and did not measure self-efficacy in performing nursing tasks. This may explain why there was no significant difference between groups. Specific self-efficacy scales may be more sensitive than the GSE to educational
interventions. However, a positive correlation between general self-efficacy and task-specific self-efficacy has been demonstrated in the literature (Sherer et al., 1982). Orkaizagirre-Gómara et al. (2020) found a positive correlation between nursing self-efficacy and general self-efficacy in nursing students. Additionally, Scherbaum et al. (2006) found that the psychometric properties of the GSE are acceptable and support the construct validity of the GSE.

Limitations

This study had several limitations. The use of a convenience sample may limit the generalizability of the findings to other populations as only students enrolled in a medical-surgical course at one public state university participated in this study. However, homogeneity between groups was demonstrated. The small sample size may also limit findings. Only 73.3% of students (88/120) who consented to participate in the study completed the GSE. The low response rate is seen more in Cohort A where only 59.3% of participants completed the GSE. It is hypothesized that this is due to the students in Cohort A being exposed to the passive teaching strategy of lecture and may have been mentally overwhelmed by all the material they had been exposed to in the teaching session. Also, this study was part of a larger dissertation study where students had to respond to multiple surveys. This survey was the last survey they were asked to complete at the end of the class meeting held later in the day. This low response rate reduces the statistical power and limits the ability to find true relationships among the variables. Last, the use of a posttest-only design limits the comparison of the two cohorts. The use of a pretest could have helped determine if the self-efficacy scores were similar before exposure to the teaching methods of interest in this study.
Conclusion

Nurse educators should continue to integrate teaching strategies into the curriculum that promote success in nursing students. Research shows that high self-efficacy scores may promote nursing students’ attributes to be successful. The positive effect of participation in simulation-based experiences on the development of self-efficacy is demonstrated in the literature; however, a gap in the literature is noted in the effect of classroom teaching strategies on nursing student self-efficacy. This study demonstrated that participation in simulation-based case studies and attendance in traditional lectures led to similar general self-efficacy scores in nursing students enrolled in a medical-surgical course. More research is needed to determine which classroom teaching strategies are most effective in developing self-efficacy in nursing students.
References


Dunn, K. E., Osborne, C., & Link, H. J. (2014). High-fidelity simulation and nursing student self-efficacy: Does training help the little engines know they can? *Nursing Education Perspectives, 35*(6), 403-404. doi: 10.1097/NCN.0b013e3182388936


Chapter 5: Dissertation Summary

This dissertation examined the effectiveness of simulation-based case studies as an innovative teaching strategy compared to a traditional lecture on knowledge acquisition, clinical judgment, and general self-efficacy in baccalaureate nursing students enrolled in a medical-surgical course. Secondarily, the study sought to determine if there were relationships between demographic characteristics of baccalaureate nursing students and their clinical judgment scores. Guided by the NLN Jeffries Simulation Theory, Tanner’s Clinical Judgment Model, and Bandura’s Self-Efficacy Theory, this sample examined 120 student nurses enrolled in their second semester of a baccalaureate program at a public state university over two semesters.

The manuscript for Chapter 2 reported the findings of comparing the effect of traditional lecture versus simulation-based case studies as a classroom teaching strategy on knowledge acquisition in nursing students. Results demonstrated that students who participated in simulation-based case studies did not have significantly higher mean gains on the quiz scores than students who attended a traditional lecture. However, it was determined that students in both the traditional lecture and simulation-based case study cohort had significant increases in the knowledge posttest. This demonstrates that both teaching strategies are effective in promoting knowledge acquisition in nursing students.

Chapter 3 presented an examination of the effect of the two teaching strategies of interest on clinical judgment scores in nursing students. Additionally, it reports on relationships between the demographic characteristics of nursing students and their clinical judgment scores. The results revealed no significant differences in the mean clinical judgment scores based on the teaching strategy they were exposed to; however, there was a significant difference in clinical judgment scores from pre-intervention to post-intervention in both cohorts. These findings
demonstrate that both simulation-based case studies and traditional lecture as a teaching strategy are effective in promoting clinical judgment in nursing students. Secondarily, it was noted that demographic characteristics in nursing students were not significant predictors of clinical judgment scores.

The final manuscript, Chapter 4, compared both teaching strategies; simulation-based case studies and traditional lecture, on general self-efficacy in nursing students. Using the General Self-Efficacy Scale, no significant differences emerged in self-efficacy scores between the two cohorts. Both cohorts reported moderate to high self-efficacy scores suggesting that both teaching strategies may have affected general self-efficacy.

**Implications for Nursing Education**

Nursing education continues to transform with recent emphasis on incorporating more innovative, active teaching strategies into the classroom that can promote knowledge and clinical judgment in nursing students. More than ever before, nurse educators are being challenged to help develop knowledge, skills, and attitudes in nursing students that will prepare them for entry-level practice (American Association of Colleges of Nursing, 2021). Dickison et al. (2019) reiterate that nursing students must have sound clinical judgment upon graduating from nursing school to adequately care for patients in today’s challenging healthcare environment. Nurse educators must incorporate teaching strategies in both the classroom and clinical setting that will promote clinical judgment in nursing students.

One promising innovative teaching strategy is the integration of simulation into the classroom. As reported by Klenke-Borgmann et al. (2021), the effect of using simulation in the classroom on clinical judgment is understudied in nursing education. Therefore, this study examined the effect of simulation-based case studies as a classroom teaching strategy on
knowledge and clinical judgment. The results of this study demonstrated that the incorporation of simulation-based case studies as an innovative teaching strategy in the classroom can promote knowledge acquisition and clinical judgment in nursing students. When comparing the use of simulation-based case studies to a traditional lecture as a teaching strategy, it was found that students did have slightly higher quiz scores following participation in the simulation-based case studies. Although this increase in score was not significant, these results demonstrate that an active teaching strategy that integrates simulation into the classroom is just as effective in promoting knowledge acquisition in nursing students as a traditional lecture. Similarly, when comparing clinical judgment scores of nursing students who participated in simulation-based case studies versus a traditional lecture, there was no significant difference found. This demonstrates that both teaching strategies are effective in the promotion of clinical judgment in nursing students.

Self-efficacy has been examined extensively in nursing education as it has been related to success in critical thinking, academic progression, and acquisition of clinical skills and competencies (Shorey & Lopez, 2021). However, few studies have examined the effect of classroom simulation as a teaching strategy on self-efficacy. Therefore, this study investigated the general self-efficacy scores of students after participation in simulation-based case studies in the classroom. It was found that participation in simulation-based case studies in the classroom has a positive effect on general self-efficacy in nursing students.

The hypothesis that participation in simulation-based case studies would be more effective than attending a traditional lecture in knowledge acquisition, development of clinical judgment, and general self-efficacy in baccalaureate nursing students was not supported. The effect seen on knowledge, clinical judgment, and general self-efficacy when participating in
high-fidelity simulation-based experiences may have been diminished due to large groups participating together in the simulation-based case studies. Typically, students are assigned in small groups of three to five students in a high-fidelity simulation and each student is assigned a specific role. In the simulation-based case studies, students were in large groups of eight to ten students and roles were not assigned. Therefore, some students could have been passive and chose not to participate which may have decreased their learning. Additionally, students were asked to prepare for the simulation-based case study classroom experience by listening to a recorded lecture. Students who chose not to listen to the recorded lecture before class would not have gotten the same knowledge as those who participated in the traditional lecture or listened to the recorded lecture.

**Direction for Future Research**

Future research should continue to examine in-class simulations as an active teaching strategy in nursing education. The positive effects of participation in simulation-based experiences as a clinical teaching strategy have been studied extensively in nursing education. However, there are not many studies that examine the use of simulation as a classroom teaching strategy. Nursing education needs to continue to study the effects of simulation-based learning in the classroom. Due to limitations in this study, the findings may not be generalizable to other populations as these results reflect a sample of students from one school of nursing. In addition, the study had a small sample size and relied upon self-reporting measures for two of the surveys. The researcher developed a knowledge quiz that had low-reliability statistics that could reduce the reliability of these findings. The novelty of participation in simulation-based case studies may have negatively affected findings. Lastly, general self-efficacy was only reported at one
time, so increases in general self-efficacy from pre-intervention to post-intervention are unknown.

To continue to determine the effectiveness of simulation as a classroom teaching strategy in nursing education, the following additional research is recommended:

1. Conduct multi-site studies on classroom simulation that capture a larger sample and a more diverse student population.
2. Evaluate the effect of simulation-based case studies on clinical performance.
3. Implement a pretest-posttest experimental study to examine differences in knowledge acquisition, clinical judgment, and general self-efficacy pre-intervention and post-intervention.
4. Implement simulation-based case studies as a classroom teaching strategy across the curriculum and evaluate the effectiveness of this teaching strategy once students are more comfortable engaging with this teaching strategy.
5. Expand studies on simulation-based case studies to evaluate other skills needed in nursing such as communication and teamwork.

The development and implementation of simulation-guided case studies in nursing education provide nurse educators with an active teaching strategy in the classroom that may help increase knowledge acquisition, develop clinical judgment, and increase general self-efficacy in undergraduate baccalaureate nursing students. This teaching strategy serves as a bonus of bringing clinical experiences to the classroom which may help further close the classroom-to-clinical practice gap that continues to persist in nursing.
References


Appendix A

IRB Approval from Teachers College

Attachments:
• Expedited Review Approved by Chair - IRB ID: 21-191.pdf

Teachers College IRB
Columbia University

To: Kesha Becnel
From: Myra Luna Lucero Research Compliance Director
Subject: IRB Approval: 21-191 Protocol
Date: 03/28/2021

Please be informed that as of the date of this letter, the Institutional Review Board for the Protection of Human Subjects at Teachers College, Columbia University has given full approval to your study, entitled “Effectiveness of Simulation-based Case Studies in Undergraduate Nursing Students (a.k.a. Lecture Versus Simulation Case Studies: Which Teaching Strategy Promotes Learning and Clinical Judgment in Nursing Students),” under Expedited Review on 03/28/2021: Category (7) Research on individual or group characteristics or behavior

The approval is effective until 03/27/2022.

The IRB Committee must be contacted if there are any changes to the protocol during this period. Please note: If you are planning to continue your study, a Continuing Review report must be submitted to either close the protocol or request permission to continue for another year. Please submit your report by 03/13/2022 so that the IRB has time to review and approve your report if you wish to continue your study. The IRB number assigned to your protocol is 21-191. Feel free to contact the IRB Office (212-678-4105 or irb@tc.edu) if you have any questions.

Please note that your Consent form bears an official IRB authorization stamp and is attached to this email. Copies of this form with the IRB stamp must be used for your research work. Further, all research recruitment materials must include the study’s IRB-approved protocol number.

As the PI of record for this protocol, you are required to:
• Use current, up-to-date IRB approved documents
• Ensure all study staff and their CITI certifications are on record with the IRB
• Notify the IRB of any changes or modifications to your study procedures
• Alert the IRB of any adverse events

You are also required to respond if the IRB communicates with you directly about any aspect of your protocol. Failure to adhere to your responsibilities as a study PI can result in action by the IRB up to and including suspension of your approval and cessation of your research.

You can retrieve a PDF copy of this approval letter from Mentor IRB.

When your study ends, please visit the IRB Mentor site. Go to the Continuing Review tab and select “terminate” from the drop-down menu.

Best wishes for your research work.

Sincerely,
Dr. Myra Luna Lucero
Research Compliance Director
IRB@tc.edu
Appendix B

IRB Approval from Study Site

I would like to thank you for submitting your project entitled “Lecture Versus Simulation Case Studies: Which Teaching Strategy Promotes Learning and Clinical Judgement in Nursing Students” to the IRB for review. It has been reviewed and has been Approved based on the following criteria:

Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your project has approval through April 1, 2022. Should you need additional time to complete the study you will need to apply for an extension prior to that date. The IRB should be notified of any planned changes in the procedures during the approval period, as additional review will be required by the IRB, prior to implementing any changes, except when changes are necessary to eliminate immediate hazards to the research participants. The researcher is also responsible for promptly notifying the IRB of any unanticipated or adverse events involving risk or harm to participants or others as a result of the research.

All future correspondence regarding this project should include the case number AY 2021-2116.
Appendix C

Simulation-Based Case Study Scenarios

Simulation Design Template
(revised May 2019)
Mr. Morgan Simulation

Date: TBD
Discipline: Nursing
Expected Simulation Run Time: 15 minutes
Location: classroom
Today’s Date: 11/5/2020

File Name: Mr. Morgan
Student Level: Second-semester
Guided Reflection Time: 30 minutes
Location for Reflection: classroom

Brief Description of Client

Name: Mr. Morgan
Date of Birth: 7/10/XX
Gender: M  Age:  43
Race:  White
Major Support:  Family
Allergies:  NKDA  Immunizations:  UTD
Attending Provider/Team: Dr. Jones
Past Medical History:  Tonsillectomy at age 4

History of Present Illness: Back injury at work 2 weeks ago. Taking Ibuprofen 600 mg for the pain twice a day. Complaining of heartburn the last 2-3 days that is relieved when taking Tums. Abdominal pain started yesterday evening accompanied by nausea and vomiting that continued to get worse so he reported to the ER. Admitted to the medical-surgical floor with a possible upper GI bleed.

Social History:  socially drinks alcohol a “few times” a month, non-smoker

Primary Medical Diagnosis:  Upper GI bleed
**Surgeries/Procedures & Dates:** Scheduled for EGD today

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**Simulation Design Template** (revised May 2019)


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**Psychomotor Skills Required of Participants Prior to Simulation**

(list skills)
- Physical assessment of patient
- Vital signs

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**Cognitive Activities Required of Participants Prior to Simulation**

(textbooks, lecture notes, articles, websites, etc.)
- Chapter readings in textbook on PUD and upper GI bleed
- View recorded lectures on PUD and upper GI bleed

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**Simulation Learning Objectives**

**Simulation Scenario Objectives** (limit to 3 or 4)

- Perform a focused assessment on a patient with a suspected upper GI bleed.
- Prioritize nursing interventions for a patient with a suspected upper GI bleed.
- Provide patient teaching to a patient diagnosed with a peptic ulcer.

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**For Faculty: References, Evidence-Based Practice Guidelines, Protocols, or Algorithms Used for This Scenario:**

---
Setting/Environment

- Emergency Room
- Medical-Surgical Unit
- Pediatric Unit
- Maternity Unit
- Behavioral Health Unit
- ICU
- OR / PACU
- Rehabilitation Unit
- Home
- Outpatient Clinic
- Other:

Equipment/Supplies (choose all that apply to this simulation)

Simulated Patient/Manikin/s Needed:
Medium fidelity manikin

Recommended Mode for Simulator:
(i.e. manual, programmed, etc.) vital signs programmed

Other Props & Moulage:

<table>
<thead>
<tr>
<th>Equipment Attached to Manikin/Simulated Patient:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ ID band</td>
</tr>
<tr>
<td>☑ IV tubing with primary line fluids running at 100 mL/hr</td>
</tr>
<tr>
<td>☑ Secondary IV line running at ___ mL/hr</td>
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<tr>
<td>☑ IVPB with ______ running at mL/hr</td>
</tr>
<tr>
<td>☑ IV pump</td>
</tr>
<tr>
<td>☑ PCA pump</td>
</tr>
<tr>
<td>☑ Foley catheter with ___mL output</td>
</tr>
<tr>
<td>☑ 02</td>
</tr>
<tr>
<td>☑ Monitor attached</td>
</tr>
<tr>
<td>☑ Other: NGT to low intermittent wall suction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Essential Equipment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medications and Fluids:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Equipment Available in Room:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ Bedpan/urinal</td>
</tr>
<tr>
<td>☑ 02 delivery device (type)</td>
</tr>
<tr>
<td>☑ Foley kit</td>
</tr>
<tr>
<td>☑ Straight catheter kit</td>
</tr>
<tr>
<td>☑ Incentive spirometer</td>
</tr>
<tr>
<td>☑ Fluids</td>
</tr>
<tr>
<td>☑ IV start kit</td>
</tr>
<tr>
<td>☑ IV tubing</td>
</tr>
<tr>
<td>☑ IVPB tubing</td>
</tr>
<tr>
<td>☑ IV pump</td>
</tr>
<tr>
<td>☑ Feeding pump</td>
</tr>
<tr>
<td>☑ Crash cart with airway devices and emergency medications</td>
</tr>
<tr>
<td>☑ Defibrillator/pacer</td>
</tr>
<tr>
<td>☑ Suction</td>
</tr>
<tr>
<td>☑ Other:</td>
</tr>
</tbody>
</table>
Roles

- Nurse 1
- Nurse 2
- Nurse 3
- Provider (physician/advanced practice nurse)
- Other healthcare professionals: (pharmacist, respiratory therapist, etc.)
- Observer(s)
- Recorder(s)
- Family member #1
- Family member #2
- Clergy
- Unlicensed assistive personnel
- Other: All students in group are working together as nurses to assess patient and work through guided case studies typed up and at the bedside

Guidelines/Information Related to Roles

All students in a large group of 8-10 are working together to assess the patient and use the provided patient chart at the bedside to work through a typed-up guided case study.

Pre-briefing/Briefing

Prior to report, participants will need pre-briefing/briefing. During this time, faculty/facilitators should establish a safe container for learning, discuss the fiction contract and confidentiality, and orient participants to the environment, roles, time allotment, and objectives.

For a comprehensive checklist and information on its development, go to http://www.nln.org/sirc/sirc-resources/sirc-tools-and-tips#simtemplate.
Pre-briefing is done by the nursing instructor with instructions on how to progress through guided case study and that the students are expected to work together to assess the manikin and work through the guided case study.

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**Report Students Will Receive Before Simulation**
(Use SBAR format.)

**Person providing report:** The report for the student will be given via the typed-up scenario on the guided case study found at the patient’s bedside.

**Situation:** Last night Mr. Morgan started having abdominal pain accompanied by nausea and vomiting. It continued to get worse throughout the night so he came into the ER. He has just been admitted to the medical-surgical floor.

**Background:** Mr. Morgan is a 43-year-old who hurt his back at work 2 weeks ago and has been taking 600mg ibuprofen twice a day for the pain. He has started having “heartburn” 2-3 times a day which he said is relieved by taking Tums.

**Assessment:** Abdominal x-ray showed nonspecific gas pattern with moderate amounts of stool.

**Recommendation:** Students are prompted by the guided case study questions to work through the following:
- Do an assessment of Mr. Morgan and look through his chart. List the abnormal assessment findings.
- What concerns do you have about the output in the suction container connected to his NG tube?
- Look at the physician’s orders. Put them in order of priority.
- Mr. Morgan has his EGD and he is diagnosed with gastritis and an ulcer in the stomach that is oozing blood. The bleeding is stopped with cautery. Biopsies are obtained of the gastric mucosa and are negative for H. pylori. What do you think caused the bleeding ulcer? Why did the physician obtain a biopsy of the gastric mucosa? If the biopsy would have come back positive for H. pylori, what treatment would you expect the physician to order?
- Mr. Morgan will be discharged home with a prescription for Protonix 40 mg orally daily. What will you teach Mr. Morgan about this medication?

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### Guided Case Study Scenario Progression Outline

<table>
<thead>
<tr>
<th>Patient Name: Mr. Morgan</th>
<th>Date of Birth: 7/10/XX</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Timing (approx.)</th>
<th>Guided Case Study Script</th>
<th>Expected Interventions</th>
</tr>
</thead>
</table>

95
Do an assessment of Mr. Morgan and look through his chart. List the abnormal assessment findings.

What concerns do you have about the output in the suction container connected to his NG tube?

Learners are expected to:
- Perform physical assessment
- Obtain vital signs
- Look at providers orders and lab results

Look at the physician’s orders. Put them in order of priority

Learners are expected to:
- Prioritize provider orders interventions

Mr. Morgan has his EGD and he is diagnosed with gastritis and an ulcer in the stomach that is oozing blood. The bleeding is stopped with cautery. Biopsies are obtained of the gastric mucosa and are negative for H. pylori. What do you think caused the bleeding ulcer? Why did the physician obtain a biopsy of the gastric mucosa? If the biopsy would have come back positive for H. pylori, what treatment would you expect the physician to order?

Mr. Morgan will be discharged home with a prescription for Protonix 40 mg orally daily. What will you teach Mr. Morgan about this medication?

Learners are expected to:
- Progress through case study and answer questions
- Provide patient teaching related to prescribed medication

Debriefing/Guided Reflection

Note to Faculty
We recognize that faculty will implement the materials we have provided in many different ways and venues. Some may use them exactly as written and others will adapt and modify extensively. Some may choose to implement materials and initiate relevant discussions around this content in the classroom or clinical setting in addition to providing a simulation experience. We have designed this scenario to provide an enriching experiential learning encounter that will allow learners to accomplish the listed objectives and spark rich discussion during debriefing. There are a few main themes that we hope learners will bring up during debriefing, but if they do not, we encourage you to introduce them.

All groups will be combined into the classroom and a large group debriefing will be facilitated by the nursing instructor using PowerPoint slides of the guided case study listed above to prompt each phase to discuss how they worked through the scenario.

Themes for this scenario:
- Focused assessment
- Prioritization of nursing interventions
• Patient teaching
Mr. Wilson Simulation

Date: TBD  
Discipline: Nursing  
Expected Simulation Run Time: 15 minutes  
Location: classroom  
Today’s Date: 11/5/2020

File Name: Mr. Wilson  
Student Level: Second-semester medical-surgical  
Guided Reflection Time: 30 minutes  
Location for Reflection: classroom

Brief Description of Client

Name: Mr. Wilson
Date of Birth: 12/15/XX
Gender: M  Age: 48
Race: Black
Major Support: Spouse

Allergies: NKA  Immunizations: unsure- patient hasn’t seen provider in a long time

Attending Provider/Team: Dr. Bennett
Past Medical History: Hasn’t seen a provider in many years

History of Present Illness: Mr. Wilson is a 48-year-old who was admitted yesterday complaining of deep, sharp pain in his ULQ of the abdomen that gets worse when he eats which is accompanied by nausea.

Social History: Doesn’t see provider regularly. Smoker. Drinks “6-pack” a day.
Primary Medical Diagnosis: Pancreatitis
Surgeries/Procedures & Dates: none
Psychomotor Skills Required of Participants Prior to Simulation

- Physical assessment of patient
- Vital signs

Cognitive Activities Required of Participants Prior to Simulation
(textbooks, lecture notes, articles, websites, etc.)
- Chapter readings in textbook on pancreatitis
- View recorded lecture on pancreatitis

Simulation Learning Objectives

Simulation Scenario Objectives (limit to 3 or 4)

- Perform a focused assessment of a patient with pancreatitis.
- Analyze nursing interventions for a patient with pancreatitis.
- Evaluate the significance of abnormal laboratory findings in a patient with pancreatitis.
- Provide patient teaching to a patient diagnosed with pancreatitis.

For Faculty: References, Evidence-Based Practice Guidelines, Protocols, or Algorithms Used for This Scenario:
Setting/Environment

- Emergency Room
- Medical-Surgical Unit
- Pediatric Unit
- Maternity Unit
- Behavioral Health Unit

Equipment/Supplies (choose all that apply to this simulation)

Simulated Patient/Manikin/s Needed:
Medium fidelity manikin

Recommended Mode for Simulator:
(i.e. manual, programmed, etc.) vital signs programmed

Other Props & Moulage:

Equipment Attached to Manikin/Simulated Patient:
- ID band
- IV tubing with primary line fluids running at 100 mL/hr
- Secondary IV line running at ___mL/hr
- IV/PB with ______running at mL/hr
- IV pump
- PCA pump
- Foley catheter with ___mL output
- 02
- Monitor attached
- Other: TPN infusing at 83 mL/hr, NG tube attached to low intermittent wall suction

Other Essential Equipment:

Medications and Fluids:
- Oral Meds:

Equipment Available in Room:
- Bedpan/urinal
- O2 delivery device (type)
- Foley kit
- Straight catheter kit
- Incentive spirometer
- Fluids
- IV start kit
- IV tubing
- IV start kit
- IV pump
- Feeding pump
- Crash cart with airway devices and emergency medications
- Defibrillator/pacer
- Suction
- Other:
Roles

- Nurse 1
- Nurse 2
- Nurse 3
- Provider (physician/advanced practice nurse)
- Other healthcare professionals: (pharmacist, respiratory therapist, etc.)
- Observer(s)
- Recorder(s)
- Family member #1
- Family member #2
- Clergy
- Unlicensed assistive personnel
- Other: All students in group are working together as nurses to assess patient and work through guided case studies typed up and at the bedside

Guidelines/Information Related to Roles

All students in a large group of 8-10 are working together to assess the patient and use the provided patient chart at the bedside to work through a typed-up guided case study.

Pre-briefing/Briefing

Prior to report, participants will need pre-briefing/briefing. During this time, faculty/facilitators should establish a safe container for learning, discuss the fiction contract and confidentiality, and orient participants to the environment, roles, time allotment, and objectives.

For a comprehensive checklist and information on its development, go to http://www.nln.org/sirc/sirc-resources/sirc-tools-and-tips#simtemplate.
Pre-briefing is done by the nursing instructor with instructions on how to progress through guided case study and that the students are expected to work together to assess the manikin and work through the guided case study.

Report Students Will Receive Before Simulation
(Use SBAR format.)

**Person providing report:** The report for the student will be given via the typed up scenario on the guided case study found at the patient’s bedside

**Situation:** Mr. Wilson is a 48-year-old who was admitted yesterday complaining of deep, sharp pain in his ULQ of the abdomen that gets worse when he eats which is accompanied by nausea.

**Background:** He has a past medical history of smoking and drinking “a 6-pack” a day. He states he has not been seen by a physician in a “long time.”

**Assessment:** His current pain is rated 9/10 to the ULQ. CT abdomen was done and shows evidence of pancreatitis.

**Recommendation:** Students are prompted by the guided case study questions to work through the following:

- Assess Mr. Wilson and look through his chart. List the abnormal assessment findings.
- Explain the significance of abnormal lab values.
- Look at Mr. Wilson’s physician orders. What is the rationale for the following orders?
  - TPN @ 83 mL/hr
  - NGT to LIWS
  - Accu checks every 6 hours
- What is it important to teach Mr. Wilson?

Scenario Progression Outline

**Patient Name:** Mr. Wilson

<table>
<thead>
<tr>
<th>Timing (approx.)</th>
<th>Guided Case Study Script</th>
<th>Expected Interventions</th>
</tr>
</thead>
</table>
| 0-8 min          | Assess Mr. Wilson and look through his chart. List the abnormal assessment findings. | Learners are expected to:  
  - Perform physical assessment |
<table>
<thead>
<tr>
<th>Time</th>
<th>Task</th>
<th>Expected Outcomes</th>
</tr>
</thead>
</table>
| 8-12 min | Explain the significance of abnormal lab values.                     | • Obtain vital signs  
• Look at providers orders and lab results  
• Analyze abnormal lab results |
|       | Look at Mr. Wilson’s physician orders. What is the rationale for the following orders? | Learners are expected to:  
Evaluate the rationale for provider orders |
|       | • TPN @ 83 mL/hr  
• NGT to LIWS  
• Accu checks every 6 hours |                                                                                   |
| 12-15 min | What is it important to teach Mr. Wilson?                           | Learners are expected to:  
Formulate patient teaching relevant to Mr. Wilson’s diagnosis and plan of care. |
|       |                                                                                                                |                                                                                  |

Debriefing/Guided Reflection

Note to Faculty
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All groups will be combined into the classroom and a large group debriefing will be facilitated by the nursing instructor using PowerPoint slides of the guided case study listed above to prompt each phase to discuss how they worked through the scenario.

Themes for this scenario:
• Focused assessment
• Evaluate provider’s orders
• Analyze laboratory findings
• Patient teaching
Brief Description of Client

**Name:** Mr. Hyde

**Date of Birth:** 4/6/XX

**Gender:** M  **Age:** 24

**Race:** White

**Major Support:** Family and girlfriend

**Allergies:** NKA

**Attending Provider/Team:** P. Clark, APRN

**Past Medical History:** none-healthy young adult

**History of Present Illness:** He complains of feeling bad the last 3 days and not being able to work at his job as a construction worker. He states he has had headaches, joint pain, low-grade fever, cough, anorexia, vague abdominal pain, and nausea and vomiting, especially after eating fatty foods.

**Social History:** Non-smoker, drinks beers after work each evening, occasional IV drug use

**Primary Medical Diagnosis:** Hepatitis B
Psychomotor Skills Required of Participants Prior to Simulation

(list skills)
- Physical assessment of patient
- Vital signs

Cognitive Activities Required of Participants Prior to Simulation
(textbooks, lecture notes, articles, websites, etc.)
- Chapter readings in textbook on hepatitis
- View recorded lecture on hepatitis

Simulation Learning Objectives

Simulation Scenario Objectives (limit to 3 or 4)
- Perform a focused assessment of a patient with hepatitis.
- Evaluate the significance of abnormal laboratory findings in a patient with hepatitis.
- Provide patient teaching to a patient diagnosed with hepatitis.

For Faculty: References, Evidence-Based Practice Guidelines, Protocols, or Algorithms Used for This Scenario:

### Setting/Environment

- [ ] Emergency Room
- [ ] Medical-Surgical Unit
- [ ] Pediatric Unit
- [ ] Maternity Unit
- [ ] Behavioral Health Unit
- [ ] ICU
- [ ] OR / PACU
- [ ] Rehabilitation Unit
- [ ] Home
- [x] Outpatient Clinic
- [ ] Other:

### Equipment/Supplies (choose all that apply to this simulation)

#### Simulated Patient/Manikin/s Needed:
Medium fidelity manikin

#### Recommended Mode for Simulator:
(i.e. manual, programmed, etc.) vital signs programmed

#### Other Props & Moulage:

#### Equipment Attached to Manikin/Simulated Patient:
- [ ] ID band
- [ ] CV tubing with primary line fluids running at ___mL/hr
- [ ] Secondary IV line running at ___mL/hr
- [ ] IVPB with ________ running at mL/hr
- [ ] IV pump
- [ ] PCA pump
- [ ] Foley catheter with ___mL output
- [ ] 02
- [ ] Monitor attached
- [ ] Other:

#### Other Essential Equipment:

#### Medications and Fluids:
- [ ] Oral Meds:
- [ ] IV Fluids:
- [ ] IVPB:
- [ ] IV Push:
- [ ] IM or SC:

#### Equipment Available in Room:
- [ ] Bedpan/urinal
- [ ] 02 delivery device (type)
- [ ] Foley kit
- [ ] Straight catheter kit
- [ ] Incentive spirometer
- [ ] Fluids
- [ ] IV start kit
- [ ] IV tubing
- [ ] IVPB tubing
- [ ] IV pump
- [ ] Feeding pump
- [ ] Crash cart with airway devices and emergency medications
- [ ] Defibrillator/pacer
- [ ] Suction
- [x] Other: urine specimen collection cup with dark amber-colored urine
Roles

☐ Nurse 1
☐ Nurse 2
☐ Nurse 3
☐ Provider (physician/advanced practice nurse)
☐ Other healthcare professionals:
  (pharmacist, respiratory therapist, etc.)
☐ Observer(s)
☐ Recorder(s)
☐ Family member #1
☐ Family member #2
☐ Clergy
☐ Unlicensed assistive personnel
☒ Other: All students in group are working together as nurses to assess patient and work through guided case studies typed up and at the bedside

Guidelines/Information Related to Roles

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Pre-briefing/Briefing

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Report Students Will Receive Before Simulation

(Use SBAR format.)

**Person providing report:** The report for the student will be given via the typed up scenario on the guided case study found at the patient’s bedside
**Situation:** Mr. Hyde is a 24-year-old who you are seeing in the clinic. He is accompanied by his girlfriend. He states he has had headaches, joint pain, low-grade fever, cough, anorexia, vague abdominal pain, and nausea and vomiting, especially after eating fatty foods.

**Background:** He complains of feeling bad the last 3 days and not being able to work at his job as a construction worker. His past medical history reveals no other health problems. He says he is a nonsmoker and drinks a “few beers” every evening to relax after work.

**Assessment:** The provider sent him to have the following labs drawn: CBC, CMP, LFTs, PT, PTT, INR, Anti-HAV IgM, HBsAg. His urine specimen is sitting on the counter. He is now waiting for the results.

**Recommendation:** Students are prompted by the guided case study questions to work through the following:

- Assess Mr. Hyde and look at his laboratory results. List any abnormal assessment findings as well as abnormal laboratory findings. Interpret the significance of any abnormal lab results.
- The provider informs Mr. Hyde that he has Hepatitis B and his assessment indicates that he is in the acute phase of the disease. Mr. Hyde asks if this disease is contagious. What will you tell him and what will you teach him about this diagnosis?
- What diet will you teach Mr. Hyde to follow?
- Mr. Hyde asks if he can return to work. What will you tell him?
- What will you teach Mr. Hyde to monitor for that may indicate complications of Hepatitis B?

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**Scenario Progression Outline**

**Patient Name:** Mr. Hyde  
**Date of Birth:** 4/6/XX

<table>
<thead>
<tr>
<th>Timing (approx.)</th>
<th>Guided Case Study Script</th>
<th>Expected Interventions</th>
</tr>
</thead>
</table>
| 0-5 min          | Assess Mr. Hyde and look at his laboratory results. List any abnormal assessment findings as well as abnormal lab findings. Interpret the significance of any abnormal lab results. | **Learners are expected to:**  
• Perform physical assessment  
• Obtain vital signs  
• Analyze abnormal lab results |
### Debriefing/Guided Reflection

**Note to Faculty**

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All groups will be combined into the classroom and a large group debriefing will be facilitated by the nursing instructor using PowerPoint slides of the guided case study as listed above to prompt each phase to discuss how they worked through the scenario.

**Themes for this scenario:**

- Focused assessment
- Analyze laboratory findings
• Patient teaching
## Simulation Design Template

(revised May 2019)

Mr. Bennett Simulation

| Date: TBD | File Name: Mr. Bennett-cholecystitis |
| Discipline: Nursing | Student Level: Second-semester medical-surgical |
| Expected Simulation Run Time: 15 minutes | Guided Reflection Time: 30 minutes |
| Location: classroom | Location for Reflection: classroom |
| Today’s Date: 11/5/2020 |

### Brief Description of Client

Name: Mr. Bennett

Date of Birth: 2/1/XX

Gender: M  Age: 65

Race: White

Major Support: Family-Daughter

Allergies: NKDA  Immunizations: UTD

Attending Provider/Team: Dr. Johnson

Past Medical History: Hypertension, hyperlipidemia, CAD

History of Present Illness: Complaining of RUQ abdominal pain rated 8/10 that radiates to mid-back described as deep, sharp pain. The pain started after eating fish and chips at a fast-food restaurant today. Denies vomiting at this time, but had a similar episode last week and vomited then.

Social History: socially drinks alcohol a “few times” a month, non-smoker

Primary Medical Diagnosis: Cholecystitis/cholelithiasis

Surgeries/Procedures & Dates: Scheduled for ERCP today
Psychomotor Skills Required of Participants Prior to Simulation
(list skills)
- Physical assessment of patient
- Vital signs

Cognitive Activities Required of Participants Prior to Simulation
(textbooks, lecture notes, articles, websites, etc.)
- Chapter readings in textbook on cholecystitis/cholelithiasis
- View recorded lectures on cholecystitis/cholelithiasis

Simulation Learning Objectives

Simulation Scenario Objectives (limit to 3 or 4)
- Perform a focused assessment on a patient with suspected cholecystitis/cholelithiasis.
- Analyze laboratory findings on a patient with suspected cholecystitis/cholelithiasis.
- Discuss preop nursing interventions for a patient with suspected cholecystitis/cholelithiasis.
- Provide patient teaching to a patient discharged home after laparoscopic cholecystectomy.

For Faculty: References, Evidence-Based Practice Guidelines, Protocols, or Algorithms Used for This Scenario:
Setting/Environment

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>☑️ Emergency Room</td>
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<tr>
<td>☑️ Behavioral Health Unit</td>
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<tr>
<td>☑️ Other:</td>
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<td>☑️ Home</td>
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<td>☑️ Outpatient Clinic</td>
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</tbody>
</table>

Equipment/Supplies (choose all that apply to this simulation)

Simulated Patient/Manikin/s Needed:
Medium fidelity manikin

Recommended Mode for Simulator:
(i.e. manual, programmed, etc.) vital signs programmed

Other Props & Moulage:

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<table>
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<tr>
<th>Equipment Available in Room:</th>
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</thead>
<tbody>
<tr>
<td>☑️ Urinal containing amber-colored urine</td>
</tr>
<tr>
<td>☑️ 02 delivery device (type)</td>
</tr>
<tr>
<td>☑️ Foley kit</td>
</tr>
<tr>
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<td>☑️ IV tubing</td>
</tr>
<tr>
<td>☑️ IVPB tubing</td>
</tr>
<tr>
<td>☑️ IV pump</td>
</tr>
<tr>
<td>☑️ Feeding pump</td>
</tr>
<tr>
<td>☑️ Crash cart with airway devices and</td>
</tr>
</tbody>
</table>
### Other Essential Equipment:

### Medications and Fluids:
- □ Oral Meds:
- □ IV Fluids:
- □ IVPB:
- □ IV Push:
- □ IM or SC:

### Emergency Medications
- □ Defibrillator/pacer
- □ Suction
- □ Other:

### Roles

<table>
<thead>
<tr>
<th>Nurse 1</th>
<th>Nurse 2</th>
<th>Nurse 3</th>
<th>Provider (physician/advanced practice nurse)</th>
<th>Other healthcare professionals: (pharmacist, respiratory therapist, etc.)</th>
</tr>
</thead>
</table>

| Observer(s) | Recorder(s) | Family member #1 | Family member #2 | Clergy | Unlicensed assistive personnel | Other: All students in group are working together as nurses to assess patient and work through guided case studies typed up and at the bedside |

### Guideline/Information Related to Roles

All students in a large group of 8-10 are working together to assess the patient and use the provided patient chart at the bedside to work through a typed-up guided case study.

### Pre-briefing/Briefing

Prior to report, participants will need pre-briefing/briefing. During this time, faculty/facilitators should establish a safe container for learning, discuss the fiction contract and confidentiality, and orient participants to the environment, roles, time allotment, and objectives.
For a comprehensive checklist and information on its development, go to http://www.nln.org/sirc/sirc-resources/sirc-tools-and-tips#simtemplate.

Pre-briefing is done by the nursing instructor with instructions on how to progress through guided case study and that the students are expected to work together to assess the manikin and work through the guided case study.

Report Students Will Receive Before Simulation
(Use SBAR format.)

**Person providing report:** The report for the student will be given via the typed-up scenario on the guided case study found at the patient’s bedside.

**Situation** Mr. Bennett is a 65-year-old who is admitted to the medical-surgical floor from the ER complaining of RUQ pain rated 8/10 that radiates to his back which is a deep, sharp pain.

**Background:** Mr. Bennett tells you he had a similar episode last week and he did vomit then. He states the pain started after eating fish and chips at a fast-food restaurant today.

**Assessment:** On arrival to his room, you note that Mr. Bennett is nearly doubled over in severe abdominal pain. He tells you that he has pain in his RUQ rated 8/10 that radiates to his mid-back which is a deep, sharp pain. He is more comfortable walking or sitting bent over than lying flat in bed. You notice his abdomen is flat and Mr. Bennett tells you not to touch it because when the doctor palpated it in the ER it was very tender, especially in the right upper part of his stomach. He is nauseated but has not vomited. Mr. Bennett tells you he had a similar episode last week and he did vomit then. He says his last BM was yesterday and that the stool was lighter in color than usual. He is not happy about being in the hospital and is grumpy that his daughter insisted on taking him to the ER.

**Recommendation:** Students are prompted by the guided case study questions to work through the following:

- Assess Mr. Morgan and look through his chart. List the abnormal assessment findings.
- Explain the significance of the abnormal lab findings.
- Soon after you complete your assessment, the radiology report comes back from the abdominal ultrasound the patient had earlier today that shows several retained stones in the common bile duct and a stone-filled gallbladder. You call the report to the surgeon that is consulted to this case and he orders for Mr. Bennett to be NPO and to consent him for an ERCP.
• What is an ERCP? Why is this appropriate for Mr. Bennett? Why does he have to be NPO before this procedure?

• Mr. Bennett undergoes the ERCP, and the gallstones and bile are released, but imaging shows a stone is still retained in the cystic duct and multiple stones remain in the gallbladder. The surgeon decides to perform a laparoscopic cholecystectomy (lap chole) on Mr. Bennett.

• What preop orders do you need to complete before sending Mr. Bennett to surgery?

• Mr. Bennett undergoes a successful lap chole. An intraoperative cholangiogram shows the ducts are cleared of stones after the surgery. When he returns to the floor while performing your assessment you note that his abdomen is soft, but distended. Mr. Bennett’s wife asks if something is wrong. How do you respond?

• Mr. Bennett had an uneventful night immediately following his surgery. He was able to tolerate a soft diet for breakfast the next morning and the doctor has written orders for discharge. Plan your discharge teaching.

Guided Case Study Scenario Progression Outline

<table>
<thead>
<tr>
<th>Timing (approx.)</th>
<th>Guided Case Study Script</th>
<th>Expected Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 min</td>
<td>Assess Mr. Bennett and look through his chart. List the abnormal assessment findings. Explain the significance of the abnormal lab findings.</td>
<td>Learners are expected to: • Perform physical assessment • Obtain vital signs • Look at providers orders and lab results • Analyze laboratory test results</td>
</tr>
<tr>
<td>5-6 min</td>
<td>Soon after you complete your assessment, the radiology report comes back from the abdominal ultrasound the patient had earlier today that shows several retained stones in the common duct.</td>
<td>Learners are expected to: • Evaluate the reason for diagnostic testing</td>
</tr>
</tbody>
</table>
| 6-11 min | Mr. Bennett undergoes the ERCP, and the gallstones and bile are released, but imaging shows a stone is still retained in the cystic duct and multiple stones remain in the gallbladder. The surgeon decides to perform a laparoscopic cholecystectomy (lap chole) on Mr. Bennett.  
- What preop orders do you need to complete before sending Mr. Bennett to surgery? | Learners are expected to:  
- Discuss nursing interventions to be done for a patient undergoing laparoscopic cholecystectomy |}

| 11-15 min | Mr. Bennett undergoes a successful lap chole. An intraoperative cholangiogram shows the ducts are cleared of stones after the surgery. When he returns to the floor while performing your assessment you note that his abdomen is soft, but distended. Mr. Bennett’s wife asks if something is wrong. How do you respond?  
Mr. Bennett had an uneventful night immediately following his surgery. He was able to tolerate a soft diet for breakfast the next morning and the doctor has written orders for discharge. Plan your discharge teaching | Learners are expected to:  
- Progress through case study and answer questions  
- Provide discharge teaching for the patient following laparoscopic cholecystectomy |

---

**Debriefing/Guided Reflection**

**Note to Faculty**

We recognize that faculty will implement the materials we have provided in many different ways and venues. Some may use them exactly as written and others will adapt and modify extensively. Some may choose to implement materials and initiate relevant discussions around this content in the classroom or clinical setting in addition to providing a simulation experience. We have designed this scenario to provide an enriching experiential learning encounter that will allow learners to accomplish the listed objectives and spark rich discussion during debriefing. There are a few main themes that we hope learners will bring up during debriefing, but if they do not, we encourage you to introduce them.

All groups will be combined into the classroom and a large group debriefing will be facilitated by the nursing instructor using PowerPoint slides of the guided case study as listed above to prompt each phase to discuss how they worked through the scenario.
Themes for this scenario:

- Focused assessment
- Analysis of laboratory findings and the need for diagnostic testing
- Patient teaching
Appendix D

Demographic Questionnaire

1) What is your gender?
   Female
   Male

2) What is your age? ______

3) What is your ethnicity?
   Hispanic
   Non-Hispanic

4) How do you characterize your race? (check all that apply)
   Asian
   Black
   Hawaiian/Pacific Islander
   White/Caucasian
   Other

5) Do you have a degree? (select highest degree held)
   No
   Yes, I hold an associate degree
   Yes, I hold a baccalaureate degree
   Yes, I hold a graduate degree

6) Do you hold any of the below-listed certifications? (select all that apply)
   Certified Nursing Assistant/Patient Care Technician
   Emergency Medical Technician
   Licensed Vocational/Practical Nurse
   Respiratory Therapist
Appendix E

Knowledge Quiz

Directions: For the following multiple-choice questions, please read each question and answer choice carefully. Select the best answer.

1. The nurse caring for a patient with hepatitis B would follow which type of precautions?
   *A. Standard precautions
   B. Neutropenic precautions
   C. Droplet isolation precautions
   D. Contact isolation precautions

2. Which laboratory test result will the nurse monitor when evaluating the effectiveness of the treatment regimen for a patient who has acute pancreatitis?
   A. Potassium
   B. Bilirubin
   *C. Amylase
   D. Calcium

3. A patient is admitted to the emergency room with profuse bright-red hematemesis. What is the priority action of the nurse?
   A. Obtain the patient’s health history
   B. Perform gastric lavage with cool water
   C. Perform a thorough pain assessment
   *D. Insert two 20-gauge IV catheters

4. A patient with a history of peptic ulcer disease is hospitalized with symptoms of gastric perforation. What assessment findings would the nurse expect to find?
   *A. Severe, sudden abdominal pain
   B. Hyperactive bowel sounds
   C. Projectile vomiting of undigested food
   D. Profuse bright red hematemesis

5. The nurse is teaching a patient diagnosed with cholecystitis about his diet. Which statement by the patient means the nurse’s teaching has been successful?
   A. “I need to eat foods that are high fiber and high in carbohydrates.”
   *B. “I should eat a low fat and high carbohydrate diet.”
   C. “I should eat 4-6 small meals per day that are low in carbohydrates.”
   D. “I need to eat a low salt and low protein diet.”
6. The nurse understands that constant stress can cause alternations to the gastrointestinal system and cause which of the following abnormal assessment findings?
   A. Decreased gastrointestinal motility resulting in constipation
   B. Decrease production of digestive enzymes resulting in malabsorption
   C. Decreased peristalsis resulting in profuse projectile vomiting
   *D. Increased production of gastric secretions resulting in peptic ulcers

7. The nurse anticipates that the patient diagnosed with peptic ulcer disease will be prescribed which medication?
   A. ondansetron
   *B. pantoprazole
   C. scopolamine
   D. simethicone

8. Which of these patients are at risk for developing Hepatitis B? (Select all that apply).
   A. 46-year-old who works at a preschool
   *B. 22-year-old who has multiple sexual partners
   *C. 45-year-old who uses illicit IV drugs
   D. 34-year-old who has poor personal hygiene
   *E. 38-year-old who works as an emergency room nurse

9. The nurse is planning care for a patient who is scheduled to have an endoscopic retrograde cholangiopancreatography (ERCP). Which priority instructions should be given to the patient?
   A. “This procedure will help decrease the swelling in your abdomen.”
   *B. “You cannot eat or drink anything for at least 8 hours before the procedure.”
   C. “You will have to undergo a bowel cleansing prep before this procedure.”
   D. “You will be given IV contrast medium during this procedure.”

10. The nurse is admitting a patient who reports abdominal pain and nausea. What action should the nurse perform first?
    A. Administer 2 mg hydromorphone IV push as ordered
    *B. Perform an assessment of the patient
    C. Provide the patient with an emesis basin
    D. Call the provider to report the pain
11. What is the priority nursing intervention for a client with the following laboratory values listed in the chart below?

<table>
<thead>
<tr>
<th>Laboratory Test</th>
<th>Result</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total serum protein</td>
<td>6.3 g/dL</td>
<td>7-7.5 g/dL</td>
</tr>
<tr>
<td>Albumin</td>
<td>2.4 g/dL</td>
<td>3-6 g/dL</td>
</tr>
<tr>
<td>AST</td>
<td>75 U/mL</td>
<td>10-40 U/mL</td>
</tr>
<tr>
<td>ALT</td>
<td>62 U/mL</td>
<td>8-40 U/mL</td>
</tr>
<tr>
<td>PT</td>
<td>18 seconds</td>
<td>12-16 seconds</td>
</tr>
<tr>
<td>Ammonia</td>
<td>82 mcg/dL</td>
<td>15-45 mcg/dL</td>
</tr>
</tbody>
</table>

A. Administer Vitamin K injection STAT  
B. Provide protein supplements at each meal  
C. Notify the physician of laboratory results  
*D. Administer oral Lactulose as ordered

12. A nurse is providing teaching to a client diagnosed with pancreatitis who is being discharged home. Which statement by the patient indicates that further teaching needs to be done?
   A. “I will stop drinking alcohol once I am discharged home.”  
   B. “I will order the grilled chicken sandwich for lunch today.”  
   *C. “I never have to worry about being in the hospital for this again.”  
   D. “I will take my pancrelipase every time I eat a meal.”

Directions: For the following items, please determine if the statement is correct or incorrect. If the statement is true, select true and if the statement is false, select false.

13. A patient who is diagnosed with cholecystitis commonly complains of lower right abdominal quadrant pain.
   A. True  
   *B. False

14. Melena indicates a slow bleed from an upper gastrointestinal source.
   *A. True  
   B. False

15. Infection with Helicobacter pylori is a major risk factor for the development of peptic ulcer disease.
   *A. True  
   B. False

16. Instructing a patient with pancreatitis to position themselves in a side-lying position with the head of the bed elevated 45 degrees can help ease abdominal pain.
   *A. True  
   B. False
17. Select the medication in column B, that corresponds with the teaching instructions that should be given to the client in column A and write the corresponding letter in the blanks in column A. Each teaching instruction will only have one correct answer. (Each correct answer is 0.5 points each).

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Instructions</td>
<td>Medication</td>
</tr>
<tr>
<td>______ 1. Carafate</td>
<td>A. Take with food</td>
</tr>
<tr>
<td>______ 2. Lactulose</td>
<td>B. May dilute with juice to help with taste</td>
</tr>
<tr>
<td>______ 3. Misoprostol</td>
<td>C. Monitor for signs of bleeding</td>
</tr>
<tr>
<td>______ 4. Pantoprazole</td>
<td>D. Take before the first meal of the day</td>
</tr>
<tr>
<td></td>
<td>E. Take two hours before other medications</td>
</tr>
</tbody>
</table>
## Appendix F

### Lasater Clinical Judgment Rubric

<table>
<thead>
<tr>
<th>Effective NOTICING involves:</th>
<th>Exemplary</th>
<th>Accomplished</th>
<th>Developing</th>
<th>Beginning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focused Observation</strong></td>
<td>Focues observation appropriately; regularly observes and monitors a wide variety of objective and subjective data to uncover any useful information</td>
<td>Regularly observes/monitors a variety of data, including both subjective and objective; most useful information is noticed, may miss the most subtle signs</td>
<td>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</td>
<td>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</td>
</tr>
<tr>
<td><strong>Recognizing Deviations from Expected Patterns</strong></td>
<td>Recognizes subtle patterns and deviations from expected patterns in data and uses these to guide the assessment</td>
<td>Recognizes most obvious patterns and deviations in data and uses these to continually assess</td>
<td>Identifies obvious patterns and deviations, missing some important information; unsure how to continue the assessment</td>
<td>Focuses on one thing at a time and misses most patterns/deviations from expectations; misses opportunities to refine the assessment</td>
</tr>
<tr>
<td><strong>Information Seeking</strong></td>
<td>Assertively seeks information to plan intervention: carefully collects useful subjective data from observing the client and from interacting with the client and family</td>
<td>Actively seeks subjective information about the client’s situation from the client and family to support planning interventions; occasionally does not pursue important leads</td>
<td>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</td>
<td>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</td>
</tr>
<tr>
<td><strong>Effective INTERPRETING involves:</strong></td>
<td><strong>Exemplary</strong></td>
<td><strong>Accomplished</strong></td>
<td><strong>Developing</strong></td>
<td><strong>Beginning</strong></td>
</tr>
<tr>
<td><strong>Prioritizing Data</strong></td>
<td>Focuses on the most relevant and important data</td>
<td>Generally focuses on the most important data and</td>
<td>Makes an effort to prioritize data and focus on the</td>
<td>Has difficulty focusing and appears not to</td>
</tr>
<tr>
<td>Making Sense of Data</td>
<td>Exemplary</td>
<td>Accomplished</td>
<td>Developing</td>
<td>Beginning</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------</td>
<td>--------------</td>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td>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.</td>
<td>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.</td>
<td>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.</td>
<td>Even in simple or common/familiar 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.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effective RESPONDING involves:</th>
<th>Exemplary</th>
<th>Accomplished</th>
<th>Developing</th>
<th>Beginning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calm, Confident Manner</td>
<td>Assumes responsibility: delegates team assignments, assess the client and reassures them and their families</td>
<td>Generally displays leadership and confidence, and is able to control/calm most situations; may show stress in particularly difficult or complex situations</td>
<td>Is tentative in the leader’s role; reassures clients/families in routine and relatively simple situations, but becomes stressed and disorganized easily</td>
<td>Except in simple and routine situations, is stressed and disorganized, lacks control, making clients and families anxious/less able to cooperate</td>
</tr>
<tr>
<td>Clear Communication</td>
<td>Communicates effectively; Generally communicates well; explains</td>
<td>Shows some communication ability</td>
<td>Has difficulty communicating</td>
<td></td>
</tr>
<tr>
<td>Well-Planned Intervention/Flexibility</td>
<td>Interventions are tailored for the individual client; monitors client progress closely and is able to adjust treatment as indicated by the client response</td>
<td>Develops interventions based on relevant patient data; monitors progress regularly but does not expect to have to change treatments</td>
<td>Develops interventions based on the most obvious data; monitors progress, but is unable to make adjustments based on the patient response</td>
<td>Focuses on developing a single intervention addressing a likely solution, but it may be vague, confusing, and/or incomplete; some monitoring may occur</td>
</tr>
<tr>
<td>Being Skillful</td>
<td>Shows mastery of necessary nursing skills</td>
<td>Displays proficiency in the use of most nursing skills; could improve speed or accuracy</td>
<td>Is hesitant or ineffective in utilizing nursing skills</td>
<td>Is unable to select and/or perform the nursing skills</td>
</tr>
</tbody>
</table>

### Evaluation/Self-Analysis

<table>
<thead>
<tr>
<th>Exemplary</th>
<th>Accomplished</th>
<th>Developing</th>
<th>Beginning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independently evaluates/analyzes personal clinical performance, noting decision points, elaborating alternatives and accurately evaluating choices against alternatives</td>
<td>Evaluates/analyses personal clinical performance with minimal prompting, primarily major events/decisions; key decision points are identified and alternatives are considered</td>
<td>Even when prompted, briefly verbalizes the most obvious evaluations; has difficulty imagining alternative choices; is self-protective in evaluating personal choices</td>
<td>Even prompted evaluations are brief, cursory, and not used to improve performance; justifies personal decisions/choices without evaluating them</td>
</tr>
<tr>
<td>Commitment to Improvement</td>
<td>Demonstrates commitment to ongoing improvement: reflects on and critically evaluates nursing experiences; accurately identifies strengths/weaknesses and develops specific plans to eliminate weaknesses</td>
<td>Demonstrates a desire to improve nursing performance: reflects on and evaluates experiences; identifies strengths/weaknesses; could be more systematic in evaluating weaknesses</td>
<td>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</td>
</tr>
</tbody>
</table>

Appendix G

Permission to Use Lasater Clinical Judgment Rubric

Hi Kesha,

Thank you for your interest in the Lasater Clinical Judgment Rubric (LCJR). You have my permission to use the tool for your project. I ask that you (1) cite it correctly, and (2) send me a paragraph or two to let me know a bit about your project when you've completed it, including how you used the LCJR. In this way, I can help guide others who may wish to use it. Please let me know if it would be helpful to have an electronic copy.

You should also be aware that the LCJR describes four aspects of the Tanner Model of Clinical Judgment—Noticing, Interpreting, Responding, and Reflecting—and as such, does not measure clinical judgment because clinical judgment involves much of what the individual student/nurse brings to the unique patient situation (see Tanner, 2006 article). We know there are many other factors that impact clinical judgment in the moment, many of which are impacted by the context of care and the needs of the particular patient.

The LCJR was designed as an instrument to describe the trajectory of students’ clinical judgment development over the length of their program. The purposes were to offer a common language between students, faculty, and preceptors in order to talk about students’ thinking and to serve as a help for offering formative guidance and feedback (See Lasater, 2007, 2011). For measurement purposes, the rubric appears to be most useful with multiple opportunities for clinical judgment vs. one point/patient in time.

Please let me know if I can be of help,

Kathie

Kathie Lasater, EdD, RN, ANEF, FAAN
Professor Emerita, OHSU School of Nursing
Visiting Professor, Edinburgh Napier University

Kathie Lasater is also Assistant Editor of Nurse Education Today

http://www.nurseeducationtoday.com
Appendix H

General Self-Efficacy Scale

Instructions: For each item, please indicate the extent to which each statement applies to you.

Mark:
1-Not at all true
2- Barely true
3- Moderately true
4- Exactly true

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

Permission granted

to use the General Self-Efficacy Scale for non-commercial reseach and
development purposes. The scale may be shortened and/or modified to meet the
particular requirements of the research context.

http://userpage.fu-berlin.de/~health/selfscal.htm

You may print an unlimited number of copies on paper for distribution to research
participants. Or the scale may be used in online survey research if the user group
is limited to certified users who enter the website with a password.

There is no permission to publish the scale in the Internet, or to print it in
publications (except 1 sample item).

The source needs to be cited, the URL mentioned above as well as the book
publication:

S. Wright, & M. Johnston, Measures in health psychology: A user’s portfolio. Casual and
control beliefs (pp.35-37). Windsor, UK: NFER-NELSON.

Professor Dr. Ralf Schwarzer
www.ralfschwarzer.de