Impact of High-Fidelity Simulation on Confidence Level of Nursing Students in the Care of COVID-19 patients

by

Faith A. Paine

A Dissertation Presented in Fulfillment

of the Requirements for the Degree

Doctorate in Education in Leadership and Learning

Aspen University

January 2022

Impact of High-Fidelity Simulation on Confidence Level of Nursing Students in the care of COVID-19 patients

by

Faith A. Paine

has been approved

January 2022

APPROVED:

Donald J. Dunn, DM, PMP, Faculty Mentor

Larry Gay Reagan, Ed.D., Faculty Reviewer

Dr. Nina Beaman, Ed.D., Independent Reviewer

ACCEPTED AND SIGNED:

_____ Program Representative

_____March 4, 2022_____ Date

Abstract

The COVID-19 pandemic impacted the education of nursing students across the world. Nursing students were unable to care for patients with COVID-19 at the beginning and potentially throughout nursing school depending on the facility and nursing school restrictions. It was not known how the participation in a high-fidelity simulation will impact the confidence level of nursing students in the care of patients with COVID-19. A mixed methods phenomenological qualitative and survey design was utilized to determine the confidence level of nursing students after participation in a high-fidelity simulation of a patient diagnosed with COVID-19. A convenience sample of fifteen participants completed the research study from a population of second year nursing students at a community college in Northwest Arkansas. The data were collected from focus groups both before and after participation in a high-fidelity simulation and a questionnaire that was completed after participation in a high-fidelity simulation. The interview data were analyzed using NVivo after being transcribed into a Microsoft Word document. The questionnaire data were transferred into a Microsoft Excel spreadsheet and the mean and standard deviation were calculated. The theme related to the impact of participation in a high-fidelity simulation was the importance of communication. The themes related to concerns in caring for patients with COVID-19 was contracting the disease, care, and long-term effects. The theme related to preparation to care for COVID-19 was that the participants felt better prepared to care for patients. The participants of the pilot and research study stated that the participants had improved confidence in caring for patients with COVID-19 after participation in a high-fidelity simulation.

Keywords: nursing education, nursing students, COVID-19, high-fidelity simulation, confidence level

Dedication

I would like to dedicate this dissertation to my heroes of the COVID-19 pandemic, the nurses and nursing students that have worked throughout the COVID-19 pandemic. Much has been asked of you and you have shown up and provided excellence in nursing care even when you were unsure what that looked like or the appropriate way to treat this disease process. I could not be prouder to be counted among your number. Thank you for all that you have done and continue to do for your patients.

Acknowledgements

I want to acknowledge and thank Dr. Donald Dunn, my chair, for your guidance and support throughout this process. I appreciate your time and willingness to push when necessary, so that I could complete this process. I could not have asked for a better chair. I also would like to acknowledge and thank Dr. Larry Gay Reagan and Dr. Nina Beaman, the other members of my committee. I appreciate Dr. Reagan's belief in me prior to starting my dissertation that gave me the confidence to continue this process. I appreciate Dr. Beaman for her willingness to encourage and guide me through the major milestones of my dissertation. I will be forever grateful for my committee and each person's encouragement.

I would like to acknowledge and thank the participants of my pilot and research study. I appreciate the time you took to participate in the focus groups and simulation. Time is precious for a nursing student, and I appreciate your willingness to give of your time. I could not have completed my dissertation without you, and I am grateful to you. I appreciate your thoughtful responses to my interview questions.

I would also like to acknowledge and thank my colleagues who have supported and encouraged me as I completed my dissertation. Your kind words will mean more than you can ever know. I truly have been blessed to work with the best nurses and nurse educators.

Last, but certainly not least, I would also like to acknowledge and thank my immediate family, Marc, Charista, and Alexandra. I appreciate your willingness to listen to me discuss my dissertation in more depth than you ever wanted to know. To my parents and my in-laws, I appreciate all your love and support. I hope that I have made you proud throughout this process.

Contents

List of Tables

Chapter 1: Introduction

Introduction

The COVID-19 pandemic changed nursing education and the experience of nursing students in training. Nursing students at the beginning of the COVID-19 pandemic moved to a completely online learning environment (Esterhuizen, 2020). Practical experience in a hospital or clinic has historically been an essential part of nursing education. This experience was not possible at the beginning of the COVID-19 pandemic and nurse educators had to adapt to online clinical experience. Nursing students may be unable to care for patients with a variety of disease processes in the clinical setting. However, simulation provides an opportunity for nursing students to care for patients with diseases processes that the students may not have the opportunity to care for in the clinical setting (Sharour, 2019).

Esterhuien (2020) stated that the beginning of the COVID-19 pandemic was a tumultuous time in nursing education. Nurse educators had uncertainty in the switch to online education as well as the care of patients with COVID-19 (Esterhuien, 2020). Tobin et al. (2020) stated that health care providers required training on caring for patients with highly infectious diseases. The treatment of patients with COVID-19 is ever evolving as health care providers learn more about the disease process. There was and is uncertainty on how to prepare new graduate nurses to care for patients diagnosed with COVID-19 (Esterhuien, 2020).

Background of the Study

Prelicensure nursing student education is composed of didactical and practical components. Nurse educators have struggled in recent years to ensure that nursing students have access to practical components in clinical areas. Nurse educators are limited in the amount of practical experience that students have access to due to limited clinical space and number of

educators in the clinical setting (Sharour, 2019). Nursing education changed dramatically across the world during the COVID-19 pandemic. Nursing students that attended classes at a campus-based institution transitioned to a fully online environment (Leigh et al., 2020a; Elliott & Muirhead, 2020; Leigh et al., 2020b). Nursing students were either unable to attend or limited in the amount of time spent caring for patients in a practical environment. Leigh et al. (2020b) stated that the nursing education regulatory body in the United Kingdom (U. K.) passed a standard that stated practical experience was not required for nursing students in the state of emergency related to the COVID-19 pandemic. Nursing students were unable to care for patients with COVID-19 in the clinical setting. After graduation, new nurses were expected to care for patients with COVID-19.

Nursing students have not been able to care for patients with a variety of disease processes in the clinical setting. Nursing students can care for patients in the simulation laboratory that the students did not have an opportunity to care for in the clinical environment. Sharour (2019) studied the impact of a simulation on oncologic emergencies had on student confidence and knowledge. Sharour (2019) found that the simulation on oncologic emergencies provided students with increased knowledge and confidence in caring for a patient with an oncologic emergency. Dincer and Ataman (2020) examined the effects on the knowledge and satisfaction of students caring for a patient with diabetes and hypoglycemia. Students that participated in the simulation had improved posttest scores and confidence compared to a control group that did not participate in the simulation. Kapucu (2017) studied how simulation impacted student confidence when caring for a patient with a thoracic injury. Kapucu (2017) found that the simulation environment prepared students to care for patients in the clinical setting. The studies completed by Sharour (2019), Dincer and Ataman (2020), and Kapucu (2017) have set protocols

to manage the disease processes in their studies. Students may have the opportunity in the clinical setting to care for a patient with diabetes, thoracic trauma, or oncologic emergencies. Nursing students did not have the opportunity to care for patients with COVID-19 in the clinical setting at the beginning of the pandemic. Nursing students may not have had the opportunity to care for patients with COVID-19 in the clinical setting throughout the pandemic depending on the institution of higher education and the clinical site.

Alshdefat et al. (2021) and Patelarou et al. (2020) examined the attitudes of nursing students in Oman and Greece related to COVID-19. Alshdefat et al. (2021) found that nursing students reported a high level of knowledge related to COVID-19, but most students did not wear a mask in public to prevent the spread of the disease. The decrease compliance in wearing a mask demonstrated a lack of understanding on how COVID-19 is spread and ways to prevent further infection rates. Patelerau et al. (2020) found that nursing students in Greece demonstrated significant knowledge related to COVID-19 and were willing to volunteer to assist healthcare providers in managing the pandemic. Nursing students must first have the knowledge to care for patients before they can successfully care for patients. Nursing students not only need knowledge; nurses need to have the clinical skills to care for patients. Nursing students must stay informed on the best practices in caring for patients with COVID-19 and apply these skills in the clinical setting.

Jensen et al. (2020) completed a study on the response of an orthopedic unit to the changes related to COVID-19. The participants of the study were in a hospital in Denmark. The hospital was a Level-1 trauma center. Jensen et al. (2020) described the changes made to the hospital, the response of the healthcare professionals to the training that the healthcare professional received, and recommendations for how hospitals can prepare for similar pandemic

situations. The focus of the study was on the perception of the healthcare professionals on the education the healthcare professionals received to prepare to care for patients during the COVID-19 pandemic. The healthcare professionals were taught using classroom instruction, e-learning, and in situ simulation (Jensen et al., 2020). There is a difference between preparing nursing students that have very little experience in the care of patients and healthcare professionals that need to expand their knowledge base to care for patients with a new disease process. Jensen et al. (2020) used a non-validated questionnaire to report the results of the study. A qualitative study on preparing healthcare students on the care of patients with COVID-19 was not found. Simulation provides a safe way to care for patients with COVID-19 without the risk to the health of the nursing students in caring for patients with a highly infectious organism.

The statement of the problem and purpose of the study are addressed. The theoretical frameworks that are used to guide the study are addressed. The theoretical frameworks addressed are related to simulation and learning theories for students at the collegiate level. The research questions that were addressed throughout the study are identified and how the research questions are addressed is found in the research methodology section. The study and relationship to the current knowledge is addressed in the advancing scientific knowledge and the significance of the study. The research methodology and rationale for the methodology used is guided by the research questions. The methodology and rationale for the methodology are introduced in this chapter and are more clearly articulated in chapter 3. A definition of various terms that are necessary for the reader to have a foundation for the context for the study are included. The assumptions, limitations, and delimitations are provided for the context of the study. The dissertation structure is identified in this chapter and provides structure for the rest of the dissertation.

Statement of the Problem

It was not known if a high-fidelity simulation on a COVID-19 case will impact the confidence level of nursing students in caring for a patient with COVID-19. The study's problem was an examination of the fears of nursing students related to COVID-19 and an understanding of whether simulation is effective in alleviating the fears and improving confidence that can help inform nursing curriculum in preparing students for the current and future pandemics.

Gaines (2020) stated that nursing students during the COVID-19 pandemic have experienced decreased clinical time. Nursing students were unable to care for patients with COVID-19 during clinical rotations due to COVID-19 restrictions at the beginning of the pandemic. Requirements for new graduate nurses included caring for patients with COVID-19 without any prior experience. COVID-19 was a new disease process and was not addressed in current nursing textbooks at the beginning of the pandemic. Nursing students may not feel prepared to care for patients with COVID-19 after graduation. Simulation provides an opportunity for students to care for patients with a variety of disease processes without causing harm to either the student or the patient.

Patients with COVID-19 were placed in strict isolation requiring the caregivers to wear personal protective equipment (PPE). During the pandemic, there have been shortages of PPE for health care providers caring for COVID-19 patients (Thomasian et al., 2020). The shortage of PPE has contributed to decreased clinical time for nursing students. Nursing students have been discouraged from caring for patients in any isolation to preserve PPE for the nursing staff caring for COVID-19 patients. A component of caring for COVID-19 patients is effectively donning and doffing PPE to prevent the spread of COVID-19.

Nursing students may understand how COVID-19 is transmitted and be fearful of caring for patients with COVID-19. COVID-19 is highly infectious and can have detrimental effects on patients including death (Alshdefat et al., 2021& Patelarou et al., 2020).

Purpose of the Study

The purpose of this phenomenological qualitative and survey research study was to evaluate how participating in a high-fidelity simulation impacts nursing students' confidence in caring for patients with COVID-19. The goals of this study were to determine what the fears of nursing students are in caring for patients with COVID-19 and how simulation impacts the nursing student's confidence level in the care of patients with COVID-19 (Dincer & Ataman, 2020 & Kapucu, 2017). Nursing students in an associate degree nursing program in Northwest Arkansas were recruited to participate in this study.

COVID-19 was a new disease process that does not have a set of prescribed interventions. Nursing students are unable to care for patients throughout nursing school career with every disease process that the student may encounter after graduation (Sharour, 2019). Simulation has been used to provide the opportunity for nursing students to care for patients with disease processes that are not seen often but have a specific set of interventions that are prescribed. The use of simulation for a patient with COVID-19 provided the opportunity to study the impact on confidence of care with a new disease process.

Nursing students will benefit from the ability to practice skills that are necessary to care for patients with COVID-19. Nursing students can also gain experience through simulation that was not allowed with the restrictions imposed at the beginning and throughout the COVID-19 pandemic. The patients with COVID-19 will benefit from having nurses that are prepared to manage a complex disease process and have practiced different aspects of care that are required.

The hospitals will benefit from having new graduates that have increased confidence in providing care for patients with COVID-19. COVID-19 has presented challenges in nursing education and this study sought to examine how simulation can impact confidence in a new disease process.

Theoretical Frameworks

The theoretical framework that was central to this study is Kolb's Experiential Learning Theory. Kolb's theory incorporated a variety of skills to reinforce student learning (Sharour, 2019). Kolb's theory emphasized the importance of not only the experience that promoted learning but included reflection on what the learner did during the experience and how they could improve in the future in a comparable situation. Experiential learning theory was one of the key theories that supports the use of simulation (Palaganas et al., 2015). Hill (2017) conducted a literature review about experiential learning theory and how it impacted student experience in higher education. Many institutions of higher education continue to employ lecture as the standard approach to higher education. Test scores do not demonstrate that this is the best method for educating students in higher education. Students each have different educational needs and will seek to meet their educational needs when provided opportunities to practice skills. Kolb's theory promotes the cyclical nature of education and that there is not a fixed point where a student has completed the educational journey. Experiential learning theory promotes an individualistic approach to education (Hill, 2017). As a student gains experience and can perform tasks more independently the more active the role the student will choose in the learning environment (Wilson & Wittmann-Price, 2019). The simulation environment provides an opportunity for students to practice skills in an environment that there is not a potential for harm to the patient or student and then reflect on what the student did during the simulation (Palaganas

et al., 2015). Jensen et al. (2020) conducted a study using in situ simulation to prepare nurses to care for patients with COVID-19 that did not have any experience caring for patients with COVID-19. The nurses in the study stated that the in-situ simulation cemented the classroom instruction received and prepared the nurses to care for patients with COVID-19.

Nursing educators should identify the baseline knowledge that nursing students have and build on that knowledge (Palaganas et al., 2015). The constructivist learning theory is a student focused learning theory in which the student builds on what the student has learned and uses that knowledge to apply to new concepts. The simulation lab provides students the opportunity to take baseline knowledge and apply to the care of a patient in the simulation lab (Wilson & Wittmann-Price, 2019). Nursing students were unable to care for patients with COVID-19 at the beginning of the pandemic but can use the basic concepts in the care of a patient with respiratory distress or failure and apply that to the care of the patient in the simulation lab. The student can take basic concepts and connect the basic concepts to a more challenging patient condition. Nursing students need to build a solid foundation in nursing school to prepare to manage patients independently once the student has graduated and becomes a licensed nurse.

Scaffolding learning theory is an extension of experiential and constructivist learning theory. Nursing educators provide a structure for learning and support for new nursing students. The nursing educator builds a basic structure for students and as the student progresses in knowledge the nurse educator constructs a more detailed structure. The nurse educator does not abandon the structure but continues to provide the student with the feedback, so the student is able to further knowledge (Wilson & Wittmann-Price, 2019).

Andragogy is also known as adult learning theory. Adult learners characteristically are more engaged with learning if the student recognizes a direct impact on the future (Hamra,

2019). Graduates of nursing programs may be required to care for patients with COVID-19 without any experience. Adult learning theory suggests that students will actively engage in education if the student recognizes a need for the education. Nursing students may feel underprepared to care for patients with COVID-19 due to lack of experience and will actively participate if the student feels that the information is vital to future job performance and patient care. Nursing students have the opportunity in simulation to practice skills that the student may not have the opportunity to practice in the clinical setting. The theories that provide a foundation for this study are Kolb's experiential learning theory, constructivist learning theory, scaffolding learning theory and andragogy.

Research Questions

The overall research question for the study was: What impact does participation in a high-fidelity simulation of a patient with COVID-19 have on student nurse confidence in caring for a patient with COVID-19? Nursing student's confidence will impact the student's ability to care for patients with COVID-19 after graduation. Simulation provides an opportunity for nursing students to care for patients with COVID-19 that the students are unable to do in the clinical setting.

RQ 1:

What concerns do nursing students have about caring for a patient with COVID-19? Nursing students may have concerns about caring for patients with COVID-19. The concerns noted by nursing students can be instrumental in curricular design for future nursing students. The concerns may be connected to the inability to care for patients with COVID-19 in the clinical setting.

RQ 2:

How will participating in a high-fidelity simulation prepare nursing students to care for COVID-19 patients, if at all? Simulation provides an environment where learners can practice caring for a patient in a safe environment (Wilson & Wittmann-Price, 2019). The impact of a high-fidelity simulation can influence the curriculum and prepare students for future pandemics.

RQ 3:

What is the confidence level of nursing students in the care of patients with COVID-19 prior to and immediately following a high-fidelity simulation? The confidence level is essential to know prior to the simulation to compare the confidence level after the simulation. It is important to know the confidence level that the nursing students have prior to the simulation to determine the difference in confidence after the simulation.

Advancing Scientific Knowledge

The theoretical theory that provided a foundation for this research is constructivism. In constructivism, the learner builds upon previously learned knowledge to make connections to new knowledge. Constructivists recognize the importance of using active learning strategies to connect what is known to what is unknown. The student has a lack of knowledge, and the faculty does not give the student the knowledge but provides scenarios and guidance that the student can use to discover the knowledge that the student does not currently have (Wilson & Wittman-Price, 2019).

No literature has been found on the ability of nursing students to care for patients with COVID-19. Research has been conducted on nursing student's knowledge levels of COVID-19 and the current restrictions (Alshdefat et al., 2021 & Patelarou et al., 2020). Jensen et al. (2020) conducted a study using simulation and other strategies to prepare nurses in an orthopedic unit to

transition to care for COVID-19 patients. Huang et al. (2020) studied the differences in the emotional response to the COVID-19 pandemic between nurses and nursing students. There was not a study found on strategies to prepare nursing students to care for patients with COVID-19. Nursing students have decreased clinical time globally because of COVID-19 (Leigh et al., 2020a; Leigh et al., 2020b; Esterhuizen, 2020).

The COVID-19 virus is complex, has been challenging for nurses, and other healthcare workers, to manage and find effective treatments regiments to manage the disease process. COVID-19 has changed higher education and nursing education. Nursing students are expected to care for COVID-19 after graduation and may not have had the opportunity to provide care for patients with COVID-19 in the clinical setting at the beginning of the pandemic depending on the institution of higher education and clinical site or the opportunity to research the disease process in nursing textbooks. Nursing students interested in learning about the current best practices for the management of COVID-19 must seek out evidence from websites and what research has been published about best practices in managing the disease process (Patelarou et al., 2020).

Nursing students may have fears and concerns related to caring for patients with COVID-19 and may also have a desire to care for patients with COVID-19 in nursing school with the ability to care for the patient with the support of a nurse and clinical instructor. The safety of nursing students should be considered. The highly infectious nature of COVID-19 is not a safe environment for nursing students to care for the disease process in the clinical setting. Hospitals have also had to ration PPE due to a PPE shortage (Thomasian et al., 2020). The nursing students have been unable to have access to the necessary PPE to care for patients with COVID-19. The research questions used to guide this study provide the opportunity to examine the current

curriculum and develop curriculum related to the current COVID-19 pandemic and future pandemics.

Significance of the Study

To address the confidence of nursing students in caring for patients with COVID-19, this study examined the fears of nursing students in caring for patients with COVID-19 and how simulation impacted the confidence of nursing students. Although past research has shown that nursing students have less anxiety than nurses in the care of patients with COVID-19 (Huang et al., 2020), nursing students were able to demonstrate knowledge about the COVID-19 and how it is contracted (Patelarou et al., 2020), and nursing students had a high to moderate level of knowledge about COVID-19 (Alshdefat et al., 2021), it is unclear to what extent nursing students in the United States feel confident in the care of patients with COVID-19. Thus, the findings of this research contributed to the knowledge about the confidence levels of nursing students in caring for patients with COVID-19 after participating in a high-fidelity simulation.

Huang et al. (2020) found that nurses had increased stress due to their current work environment and have the fear of being infected with COVID-19. Nursing students did not have the same fears. Nursing students had fears about the transition to a career as a nurse and how the pandemic would impact that career. The more knowledge the nurse had about the virus and the effects of the virus the more fear and anxiety the nurse experienced in caring for a patient with COVID-19 (Huang et al., 2020). Nursing students are not licensed to care for patients and do not have the same anxiety related to the health of the nursing students' families. Nursing students have not been on the frontlines of patient care during the pandemic and have not had the same opportunities to care for patients in a clinical setting (Huang et al., 2020; Leigh et al., 2020a; Leigh et al.; 2020b).

Patelarou et al. (2020) found that nursing students had a prominent level of knowledge of COVID-19 and sought knowledge from credible sources. Nursing students were also highly likely to comply with restrictions to limit the spread of COVID-19 and sought to volunteer to help during the COVID-19 pandemic. Alshdefat et al. (2021) found that nursing students Oman had a high to moderate level of knowledge about COVID-19, but over 50% of the nursing students surveyed were not compliant with wearing a mask in public. Alshdefat et al. (2021) and Patelarou et al. (2020) examined nursing students' knowledge and preventative practices to prevent the spread of COVID-19. The nursing students were not questioned about knowledge in caring for patients with COVID-19. There is not any current literature found about the use of simulation in preparing nursing students in caring for patients with COVID-19.

Nursing students have had clinical time decreased due to the COVID-19 pandemic and have not had the opportunity to care for patients with COVID-19. Nursing faculty have shared creative solutions to meet the clinical hours required for licensure (Elliot & Muirhead, 2020). Increased demand for personnel protective equipment (PPE) to prevent the spread of COVID-19 has resulted in a decreased supply of PPE (Thomasian et al., 2020). Hospitals and other healthcare entities have not allowed students into rooms requiring PPE to protect the dwindling supply of PPE necessary for necessary healthcare workers. Nursing students have not had the opportunity to practice appropriate donning and doffing of PPE related to caring for patients with COVID-19. This study sought to add to the knowledge to what was currently known about nursing students fears of caring for patients with COVID-19 and the impact of a high-fidelity simulation on the confidence levels of nursing students.

Rationale for Methodology

The research methodology that was utilized for this study was a phenomenological qualitative study and survey research utilizing a questionnaire on confidence level. A phenomenological qualitative approach allows participants to describe the event more thoroughly under investigation (Morrell-Scott, 2018). Nursing students described current concerns about caring for COVID-19 patients and the way the participation in a high-fidelity simulation impacted their confidence in the care of patients with COVID-19. The nursing students provided the perspective on how simulation benefited the nursing students and if the simulation experience was beneficial and should be considered for future cohorts of nursing students. The data on the confidence level of nursing students in the care of COVID-19 patients was addressed utilizing a questionnaire on confidence levels (Sarman & Pardi, 2019; Dincer & Ataman, 2020; Sharour, 2019).

The students' fears in caring for patients with COVID-19 were identified by asking open-ended questions to a focus group of students that participate in a high-fidelity simulation related to COVID-19 (Morrell-Scott, 2018). The data gathered from the questions will provide a basis for future development of curriculum to address other pandemic disease processes. The fears of nursing students were unknown related to the care of patients with COVID-19. The use of open-ended questions provided nursing students with the opportunity to communicate the fears of the nursing students related to the care of patients with COVID-19. The confidence level of nursing students in the care of patients with COVID-19 was collected after participating in a high-fidelity simulation. A questionnaire administered after the simulation was used to determine if there is a difference in the confidence level of nursing students after participating in a high-fidelity simulation. The researcher asked the focus group questions concerning if the nursing students

felt the nursing students had accurately scored the nursing student's confidence level prior to the participation in the simulation. The use of a questionnaire and focus group provided the answers to the research questions identified for the study.

Nature of the Research Design

The research methodology identified for this study was a phenomenological qualitative study and a survey design utilizing a questionnaire to determine the confidence level of nursing students after a high-fidelity simulation. It was not known what fears nursing students have related to the care of patients with COVID-19 and the impact that a high-fidelity simulation has on the confidence of patients with COVID-19. The fears and concerns of nursing students cannot accurately be identified without asking the nursing students questions that provided data. Phenomenological studies provide data on the shared experiences of a group and how the group experiences a certain phenomenon, in this case COVID-19 patients (Morrell-Scott, 2018). The overall research question was addressed utilizing a phenomenological approach by collecting data about the impact that a high-fidelity simulation had on the confidence level of nursing students.

The survey research was conducted by collecting data through a questionnaire used to address confidence level of nursing students after participating in a high-fidelity simulation (Sarman & Pardi, 2019; Dincer & Ataman, 2020; Sharour, 2019). The confidence level of the nursing student was collected after the simulation through the National League for Nursing (NLN) tool (2005). The questionnaire was administered after the participation in a simulation of the care of patients with COVID-19 to determine the nursing student's confidence level collected on the confidence level. The focus group expounded on what the members of the focus group felt

improved the confidence level of the members of the group, if there was an improvement in the confidence level. The data gathered throughout the process were analyzed for different themes.

The research questions in this study sought to examine the experience of students in the current pandemic and provide guidance for faculty in developing curriculum to prepare future generations of nursing students for caring for patients with other pandemics. The data on the fears of nursing students and the impact on simulation related to these fears was not sufficiently answered through questionnaire data alone. The use of a qualitative design provided a more holistic view of the problem.

The population that was investigated in this research study was second-year nursing students from an associate degree of nursing program from a small community college in Northwest Arkansas. The sample was a sample of convenience of one of the cohorts at the small community college in Northwest Arkansas for the research study. A pilot study was conducted prior to the research study and a different cohort of students was utilized. The sample size depended on the size of the cohort and the volunteers from the cohort that were willing to participate in the study.

The data were collected by having the nursing students discuss the students' current confidence level in caring for patients with COVID-19. The student then completed a high-fidelity simulation related to the care of a patient with COVID-19. The student completed a questionnaire on the confidence level of the student related to the care of the patient with COVID-19 after participation in a high-fidelity simulation. The student then participated in a focus group. In the focus group the student was asked questions about any fears or concerns they have related to the care of patients with COVID-19 and the impact the high-fidelity simulation

had on their confidence level in caring for patients with COVID-19. These procedures were utilized to provide the data necessary for the research questions in the study.

Definition of Terms

The following definitions are key for the reader to understand:

Confidence: Feelings of security in knowledge and skills to care for a patient with a specific disease process (Sharour, 2019).

Corona Virus Disease 2019 (COVID-19): A global pandemic first diagnosed in Wuhan China that is highly infectious and is transmitted with the source patient can be asymptomatic through contact, airborne, and respiratory droplets. This disease process can be fatal in severe cases and has no known cure (Huang et al., 2020).

Experiential Learning Cycle: "A theoretical model developed by David A. Kolb presenting a cycle required for effective learning, and includes four stages: experience, reflection, conceptualization, and experimentation" (Palaganas et al., 2015, xxvi).

High-fidelity simulation: "The use of a computerized mannequin in a "realistic setting" to accomplish learning objectives in the simulation laboratory. The computerized mannequins can be programmed to have a heartbeat, various breath sounds, and other responses" (Palaganas et al., 2015, xxvii).

Mannequin-based Simulation: "The use of human-like mannequins to create a patient case/scenario/situation via heart and lung sounds, palpable pulses, voice interaction, vital sign monitoring, movement (e.g., seizures, eye blinking), bleeding, blood flashback with intravenous insertion, and other human capabilities that may be controlled by a simulation specialist using computers and paralleled software" (Palaganas et al., 2015, xxix).

Proning: "The act or practice of placing a patient and especially one in respiratory distress in the prone position with the chest and stomach facing downward to increase blood oxygenation" (Merriam-Webster, n.d.).

Simulation Lab/Learning environment: A place that is designed to replicate a realistic hospital or healthcare environment "for the purpose of learning" (Palaganas et al., 2015, xxxi).

Assumptions, Limitations, and Delimitations

Assumptions

An assumption in research "is a condition that is taken for granted, without which the research would be pointless" (Leedy & Ormrod, 2013, p. 5). One of the assumptions for this study was that nursing students that participated in the focus groups answered the questions honestly. The participants in the study may have felt pressured to answer the questions according to what the students think that the researcher may want to hear. The assumption that the students answered the questions honestly was essential to conducting and interpreting the results of the questions from the focus groups. Another assumption of this study is that simulation is an effective method of providing students to care for simulated patients in a safe environment. Students can practice skills and make clinical decisions for patients that the nursing students do not have the opportunity to care for in the clinical setting (Sharour, 2019). The simulation environment was designed to provide both physical and psychological safety (Wilson & Wittman-Price, 2019). Another assumption of this study is that a high-fidelity simulation has a degree of transferability of skills in the clinical setting. Hayden et al. (2014) conducted a robust study on simulation for the National Council of State Boards of Nursing (NCSBN) to determine the competence of nursing students in clinical reasoning and skills compared to the traditional

clinical environment. Hayden et al. (2014) found that students had similar clinical knowledge, skills, and abilities in the clinical setting when up to 50% of clinical time was completed in simulation. Another assumption of this study was that nursing students need to prepare to care for patients with COVID-19 after graduation from nursing school. The care of patients with Ebola virus remained a concern for healthcare providers throughout the world following the outbreak from 2014-2016 (Tobin et al., 2020). These assumptions ensure that the reader knows the perspective of the study.

Limitations

The limitations of a research study are restrictions over which the researcher does not have any control (Rudestam & Newton, 2015). One of the greatest limitations of this study was the sample size. The sample for this study was a convenience sample of nursing students at a small community college in Northwest Arkansas. Another limitation of the study was that the students interacted with the researcher as an instructor in the nursing lab throughout the students' educational experience and this could impact the answers the nursing students provide. Another limitation was that there is minimal literature on education and training for the care of patients with COVID-19. The limitations of the study impact the data gathered during the study.

Delimitations

Delimitations of the research study are restrictions that the researcher chooses to impose on the study to "restrict the populations to which the results of the study can be generalized" (Rudestam & Newton, 2015, p. 122). One of the delimitations that was employed in this study was to use a sample from second year nursing students at a small community college in Northwest Arkansas. The other delimitation that was be employed was to conduct the interviews before and after the simulation and ask the same questions to each group of students. The other

delimitation that was employed was to run the simulation the same way each time. The delimitations of the study should be employed to ensure the validity of the study.

Dissertation Structure

This dissertation consists of five chapters. The first chapter introduced the topic of preparing nursing students to care for patients with COVID-19 with current restrictions and the role of high-fidelity simulation in nursing education. The theoretical frameworks that were used to guide this study were introduced. The background and purpose of the study were more clearly delineated. The research questions, definitions of relevant terms, assumptions, limitations, and delimitations were identified for the study. The research methodology was introduced with a rationale for the selected research methodology. The role of this study as related to the current research and the contributions to the current literature were identified.

The second chapter is a review of the current literature related to the care of patients with COVID-19 and the impact of simulation in caring for patients with COVID-19. The impact of high-fidelity simulation in nursing education to prepare nursing students to care for patients in the clinical setting is discussed. The theoretical framework for the study is expounded in chapter two. The methodology employed to identify relevant research related to the study and the relevant studies are discussed including how the studies identified in the current literature relate to this study.

The third chapter provides a thorough description of the research methodology used in the study. The third chapter provided the research design and the procedures used in the study. The instruments, data collection procedures, and planned analysis of the data collected are articulated.

The fourth chapter provides the results of the research findings by research question. It includes the feedback on the survey questionnaire administered after simulation about the nursing student's confidence level in caring for patients with COVID-19. The data gathered in the focus groups were presented and addressed by research question.

Finally, the fifth chapter is the conclusion of the study that addresses the major findings of the study. The major findings of the study are identified and how the study contributes to the current literature is stated. The recommendations for future studies are identified in the fifth chapter.

Summary

The COVID-19 pandemic has presented a challenge for nursing students and nurse educators. Nursing students have had decreased clinical time due to the highly infectious nature of COVID-19 and the clinical sites need to preserve PPE (Thomasian et al., 2020). Nursing students after graduation are expected to care for patients with COVID-19. It is not known what the impact high-fidelity simulation has on the confidence levels of nursing students caring for patients with COVID-19 and what fears nursing students may have related to the care of patients with COVID-19. A phenomenological qualitative and survey research design was used to address the research questions related to the impact of high-fidelity simulation on the confidence level of nursing students caring for COVID-19. No literature was found related to confidence level of nursing students in the care of patients with COVID-19 and the role of simulation in preparing nursing students to care for patients with COVID-19. The current literature provided a theoretical framework for the current study. The literature was examined for the role of simulation in the preparation of nursing students, the current use of simulation related to COVID-19, and the knowledge of nursing students related to COVID-19.

Chapter 2 includes a critical examination of the current literature on theoretical frameworks related to high-fidelity simulation and caring for patients with COVID-19. A critical examination of current literature related to nursing student knowledge related to COVID-19 and how to prepare nursing students to care for COVID-19 and how it could impact curricular development.

Chapter 2: Literature Review

Introduction

A phenomenological qualitative and survey research methodology was used to evaluate how participating in a high-fidelity simulation impacts nursing students' confidence in caring for patients with COVID-19. The history of COVID-19 and impact on nursing education was explored in the literature. The history of simulation and the learning theories that provided the foundation for simulation as a learning strategy were explored in the current literature. Kolb's experiential learning theory, constructivist learning theory, scaffolding learning theory and andragogy provided a conceptual framework to examine simulation as a learning strategy. The rationale for the topic is provided through an examination of the current literature and gap in the knowledge related to high-fidelity simulation and impact of confidence level in caring for a patient diagnosed with COVID-19. A review of related studies was provided and a description of chosen research methodologies for the phenomenological qualitative and survey research. A summary of the key points of the chapter concludes the literature review chapter.

Contextual Background

Hinkle and Cheever (2018) defined the term pandemic as "a global outbreak of a disease" (p. 2135). The increase in travel throughout the world and the globalization of many industries has led to an increase in the transmission of infectious diseases (Hinkle & Cheever, 2018 & Lateef, 2020). COVID-19 was first recognized and diagnosed in Wuhan, China. The first cases of COVID-19 were recognized in December 2019, but the virus did not have an official name until January 2020. It was estimated that over five million people had been exposed to COVID-19 and traveled throughout China and the world leading to the spread of this highly infectious virus (Huang et al., 2020). The World Health Organization (WHO) declared COVID-19 a

pandemic in 2020 (Huang et al., 2020; Jawed et al., 2020; Khanmohammadi et al., 2020; Lateef, 2020; Tamang et al., 2020).

The methods employed to prevent the transmission of COVID-19 impacted nursing education. Nurse educators across the world moved to an online teaching environment (Elliott & Muirhead, 2020; Esterhuizen, 2020; Leigh et al., 2020a; Leigh et al., 2020b). Nursing students were unable to participate in the care of patients in the hospital setting due to restrictions related to COVID-19 (Elliott & Muirhead, 2020). Upon graduation, newly graduated nurses cared for patients diagnosed with COVID-19 in the hospital and were presented with the stresses of caring for patients with a highly infectious disease (Huang et al., 2020).

Simulation is not a new concept in nursing education, but the use of simulation to prepare students to care for patients with COVID-19 has not been examined in the literature that was found. Nursing simulation in some form has been in use since the time of Florence Nightingale. Nursing simulation has evolved from simple mannequins to more complex high-fidelity mannequins that allow nursing students to practice skills multiple times prior to performing the skill on a patient. Nursing students can care for patients in the simulation laboratory that the students may not have the opportunity in the clinical setting. The simulation environment provides an opportunity to practice skills and learn in a safe environment without causing harm to the student or patient (Sanka, 2017). Sanka (2017) stated that many studies had been completed that demonstrated that simulation is a valid educational strategy. In previous studies, nursing students have had increased self-confidence in caring for patients in a simulated environment (Hustad et al., 2019 & Sharour, 2019). The use of high-fidelity simulation and the impact of confidence level in the care of patients diagnosed with COVID-19 has not been found in the current literature.

Conceptual Framework

Kolb's experiential learning theory is foundational to the use of simulation as an educational tool (Sanka, 2017). In simulation, nursing students can have an active role in their learning environment. Simulation educators facilitate learning through the development of realistic scenarios in a realistic environment that promotes independence in the learning environment. In simulation, nursing students can make decisions about the care that a patient should receive and then reflect on the actions that resulted from the decisions that were made. Nursing students can evaluate the consequences of decisions that the nursing students made without harm to either patients or students (Palaganas et al., 2015; Sharour, 2019; Wilson & Wittmann-Price, 2019). Kolb stated that learners could gain knowledge in a variety of settings and were able to apply what the learners learned in a situation if the learner was able to connect the consequences to the decisions that the learner made. The simulation environment has safety for both the learner and the patient where the consequences can be explored without harm occurring to either the learner or patient (Palaganas et al., 2015).

Constructivist learning theory is utilized to explain how learners can use previous knowledge to gain mastery over new concepts (Wilson & Wittmann-Price, 2019). The guiding principle of constructivist learning theory is that the learner will make decisions in simulation in an unfamiliar situation based on what the learner has previously mastered (Wilson & Wittmann-Price, 2019). COVID-19 is a newly diagnosed virus and treatment protocols have changed based on what is learned about the care of patients diagnosed with COVID-19. Healthcare professionals have had to adapt to changing protocols and build on previous experiences to care for patients diagnosed with COVID-19 (Jawed et al., 2020 & Tamang et al., 2020).

Scaffolding theory is utilized to provide a framework to transition novice learners to experts in a field. Novice learners must have the necessary foundation established to build additional knowledge (Wilson & Wittmann-Price, 2019). For example, novice nursing students are provided a foundation of basic concepts in breathing and interventions to promote improved breathing. The nursing student is taught basic interventions if a patient complains of difficulty breathing. As the nursing student progresses, the nursing student is taught more complex interventions that a patient may require to have improved breathing. If the nursing student is unable to perform the basic intervention, the nursing student will not be successful in performing the more complex intervention.

Andragogy or adult learning theory is utilized in simulation. Adult learners seek learning experiences that the adult learner feels are essential for a particular purpose (Palaganas et al., 2015). Hedman and Fellander-Tsai (2020) refer to self-determination theory (SDT) for learners as a motivation to learn a new skill or improve on a skill. Students that are unable to perform a skill in a clinical setting are motivated to practice the skill and gain competence in a simulated environment, according to SDT (Hedman & Fellander-Tsai, 2020). Adult learners are motivated to learn if the adult learner recognizes an importance to learning the skill (Palaganas et al., 2015). Nursing students may recognize the need to learn the appropriate interventions to care for patients diagnosed with COVID-19 and seek strategies to improve the students' knowledge of the appropriate protocols to care for patients diagnosed with COVID-19.

Theoretical Foundation

Experiential learning theory, constructivist learning theory, scaffolding theory, and andragogy are theories that have been utilized to support simulation as a learning strategy (Palaganas et al., 2015; Sharour, 2019; Wilson & Wittmann-Price, 2019). Nursing students may not be able to recognize the consequences of interventions performed without the ability to practice in the simulation environment, in the absence of performing the intervention in the clinical environment with a patient. The nursing student utilizes knowledge previously obtained to make decisions about an unknown disease process. Information about treatment protocols for COVID-19 are not currently in any nursing textbook. The basic nursing principles that students are taught can help guide the student's decision-making process to more complex treatment regimens related to the care of patients diagnosed with COVID-19. Nursing students preparing to graduate from nursing school may be motivated to further the students' knowledge of the care for patients diagnosed with COVID-19.

Related Studies

It is essential to examine the literature that is related to the research question and sub questions posed in this research study. The Cumulative Index to Nursing and Allied Health Literature (CINAHL) database and Academic Search Premier database were utilized to find applicable literature for the research study. The literature was examined for concerns of nursing students in the care of patients with COVID-19, impact of high-fidelity simulation on preparing students to care of patients with COVID-19, and how high-fidelity simulation impacts the confidence level of nursing students. There are few studies related to nursing students and patients with COVID-19 (Patelarou et al., 2020; Alshdefat et al., 2021; Kadapurran & De Guzman, 2020; Huang et al., 2020). Most studies found involve licensed healthcare professionals

and the licensed healthcare professionals' fears in caring for patients with COVID-19 (Cosic et al., 2020; O'Neal et al., 2021; Huang et al., 2020; Al Mutair et al., 2020; Jensen et al., 2020; Fadaak et al., 2021). A few studies were found about the current knowledge level of nursing students related to COVID-19 and the nursing students' fears about COVID-19 (Patelarou et al., 2020 & Alshedefat et al., 2021). No studies were found on simulation and how simulation can prepare nursing students to care for patients with COVID-19. Studies were found on preparing hospital personnel for the care of patients with COVID-19 and the use of simulation in that preparation (Jensen et al., 2020). There are several studies on how simulation impacts confidence levels of nursing students in the care of patients after participating in a high-fidelity simulation (Morrell-Scott, 2018; Dincer & Ataman, 2020; Sharour, 2019). There were not any studies found on how simulation impacted nursing students' confidence levels both before and after participating in a high-fidelity simulation. Each of these studies provides a background on what is currently known and emphasizes the gap in knowledge.

Concerns of Nursing Students in Caring for Patients with COVID-19

There is fear and concern among the public about the COVID-19 virus. The fear of contracting and transmitting the COVID-19 has led to increased anxiety concerning COVID-19. The increased anxiety about the COVID-19 virus was evident in the media coverage about COVID-19 (Mpeshe & Nyere, 2021). The best approach to decreasing fear concerning and the transmission of the COVID-19 virus is accurate education concerning COVID-19 (Mpeshe & Nyere, 2021).

Nursing students in Greece and Oman demonstrated considerable knowledge concerning COVID-19 (Patelarou et al., 2020 & Alshdefat et al., 2021). Nursing students in Greece preferred to get information about COVID-19 from reputable sources rather than from social

media sources (Patelarou et al., 2020). Nursing students in Oman had a significant amount of knowledge about COVID-19, but it did not impact the students' compliance with current preventative measures (Alshdefat et al., 2021). Knowledge is the beginning of understanding the best methods of caring for patients diagnosed with COVID-19 but must be translated into practice to be demonstrate full comprehension.

The impact of COVID-19 is not only on the physical health of nursing students, but also has a mental health component. Kadapurran and De Guzman (2020) examined the mental health of female nursing students during the COVID-19 pandemic in India. Female nursing students in India experienced moderate depression, fear, and anxiety during the pandemic. Nursing students are instrumental in addressing the nursing shortage and it is essential to provide care for the students' mental health (Kadapurran & De Guzman, 2020). Huang et al. (2020) examined the difference in the stressors between nursing students and nurses. Nursing students had fears concerning contracting COVID-19, the nursing students also had other emotional responses concerning COVID-19. Nursing students were concerned about how COVID-19 would impact the students' careers. The nursing students had feelings of "excitement, doubt, and helplessness" (Huang et al., 2020, p. 8). Nursing students and nurses had different concerns related to the care of patients diagnosed with COVID-19 and the current environment related to COVID-19. Nurses had fears related to contracting COVID-19 and transmitting the COVID-19 virus to family (Huang et al., 2020). Many cases of COVID-19 reported from Wuhan, China were transmitted by people that were asymptomatic (Rippinger et al., 2021). At the beginning of the COVID-19 pandemic, the knowledge that a family member may be infected by the nurse that is asymptomatic led to nurses isolating from the nurses' family (Huang et al., 2020). Nurses were concerned about the impact of COVID-19 on the health of the nurses (Huang et al., 2020).

Razzak et al. (2020) predicted the number of healthcare workers that would become infected and die from COVID-19 in the United States. Razzak et al. (2020) predicted that 53,000 healthcare workers would contract COVID-19 and 1,579 healthcare workers would die of the COVID-19 virus. The lack of appropriate PPE played a significant role in the predictions of illness and death in healthcare workers in the United States. The infection rate was predicted from the reported infection rates in China and Italy (Razzak et al., 2020).

The fears of contracting COVID-19 or transmitting COVID-19 to family members was not the only concern healthcare workers reported (Cosic et al., 2020 & O'Neal et al., 2021). Healthcare workers are at risk for posttraumatic stress disorder (PTSD) related to the care of patients with the COVID-19. Nurses have cared for patients that have died from COVID-19. Nurses may feel guilty that the patients died because of the nurses' lack of knowledge (Huang et al., 2020). Nurses have reported high levels of stress, and this can contribute to PTSD (Cosic et al., 2020). Healthcare professionals may feel conflicted about the decisions that the professionals made during the pandemic related to the care provided to patients with COVID-19. Many hospitals lacked necessary supplies to care for patients with COVID-19 (O'Neal et al., 2021). The mental stress can have impact on the overall health of healthcare professionals. Strategies to mitigate and address PTSD, depression, anxiety, and fear need to be addressed in healthcare professionals (Kadapurran & De Guzman, 2020; Cosic et al., 2020; O'Neal et al., 2021). The mental health component is an aspect that may not be a concern addressed by nursing students.

High-fidelity Simulation Use in Preparing Students to Care for Patients with COVID-19

High-fidelity simulation has been used to give nursing students the opportunity to care for patients that the nursing students may not have the opportunity to care in the clinical setting (Sharour, 2019; Hustad, et al., 2019; Jang et al., 2019). Simulation provides an opportunity for

nursing students to practice without danger to either the nursing students or patients in the clinical setting. Nursing students have demonstrated improved knowledge after participation in a high-fidelity simulation (Sharour, 2019; Hustad, et al., 2019; Jang et al., 2019). Nursing students can assume the role of primary nurse and make decisions that impact the care of the patient that the nursing students cannot do independently in the clinical setting (Jang et al., 2019). Simulation is considered high-fidelity if the environment is realistic to the setting that the nursing student would provide care. The environment is critical for transfer of knowledge and for students to feel that the situation could occur (Hustad et al., 2019). The use of high-fidelity simulation provides feedback to students about the decisions that the students make during simulation. The patient can become worse or have a complication based on the decisions that the students make in the simulation environment (Sharour, 2019). The high-fidelity simulation environment is a standard component of healthcare education (Sanka, 2017).

Hospital units that were not designated as COVID-19 units made rapid changes to prepare to care for patients diagnosed with COVID-19 (Fadaak et al., 2021). Hospital staff had to implement changes to the current workflow to accommodate necessary changes required for the care of patients with COVID-19 (Fadaak et al., 2021). Fadaak et al. (2021) provided insight into the work that was accomplished to prepare a unit to safely care for patients with COVID-19. The space in the hospital needed to be prepared to care for patients and the staff also required training as to the best approach to implement the necessary isolation precautions (Fadaak et al., 2021).

Jensen et al. (2020) examined the environmental changes and the staff preparation to care for patients with COVID-19. The simulation that Jensen et al. (2020) prepared was completed in the hospital setting that provided a realistic setting for nurses to prepare for the care of patients with COVID-19. Healthcare professionals were educated through many different methods to

prepare to care for patients with COVID-19. The participants in the study identified simulation as an essential part of the preparation to care for patients with COVID-19 (Jensen et al., 2020). This is the only study that was found on simulation used to prepare healthcare workers to care for patients with COVID-19.

Impact of High-fidelity Simulation on Confidence Level of Nursing Students

High-fidelity simulation has been examined for the impact on confidence level of nursing students in the care of patients (Morrell-Scott, 2018; Dincer & Ataman, 2020; Sharour, 2019; Hustad et al., 2019). Sarman and Pardi (2019) examined the confidence of nursing students utilizing low-fidelity simulation. The participants in the study had a higher confidence level compared with students that participated in high-fidelity simulation (Sarman & Pardi, 2019). Participants in the study utilized the items for simulation at least once a month and had high confidence in performing the skills that the students practiced (Sarman & Pardi, 2019).

High-fidelity simulation can provide students with the opportunity to apply classroom knowledge to the clinical setting (Morrell-Scott, 2018). The participants in the study conducted by Morrell-Scott (2018) responded that participating in the high-fidelity simulation improved the participants' confidence in caring for patients that the participants had not the opportunity to care for in the clinical setting. The participants stated that the simulation environment was a safe place for the participants to learn and develop confidence in the care of patients.

Dincer and Ataman (2020) utilized a high-fidelity simulation to compare the confidence level of a control and experimental group. The experimental group participated in a high-fidelity simulation with a patient diagnosed with diabetes. The experimental group had higher confidence in the care of patients with diabetes and hypoglycemia. Dincer and Ataman (2020) stated that "self-confidence levels of nurses affected the quality of patient care" (p. 899).

Hustad et al. (2019) conducted a qualitative study on the experience of nursing students in the participation in high-fidelity simulation. Hustad et al. (2019) identified three themes in the qualitative study. The first finding was that high-fidelity simulation improves the confidence of nursing students in the care of patients. The second finding is that clinical judgement is improved by participating in high-fidelity simulation. The third finding was that teamwork is emphasized in high-fidelity simulation (Hustad et al., 2019).

Sharour (2019) developed a high-fidelity simulation regarding oncologic emergencies and examined how it impacted knowledge and confidence. Participants in the study had not had the opportunity to care for patients with an oncologic emergency. The participants reported increased confidence levels in caring for patients with oncologic emergencies after participation in the high-fidelity simulation (Sharour, 2019). No studies were found on the confidence level of nursing students that participate in a high-fidelity simulation for patients diagnosed with COVID-19.

Methodological Framework

The methodology that was implemented in this research study is a mixed methods methodology using a phenomenological study and survey research. Qualitative methodologies have been utilized to gather data from nursing students about high-fidelity simulation (Hustad et al., 2019; Thorp & Bassendowski, 2018; Morrell-Scott, 2018; Kapucu, 2017; Ward et al., 2017; Mohammad, 2020; Bowman, 2020). Morrell-Scott (2018) stated that phenomenological studies provide data that illuminated a subjective experience by the participants in the study. Hustad et al. (2019) stated that focus groups were appropriate if "participants have a common background" and "can help the participants to clarify and explain their experiences" (p. 2). Ward et al. (2017) gathered data from six focus groups about the participants experience in high-fidelity simulation

and caring behaviors. Each participant was involved in one focus group during the study (Ward et al., 2017). Morrell-Scott (2018) collected data with individual students one at a time. Bowman (2020) conducted focus groups at one time to collect data for the study. Kapucu (2017) conducted the interview after participating in a high-fidelity simulation and only conducted the interview one time. Thorp and Bassendowski (2018) conducted focus groups at the beginning of the data collection period and at the midpoint of the data collection period. The data collection period began at the beginning of the fall semester and at the end of the fall semester/beginning of the spring semester (Thorp & Bassendowski, 2018). Hustad et al. (2019) conducted focus groups at three different times during the study to gather data regarding the participants experience of utilizing skills developed in simulation to clinical practice. Individual interviews and focus group interviews provide data on the participants experience in a high-fidelity simulation.

Confidence levels after participating in a high-fidelity simulation can be identified through interview questions asked during either focus group or individual interviews. Morrell-Scott (2018) stated that the participants in the study felt that participating in simulation improved the participants' critical thinking and confidence in caring for a patient that was in cardiac arrest. During interviews, one participant stated that the participant felt nervous to participate in the simulation but had gained confidence after the participation in a high-fidelity simulation (Morrell-Scott, 2018). Hustad et al. (2019) reported that participants stated that high-fidelity simulation prepared the participants for the clinical environment. The participants stated that high-fidelity simulation allowed the participant to feel that the participant had some experience in caring for patients prior to clinical experience (Hustad et al., 2019). Kapucu (2017) reported that one of the participants in the study stated that the participant had increased confidence after participating in the high-fidelity simulation.

Confidence levels can be reported by participants during interviews or can be measured through collection of data using a self-confidence scale (Sharour, 2019; Dincer & Ataman, 2020; Sarman & Pardi, 2019; Omer, 2016).

Sharour (2019) utilized a self-confidence scale that was developed by Hicks (2006) that has 13 questions with a Likert scale. Sharour (2019) found that the participants in the study had increased confidence after participating in a high-fidelity simulation for patients with an oncologic emergency. The self-confidence scale developed by Hicks (2006) has been validated in previous literature (Sharour, 2019). Sarman and Pardi (2019) and Dincer and Ataman (2020) utilized the Student Satisfaction and Self-Confidence in Learning Scale from the National League of Nursing (NLN). Omer (2016) utilized both the Student Satisfaction and Self-Confidence in Learning Scale from the NLN, and self-confidence scale developed by Hicks (2006). Both scales are Likert scales in which the participant identified how confident and satisfied the participant is after participating in a high-fidelity simulation (Sharour, 2019; Sarman & Pardi, 2019; Omer, 2016). The participants answered these surveys after the participation in a high-fidelity simulation (Sharour, 2019; Sarman & Pardi, 2019; Omer, 2016).

Sharour (2019) and Dincer and Ataman (2020) utilized a pre-test-posttest design to examine if there was a difference in the knowledge level of students after participation in a high-fidelity simulation. Jang et al. (2019) and Mehdipur-Rabori et al. (2021) utilized a pre- test-posttest design to compare the knowledge level between participants that had traditional educational strategies versus participants that participated in a high-fidelity simulation. A pre-test-posttest design is helpful to compare what was known about a concept before the high-fidelity simulation and how the high-fidelity simulation impacted the participants' knowledge.

The research questions for studies with a pre-test-posttest design involve comparison of knowledge. The research questions posed in this study are not concerned with knowledge but the impact of a high-fidelity simulation on confidence levels of the participants in the care of patients with COVID-19.

Summary

COVID-19 was first recognized in December 2019 and was officially given a name in January 2020 (Huang et al., 2020). COVID-19 is highly contagious and nursing students were unable to care for patients with COVID-19 in the clinical setting at the beginning of the pandemic and throughout the pandemic depending on the clinical agency and institution of higher education. Upon graduation, novice nurses are assigned to care for patients with COVID-19 without having had the opportunity to care for patients diagnosed with COVID-19 in the clinical setting. Simulation is used in nursing education and provides a safe place for students to practice caring for patients without harming the patient or the nursing student being harmed during the simulation (Sanka, 2017). There was not found any studies on how simulation impacts the confidence level of students in the care of patients with COVID-19.

Kolb's experiential learning theory, constructivist learning theory, scaffolding theory, and andragogy or adult learning theory inform best practices in simulation and are the basis for simulation in education. Kolb's experiential learning theory provides a foundation for simulation. Nursing students that can perform interventions in a simulation environment gain knowledge through participation in the simulation (Palaganas et al., 2015; Sharour, 2019; Wilson & Wittmann-Price, 2019). In constructivist learning theory, students use previously mastered concepts to provide a foundation to learn new concepts (Wilson & Wittmann-Price, 2019). Students can use concepts related to oxygenation and immunology to provide a basis for the care

of patients with COVID-19. The transition from novice practitioner to expert is identified in scaffolding theory (Wilson & Wittmann-Price, 2019). Novice practitioners have a baseline knowledge, and the instructor can use the simulation environment to further build on the foundational knowledge that the novice practitioner has. Adult learning theory stated that adult learners will engage in learning that the adult learner feels is integral to the adult learner's career (Palaganas et al., 2015). Effective treatment protocols are still being developed for COVID-19. Nurses and nursing students need to find reliable sources of information to know which strategies are most effective in the care of patients with COVID-19 (Patelarou et al., 2020 & Alshdefat et al., 2021). Patelarou et al. (2020) found that nursing students sought information about COVID-19 from resources outside social media.

Qualitative research studies have been utilized to gather data on high-fidelity simulation with nursing students (Hustad et al., 2019; Thorp & Bassendowski, 2018; Morrell-Scott, 2018; Kapucu, 2017; Ward et al., 2017; Mohammad, 2020; Bowman, 2020). The data have been gathered through both individual interviews and focus groups in the previous literature. Confidence levels have been identified through interview questions in qualitative research studies and using a validated research tool in survey research (Hustad et al., 2019; Morrell-Scott, 2018; Kapucu, 2017; Sharour, 2019; Sarman & Pardi, 2019; Omer, 2016). The scales utilized are the Student Satisfaction and Self-Confidence in Learning Scale from the NLN and self-confidence scale developed by Hicks (2006) (Sharour, 2019; Sarman & Pardi, 2019; Omer, 2016). These research methodologies are consistently used throughout the literature and were applied to investigate the research questions of how a high-fidelity simulation impacts the confidence level of nursing students in caring for patients with COVID-19.

Chapter 3 includes the methodology and procedures that was utilized in the research study. The methodology that was used is a phenomenological and survey research approach. The procedures outlined in chapter 3 were implemented to determine how the participation in a high-fidelity simulation impacts the confidence level of nursing students in the care of patients with COVID-19.

Chapter 3: Methodology

Introduction

A qualitative and survey research study was designed to investigate the confidence level of nursing students in the care of patients diagnosed with COVID-19 among associate degree nursing students at a community college in Northwest Arkansas. It was not known the impact that participating in a high-fidelity simulation had on the confidence level of nursing students in the care of patients diagnosed with COVID-19. Nursing students do not the opportunity to care for patients with every disease process in simulation (Sharour, 2019). COVID-19 was a newly diagnosed disease process with ever changing treatment protocols. There is no research found on the impact of simulation in the preparation of nursing students to care for patients with the COVID-19. The overall research question that guided this study was: What impact does participation in a high-fidelity simulation of a patient with COVID-19 have on student nurse confidence in caring for a patient with COVID-19? There were three research sub questions that will be utilized to further examine this phenomenon. The first sub question was: What concerns do nursing students have about caring for a patient with COVID-19? The second research sub question was: How will participating in a high-fidelity simulation prepare nursing students to care for COVID-19 patients, if at all? The final research sub question was: What is the confidence level of nursing students in the care of patients with COVID-19 prior to and immediately following a high-fidelity simulation? These research questions guided the design of the research study.

This chapter includes a description of the research procedure and research design. The population and sample are identified to investigate the research questions. The sources of data, instrumentation, data collection, and the data analysis procedure are identified for the research study. The ethical considerations are identified that apply to the participants in the research

study. The limitations and delimitations of the methodology and design of the research study are further expounded. The design of the research study is the key to ensuring that the appropriate data is collected to answer the research questions.

Research Methodology

A phenomenological qualitative and survey research design was utilized to gather data to answer the research questions. A phenomenological qualitative study is used in research to gain the perspective of the participants in the study to answer the research question (Leedy & Ormrod, 2013). Bowman (2020) utilized a qualitative design to answer research questions related to caring behavior in high-fidelity simulation and if the participants could translate the caring behaviors from simulation to the clinical site. The participants in Bowman's (2020) study were interviewed with open-ended questions related to caring behaviors in simulation and in the clinical setting. Kapucu (2017) utilized a qualitative approach to examine the experience of nursing students in a high-fidelity simulation with a patient diagnosed with a chest trauma. The qualitative data was utilized to answer the research question of the opinions of nursing students in simulation and if the nursing students felt prepared to care for patients with a chest trauma (Kapucu, 2017). Morrell-Scott (2018) employed a qualitative research design to answer the research question of what nursing students' experience was in participating in simulation throughout the nursing students' education. Focus groups are commonly utilized to gather data in qualitative studies in simulation studies (Bowman, 2020; Kapucu, 2017; Morrell-Scott, 2018; Hustad et al., 2019). The sample size of a phenomenological qualitative study is ideally 5 to 25 participants to allow for an interview that is 1 to 2 hours long (Leedy & Ormrod, 2013). The researcher in a qualitative study should not allow personal biases to influence the interpretation of the data and questions asked during the research study (Leedy & Ormrod, 2013). The

researcher must make the effort to remain impartial during the study and ask questions related to the research questions and not the expectations the researcher has for the study (Leedy & Ormrod, 2013).

Survey research is utilized to acquire data on a group by asking questions that can be counted and reported. Survey research is meant to gather data about one instance in time (Leedy & Ormrod, 2013). Dincer and Ataman (2020) utilized the student satisfaction and self-confidence learning scale by the NLN to gather data on the satisfaction and self-confidence of nursing students caring for patients diagnosed with hypoglycemia and diabetes in simulation. Dincer and Ataman (2020) stated that the student satisfaction and self-confidence scale is a questionnaire that has 13 items total on a Likert Scale from 1-5. The higher the score on the scale the more satisfied and confident the participants were after participating in a simulation (Dincer & Ataman, 2020). Sharour (2019) utilized Hicks (2006) self-confidence scale that consisted of 13 items on a Likert scale that the higher the score the more confident the participant was in skills after the participation in a high-fidelity simulation. Sarman and Pardi (2019) utilized the NLN student satisfaction and self-confidence scale to gather data on the impact of simulation related to nursing education. The participants in the study had high self-confidence levels with the utilization of simulation throughout clinical education (Sarman & Pardi, 2019). The satisfaction and self-confidence scales have been previously validated in the literature (Dincer & Ataman, 2020; Sharour, 2019; Sarman & Pardi, 2019). The use of the student satisfaction and self-confidence scales has been used in previous studies along with evaluating knowledge after participation in a simulation (Dincer & Ataman, 2020 & Sharour, 2019). A pre-test and posttest design were utilized to evaluate if there was improved knowledge on the content of the simulation and the student satisfaction and self-confidence scales provided additional

information about the student experience of the simulation (Dincer & Ataman, 2020 & Sharour, 2019). The research design chosen for this study was a mixed methodology involving phenomenological qualitative and survey methods.

Design of the Study

A mixed methods phenomenological and survey research design was used to answer the research questions related to confidence level of nursing students in the care of patients diagnosed with COVID-19 after the participation in a high-fidelity simulation. No previous research was found on the confidence level of nursing students in the care of patients with COVID-19. Huang et al. (2020) used survey research to examine the emotional response experienced by nurses and nursing students related to COVID-19. The questionnaire provided data on the difference between nursing students and nurses related to concerns about COVID-19. The data for the study were not focused on confidence level in caring for patients with COVID-19. Jensen et al. (2020) studied the impact of simulation in the hospital environment and if simulation improved confidence of staff preparing to care for patients with COVID-19. No other studies were found on simulation use in the preparation of healthcare workers in the care of patients diagnosed with COVID-19.

A mixed methods approach was necessary to answer the research questions for this study. The researcher conducted a pilot study with four participants from a different cohort than the participants of the researcher study. The pilot study participants were second-year nursing students that were closer to graduation than the participants of the research study. The pilot study consisted of four participants. The researcher had groups of three to four participants per focus group. The participants participated in a pre-simulation focus group that provided data about concerns that the participants had related caring for patients diagnosed with COVID-19 and how

confident the participants felt in caring for a patient diagnosed with COVID-19. The questions asked in the pre-simulation focus group were used as a baseline prior to the participation in the simulation. The participants then participated in a high-fidelity simulation using a high-fidelity simulator. After the completion of the simulation the participants participated in a focus group to gather data on if the simulation improved the participants' confidence level in the care of COVID-19. The participants were then given a self-confidence items from the student satisfaction and self-confidence scale by the NLN. Some items were adjusted to apply specifically to the simulation for patients diagnosed with COVID-19. Bowman, 2020; Kapucu, 2017; Morrell-Scott, 2018; and Hustad et al., 2019 conducted qualitative research studies without adding a questionnaire to further data collection. Sarman and Pardi (2019) only utilized survey research to collect data to answer the research question for the research study on satisfaction and confidence in the use of simulation in nursing education. Sharour (2019) and Dincer and Ataman (2020) designed a study with a pre-test and posttest and a questionnaire to answer the research questions posed by their studies. Mixed methods research studies provide both quantitative and qualitative data that can be used to answer the research question (Leedy & Ormrod, 2013). The fears and the impact of a high-fidelity simulation were best addressed through a phenomenological qualitative approach with the use of a focus group to collect data. The confidence level of nursing students after participating in a high-fidelity simulation were best addressed through the self-confidence section of the student satisfaction and self-confidence scale developed and validated by the NLN (2005). The data gathered through these two methodologies provided a comprehensive answer to the research question.

Sample and Population

The population for this study was an associate degree nursing school in Northwest Arkansas. The population of nursing students had not been able to care for patients diagnosed with COVID-19 in the clinical setting. The sample identified for the research study are second year nursing students. Qualitative studies generally have smaller small sizes to collect data (Bowman, 2020). Leedy and Ormrod (2013) recommended between 5 and 25 participants in a qualitative phenological study. A sample size of 15 students was identified as an appropriate target for data gathering. The population consists of between 100 and 160 students and a sample of 15 students in the students' second year of nursing school would provided a representative sample of students that were preparing for to care for patients with COVID-19 after graduation from nursing school.

Once approval was obtained from the IRB at Aspen University and permission granted from the community college to conduct research the sample was recruited. Flyers were placed in all the classrooms with a date for participants to volunteer and obtain information about the study. The participants were given an overview of the research study and the informed consent form was given to the participants to review and ask questions regarding the research study. The participants of the pilot study returned the informed consent both before and on the day of the pilot study prior to the pre-simulation focus group. The participants of the research study returned the informed consent prior to the day of the research study. The potential participants in the research study were notified of the methods that were utilized to protect the participants' privacy, including that data is stored in a lock box at the researcher's home and that all recorded data would be password protected. The sample population should be representative of the

population under investigation and should potentially represent differing viewpoints (Leedy & Ormrod, 2013).

Instrumentation and Data Sources

The mixed-methods instrument used in the research study involved the collection of data through recorded interviews (See Appendix C) and the self-confidence scale from the NLN (2005) (See Appendix D). The NLN (2005) self-confidence scale has been previously validated Cronbach's alpha of 0.87 (Available Instruments, 2021). A recording device was used to record the answers to the questions asked in the focus group and were later be transcribed. A pad of paper and pen was used to take notes during the focus group session and compared to the recordings from the focus groups obtained before and after participation in a high-fidelity simulation. Open-ended questions were asked by the researcher to the focus group related to the research question. The researcher did not use personal information when collecting data and had a system to identify the first participant as A, the second a B, until S. The participants in the pilot study were identified as A, B, C, and D. The participants in the research study began at D. The instruments and interview questions were approved by the IRB prior to implementation of the research study.

Validity

The validity of the tools utilized are essential to obtain data that answers the research question but does not have too much influence by the researcher. The NLN (2005) self-confidence scale has been previously validated Cronbach's alpha of 0.87 (Available Instruments, 2021). The research questions were trialed in a pilot study prior to the research study to ensure that the research questions obtain the necessary information without leading the participants to

the answers that the researcher wants the participants to say. Reliability is essential for the instruments used in the research study.

Reliability

The NLN (2005) self-confidence scale has been previously validated as being reliable with a Cronbach's alpha of 0.87 (Available Instruments, 2021). The questions for the focus group were consistently administered during the data collection process. The researcher asked the same questions to each focus group to obtain the necessary information to answer the research questions (Leedy and Ormrod, 2013).

Data Collection

The participants of the research study were given information about the purpose of the research study in an information session about the purpose of the research study and signed an informed consent prior to participating in the research study. The participants of the research study were given the opportunity to ask questions about the research study and the informed consent. The participants participated in a focus group prior to a high-fidelity simulation to obtain data on the participants' confidence level in the care of patients diagnosed with COVID-19 prior to the simulation and any fears in the care of a patient with COVID-19. The participants were in groups of no more than 4 participants and participated in a high-fidelity simulation (See Appendix E). After the participation in a high-fidelity simulation, the participants participated in a focus group to evaluate the participants' confidence level and if the simulation improved the participants' confidence level in the care of patients with COVID-19. After the focus group the participants completed the self-confidence scale from the NLN (2005) and were dismissed and thanked for the participation in the research study.

Data Analysis Procedure

The data were analyzed by examining the survey for confidence level after simulation. The mean and standard deviation were used by entering the data from the self-confidence questionnaire in an Excel spreadsheet (Sarman & Pardi, 2019). The qualitative data were examined for themes on what the participants' confidence level is, if simulation improved confidence levels, and concerns in caring for a patient with COVID-19. NVivo was utilized to examine the themes from the data gathered in the focus groups, both before and after participation in a high-fidelity simulation. The researcher sorted through the data to examine the information that is essential and the information that is not essential to the research study. The process of data analysis for a qualitative study is a lengthy and requires patience and accurate transcription and notes during the focus group interviews (Leedy & Ormrod, 2013). The analysis of both the survey and themes were reported in the results section of the dissertation.

Ethical Considerations

The participants in the research study were treated in the highest ethical manner. All participants of the research study were given informed consent in which the risks and benefits of participating in the research study were explained. The participants of the research study were assured that the participation or choice not to participate in the research study would not have an impact on the participants' academic standings. The researcher did not use personal information when collecting data and had a system to identify the first participant as A, the second a B, until S. The instruments and interview questions were approved by the IRB prior to implementation of the research study. The researcher stored all information in a lock box at the researcher's home and all recordings were password protected. The confidentiality and informed consent process are essential in ensuring the protection of the participants in a research study.

Limitations and Delimitations to the Methodology and Design

The limitations of a research study are restrictions over which the researcher does not have any control (Rudestam & Newton, 2015). One of the greatest limitations of this study is the sample size. The sample for this study was a convenience sample of nursing students at a small community college in Northwest Arkansas. Another limitation of the study was the students will interact with the researcher as an instructor in the nursing lab and this could impact the answers the nursing students provide. Another limitation was that there is minimal literature on education and training for the care of patients with COVID-19. The limitations of the study impact the data gathered during the study.

Delimitations of the research study are restrictions that the researcher chooses to impose on the study to "restrict the populations to which the results of the study can be generalized" (Rudestam & Newton, 2015, p. 122). The delimitations that were employed in this study was to use a sample from second year of nursing students at a small community college in Northwest Arkansas. The other delimitation that was employed was to conduct the interviews before and after the simulation and ask the same questions to each group of students. The other delimitation that will be employed was to run the simulation the same way each time. The delimitations of the study should be employed to ensure the validity of the study.

Summary

The mixed methods research design supplied the structure necessary to answer the research questions that guided this research study. The sample for this study was second year nursing students at a community college in Northwest Arkansas. The data was gathered using the self-confidence scale from the NLN (2005) and focus groups of no more than four students before and after participation in a high-fidelity simulation. The data was analyzed using an Excel

spreadsheet for the self-confidence scale and the analysis of these for the data gathered from the focus groups using NVivo. The researcher took right steps to ensure the confidentiality of the participants and ensured that the participants were informed of the risks and benefits of participating in the research study. The limitations of the research study included a small sample size in one geographical location that does not generalize to all nursing students. The delimitations included ensuring that the same questions are asked during the focus groups and that the high-fidelity simulation was run the same way every time. The data gathered from this research study were reported in Chapter 4 of the dissertation.

Chapter 4: Results and Discussion

Introduction

The results of the research study conducted on the impact on the confidence level of nursing students in caring for patients diagnosed with COVID-19 after participating in a high-fidelity simulation is presented in this chapter. The purpose of the phenomenological qualitive and survey research study was to evaluate the effects on the confidence level of nursing students in caring for patients with COVID-19 after participating in a high-fidelity simulation in which the patient in the scenario is diagnosed with COVID-19. A mixed method designed was utilized to investigate the research questions identified related to nursing students in the care of COVID-19 patients.

The overall research question that guided this study was: What impact does participation in a high-fidelity simulation of a patient with COVID-19 have on student nurse confidence in caring for a patient with COVID-19? There are three research sub questions that will be utilized to further examine this phenomenon. The first sub question is: What concerns do nursing students have about caring for a patient with COVID-19? The second research sub question is: How will participating in a high-fidelity simulation prepare nursing students to care for COVID-19 patients, if at all? The final research sub question is: What is the confidence level of nursing students in the care of patients with COVID-19 prior to and immediately following a high-fidelity simulation?

Chapter 4 includes the results collected from the research study. The demographic data and overview of the data collected are addressed. The data analysis procedures are addressed including the software utilized in the data analysis process. The results of the study are addressed by research question. The qualitative data are addressed in each research questions. The results

from the survey data are presented when providing the data for the final research sub question about the confidence level of nursing students in care of patients with COVID-19 immediately following a high-fidelity simulation. The results are summarized at the end of the chapter.

Descriptive Data

The participants in the pilot study and the research study were selected from the chosen population of second year nursing students at community college in Northwest Arkansas. The participants in the pilot study were nursing students that were in the final semester of nursing school. The participants of the research study were students in the third semester of nursing school. Nursing students in the third and fourth semester of nursing school are considered second year in the community college selected for this study. No other demographic data were collected in this study to protect the confidentiality of the participants in the small population. There were four participants in the pilot study and fifteen participants in the research study. The participants in the pilot study were from one cohort and the participants from the research study were from a different cohort of students. Table 1 displays data concerning the number of surveys completed, the number of focus groups, and the duration of each focus group. The pilot study is included in this table and is referenced as the pilot group. The focus groups for the research study are identified as focus group 1, focus group 2, focus group 3, and focus group 4. Each focus group had an interview conducted prior to the high-fidelity simulation and immediately following the debriefing session of the high-fidelity simulation of a patient diagnosed with COVID-19.

Table 1

Overview of data collected

Focus Group	Surveys Collected	Pre-simulation interview duration	Post simulation interview duration
Pilot Group	4	3 minutes 4 seconds	6 minutes 37 seconds

Focus Group 1	4	3 minutes 11 seconds	11 minutes 19 seconds
Focus Group 2	4	4 minutes 37 seconds	11 minutes 27 seconds
Focus Group 3	4	6 minutes 40 seconds	13 minutes 4 seconds
Focus Group 4	3	5 minutes 20 seconds	13 minutes 46 seconds
Total	19	22 minutes 52 seconds	56 minutes 13 seconds

Data Analysis Procedures

The data analysis was conducted using Microsoft Excel for the quantitative data collected and NVivo for the qualitative data collected. The quantitative data were entered into two different Microsoft Excl spreadsheets. One spreadsheet contained the results of the surveys from the pilot study. The survey used in the data collection process is found in Appendix D. The participants answered each question on a Likert Scale between 1-5. The results for each question were entered individually by participant letter. After each number was entered per question, the mean and standard deviation were found using formulas in Microsoft Excel. The same procedure was duplicated for the research study but with fifteen participants instead of four.

The interviews for the focus groups were conducted prior to participation in a high-fidelity simulation and immediately following a high-fidelity simulation for a patient diagnosed with COVID-19. The interviews were recorded using a voice recorder and the researcher took notes during the interview process. The interviews were uploaded to a zip drive. The interviews were transcribed and emailed to the participants by focus group to ensure that the information was accurately transcribed. The data were then entered in the program NVivo. The data were coded separately for the pilot study and the research study, but the same codes were used to

analyze the data for both the pilot and research study. The codes used were COVID-19 concerns pre-simulation, experience in simulation, experience level with COVID-19, confidence level pre-simulation, post simulation concerns, pre-simulation concerns addressed in simulation, simulation expectations pre-simulation, and simulation impact. The codes chosen were based on the interview questions asked in Appendix C. The data were grouped under each heading and after completing that process the query results function was utilized in NVivo to determine the themes related to each of the codes utilized. A pilot study was utilized to ensure that the data collected would answer the research questions for the study. The data were limited by the number of participants for the study. Fifteen participants were the minimum number of participants that was approved for the study. The pilot study was conducted with students that were not part of the same cohort of students and could have impacted the results of the study if they had been included in the initial study.

Results

Overall research question

The overall research question was: What impact does participation in a high-fidelity simulation of a patient with COVID-19 have on student nurse confidence in caring for a patient with COVID-19? This overall research question has three sub-questions that further help to answer the overall research question. The participants of the pilot study were asked the impact that the simulation had on the participants after participating in the simulation of a patient with COVID-19. The participants of the pilot study stated that the participants felt more comfortable in the care of patients with COVID-19 and were “not nearly as scared”. The participants of the research study stated that one impact of the simulation was the importance of teamwork and planning prior to entering the room. Communication was another theme that

was identified as an impact of the participation in the simulation. One of the participant's stated "Knowing there's an opportunity to call for more help than what is in the room, not being stuck in the immediacy of the situation". The impact that the simulation had on the participants of the pilot and research study is further identified in the research sub-questions. **Research sub-question 1**

The first sub-question was: What concerns do nursing students have about caring for a patient with COVID-19? This question was addressed prior to participation in a high-fidelity simulation and immediately after participation in a high-fidelity simulation. In the pilot study the concerns mentioned by the participants prior to the simulation were the rapid deterioration of patients with COVID-19 and the ability to manage all the medications for the patient. After participation in a high-fidelity simulation the concerns for the pilot study were managing the patient's comorbidities, managing all the equipment attached to the patient, keeping up with the ever-changing protocols for the patient, and properly caring for the patient. The participants were also asked what concerns that were mentioned in the focus group prior to simulation were addressed in the simulation. The participants in the pilot study stated that most of the concerns were addressed in the simulation. One of the participants stated "I feel like all those were addressed" that were mentioned in pre simulation in the simulation.

In the research study, concerns that were voiced prior to the simulation were contracting COVID-19 while caring for patients, keeping current on the protocol to manage COVID-19, not having the training to care for a patient with COVID-19, caring for a patient on a ventilator, and the long-term effects for patients. One participant stated, "I think just general contraction of the virus like even though I am in full PPE and stuff there is still always that concern". This concern was echoed in some of the other focus groups as well. Post simulation the concerns that were

voiced were not knowing the long-term effects of COVID-19, caring for a patient that is completely dependent on the nurse for care, staffing, managing the equipment for the patient, planning appropriately, and concerns about contracting COVID-19. One participant stated, "staffing since we had a low team to do this, and I know that's been a reality in a lot of places". Other members of this focus group echoed the concern of not having enough staff to safely care for a patient. Another participant stated, "I didn't think about it when I set the goal of being a nurse, but well this job could really, really hurt you, you could get really sick". Other participants echoed the concern of being fearful of contracting the virus while caring for patients that had COVID-19. The participants in the research study were asked about the concerns that were voiced in pre simulation were addressed in the simulation. The participants verbalized that some of the concerns that were mentioned were addressed in the simulation. One of the participants stated that participating in the simulation did not take away the concerns of contracting COVID-19. Some of the participants stated that participating in the simulation addressed concerns related to dealing with multiple intravenous fluids in a critically ill COVID-19 patients. One of the participants stated that the concern of not knowing how to properly prone a patient was addressed. This was echoed with other focus groups. The participants of both the pilot study and research study were asked about the participants concerns prior to the simulation, after the simulation, and if the concerns were addressed during the simulation.

Research sub-question 2

The second sub-question of the research study was: How will participating in a high-fidelity simulation prepare nursing students to care for COVID-19 patients, if at all? The participants in the pilot study stated that the participants stated the participants felt more prepared and were less scared than prior to the simulation. One participant in the pilot group

stated that “It was better to learn with a mannequin than with a real patient that it is in critical condition”. In the research study, the participants stated the participants felt more comfortable with the proning process, working around a ventilator, the importance of teamwork in the situation, and the importance of planning the care prior to entering the room. One participant stated, “One thing that stood out to me particularly is how important it is to plan”. This was repeated by other participants in other focus groups about the importance of planning. Another participant stated, “I am definitely going to be more eager to volunteer for the COVID patients, because I feel like I know how to care for them a bit better”.

Research sub-question 3

The final sub-question of the research study was: What is the confidence level of nursing students in the care of patients with COVID-19 prior to and immediately following a high-fidelity simulation? The participants in the pilot study had a very low confidence level prior to participating in the simulation. Two of the participants had none or minimal experience in caring for patients with COVID-19 and the other two participants had cared for patients with COVID-19 as unlicensed assistive personnel in the hospital. The participants of the pilot study were asked about the participants’ confidence level in various interventions in the simulation. The participants mentioned assessment of the patient, speaking to the healthcare provider, recognizing a medical error, and proning a patient. The participants stated that the participants of the pilot study felt comfortable with the assessment process and more comfortable with the proning process. Table 2 is the results of the questionnaire completed by the participants of the pilot study. The mean and standard deviation are presented by the question that the participants rated on a Likert scale found in Appendix C.

Table 2

Results of self-confidence questionnaire for pilot study

Question	Mean	Standard Deviation
1. I am confident that I am mastering the content of the simulation activity that my instructors presented to me.	5	0
2. I am confident that this simulation covered critical content necessary for the mastery of caring for a patient with COVID-19.	5	0
3. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting related to COVID-19.	5	0
4. My instructors used helpful resources to teach the simulation.	5	0
5. It is my responsibility as the student to learn what I need to know from this simulation activity.	5	0
6. I know how to get help when I do not understand the concepts covered in the simulation.	5	0
7. I know how to use simulation activities to learn critical aspects of these skills.	5	0
8. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time.	3.75	0.9574271

The participants of the research study had different levels of confidence. Some had no confidence from lack of experience, some felt confidence in the role of unlicensed assistive personnel, and some participants felt confident in the participant's ability to manage the PPE. Some of the participants had not worked with COVID-19 patients, some had work with COVID-19 patients in a limited capacity, and others had worked as unlicensed assistive personnel. The participants of the research study were asked the interventions completed in the simulation and the confidence level in completing the interventions. The participants of the research study identified assessment, medication administration, proning, contacting other healthcare professionals, and communicating with the patient. The participants of the study stated a high confidence level in completing the assessment. One of the participants stated, "I feel confident" and this was echoed by other focus groups. The participants of the study were divided in the

confidence of medication administration. One of the participants stated that the participant was "not as good as I would like" at medication administration. Another participant stated, "I was pretty confident. I mean, it's overwhelming if you just look at all of it at first but just have to break it down one piece at a time". The participants stated that the participants had increased confidence in proning a patient, but not completely confident in the maneuver. The participants stated that "I feel more confident now than going into this for sure". The participants of one of the focus groups stated there were still areas of concern in the proning process. The participants of the research study had a high confidence level in contacting other healthcare providers in the care of patients. The participants in some focus groups identified communication with a patient that is not verbal as a strength, while other participants identified this as an area for improvement. One of the participants stated, "I'm probably better at that part maybe even than the physical skill thing, the compassion side". One of the participants stated that the participants in one of the focus groups took some time to communicate what was happening to the patient in the simulation. The participants in three out of four focus groups in the research study stated a need to communicate with the patient. Table 3 is the results of the questionnaire completed by the participants of the research study. The mean and standard deviation are presented by the question that the participants rated on a Likert scale found in Appendix C.

Table 3

Results of self-confidence questionnaire for research study

Question	Mean	Standard Deviation
1. I am confident that I am mastering the content of the simulation activity that my instructors presented to me.	3.5333333	0.99043
2. I am confident that this simulation covered critical content necessary for the mastery of caring for a patient with COVID-19.	4.6	0.507093

3. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting related to COVID-19.	4.2	1.014185
4. My instructors used helpful resources to teach the simulation.	4.866667	0.351866
5. It is my responsibility as the student to learn what I need to know from this simulation activity.	4.466667	0.743223
6. I know how to get help when I do not understand the concepts covered in the simulation.	4.533333	0.63994
7. I know how to use simulation activities to learn critical aspects of these skills.	4.666667	0.48795
8. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time.	3.333333	0.899735

Summary

The mixed methods phenomenological qualitative and survey research study was completed at community college in Northwest Arkansas. The participants of the research study participated in a focus group before and after participating in a high-fidelity simulation. The participants completed a questionnaire after participating in a high-fidelity simulation. The overall research question posed in the research study was: What impact does participation in a high-fidelity simulation of a patient with COVID-19 have on student nurse confidence in caring for a patient with COVID-19? The participants identified communication and the need to plan care as an impact of participating in a high-fidelity simulation in the care of a patient with COVID-19.

The first sub-question posed to provide answer the overall research question was: What concerns do nursing students have about caring for a patient with COVID-19? The participants identified contracting COVID-19 or exposing a family member to COVID-19 and the family member contracting COVID-19. The participants in the pilot study were concerned about the rapid deterioration of patients with COVID-19 prior to participating in the simulation. After

participating in the simulation, the pilot focus group identified managing co-morbidities as a concern in caring for patients diagnosed with COVID-19. One of the focus groups identified staffing as a concern in the care of patients with COVID-19, not having enough staff to properly care for the patient. A couple of the focus groups identified long-term effects as a concern in caring for patients that have been diagnosed with COVID-19. The concerns identified prior to the simulation were like the concerns identified after the simulation in some of the focus groups and in other focus groups the concerns had slightly changed.

The second sub-question identified to answer the overall research question was: How will participating in a high-fidelity simulation prepare nursing students to care for COVID-19 patients, if at all? The participants of the research study stated that the participants appreciated the opportunity to prone a mannequin that could not be harmed before performing the prone procedure on a patient that could be harmed.

The third sub-question that was addressed to answer the overall research question was: What is the confidence level of nursing students in the care of patients with COVID-19 prior to and immediately following a high-fidelity simulation? Most of the participants in the combined pilot and research study had limited experience in caring for patients with COVID-19. In the pilot study two out of the four participants had cared for patients with COVID-19. Only a six of the fifteen participants in the study had any experience directly caring for a patient diagnosed with COVID-19. The most common role for these participants was in unlicensed assistive personnel role. The participants in the pilot and research study stated that the participants had a low confidence level in caring for patients with COVID-19 prior to the simulation. The participants of the pilot and research study completed a modified self-confidence questionnaire previously validated by the NLN (2005). Most participants of the pilot and research study either

agreed or strongly agreed with the statements related to self-confidence in the care of patients with COVID-19 after participating in a high-fidelity simulation. The participants in the pilot and research study had different levels of confidence for the interventions performed in the simulation. The participants had a high-level of confidence in assessment and communicating with other healthcare providers. The participants were divided in different focus groups on the administration of medications. The participants stated that the participants had improved confidence in proning a patient, but not a high confidence level.

The analysis of data confirmed the limitations of the study. The sample size was small and impairs the ability to generalize to all nursing students. The sample was from one geographic region and cannot be generalized outside this region. The researcher used one treatment protocol identified in the literature. The ever-changing treatment protocol was identified as a concern for the participants of the study and was previously identified as a limitation of the study.

In chapter 5, the results of the study will be further interpreted. How the results of this study contribute to the knowledge about the impact of high-fidelity simulation on nursing student confidence level in the care of patients with COVID-19 will be further identified. Recommendations on how this research study should be utilized to inform decision-making on future research topics and the current needs of nursing students in caring for patients with COVID-19 will also be explored.

Chapter 5: Conclusions and Recommendations

Introduction

An analysis and interpretation of the results of the research study conducted on the impact of participation in a high-fidelity simulation of a patient with COVID-19 on the confidence on student nurse confidence are presented in this chapter. The problem that was investigated in the research study was how participation in a high-fidelity simulation on the care of a patient diagnosed with COVID-19 will impact the confidence level of nursing students in caring for a patient with COVID-19. The fears of nursing students related to the care of patients with COVID-19 were examined. The confidence level of nursing students was examined related to the care of COVID-19 both before and after participation in a high-fidelity simulation.

The COVID-19 pandemic changed the way nursing students were educated. At the beginning of the pandemic nursing students had decreased clinical time and moved to an online classroom environment (Gaines, 2020). Nursing students were prohibited from caring for COVD-19 patients in some facilities at the beginning of the COVID-19 pandemic due to a shortage of PPE (Thomasian et al., 2020). Nursing students may not be able to care for patients with COVID-19 during nursing school due to nursing school or facility restrictions but are expected to care for patients diagnosed with COVID-19 upon graduation from nursing school and obtaining a nursing license.

Simulation has been utilized to provide an opportunity to care for students to care for patients that the student may not have the opportunity to care for in the clinical setting (Sharour, 2019). The COVID-19 virus is unique in the simulation environment. The treatment protocols for COVID-19 are not standardized and are currently being researched for the most effective regimen. The COVID-19 virus in highly infectious and places healthcare workers at risk for

contracting the COVID-19 virus (Thomasian et al., 2020). Simulation provides an opportunity to care for patients in an environment that does not cause harm to either the student or the patient.

This chapter includes the discussion of the findings and relates the findings to theoretical findings in the research. The implications and connections to the current research is further explored. The limitations, strengths, weaknesses, credibility, and generalizability of the research study are identified. The recommendations based on the current research findings are delineated. The findings of the research study should be examined in the context of what is in the current literature related to simulation, the COVID-19 virus, and nursing students.

Discussion of Findings and Theoretical Foundations

A phenomenological qualitative and survey research design was utilized to investigate the overall research question of the impact of participation in a high-fidelity simulation caring for a patient diagnosed with COVID-19 has on the confidence level of nursing students in the care of a patient diagnosed with COVID-19. Three research sub questions were identified to further explore the overall research question. The first sub question explored the concerns that nursing students had in the care of patients with COVID-19. The second sub question examined the how participation in a high-fidelity simulation prepared nursing student to care for patients with COVID-19 if it prepared nursing students to care for patients with COVID-19. The final sub question examined the confidence level of nursing students prior to and immediately following a high-fidelity simulation caring for a patient with COVID-19.

The COVID-19 pandemic was officially named in January 2020 after the first cases were identified in Wuhan, China in December 2019 (Huang et al., 2020). Nursing students were not allowed to care for patients diagnosed with COVID-19 due to concerns about PPE and the highly infectious nature of the virus (Thomasian et al., 2020). Simulation has been previously validated

in the literature as a valid educational methodology to increase confidence level of nursing students (Hustad et al., 2019 & Sharour, 2019). There were not any studies found on the confidence level of nursing students in the care of patients diagnosed with COVID-19 utilizing simulation. The theoretical foundations that are utilized in simulation are Kolb's experiential learning theory, constructivist learning theory, scaffolding theory, and andragogy or adulty learning theory (Sanka, 2017; Wilson & Wittmann-Price, 2019; Palaganas et al., 2015; Hedman & Fellander-Tsai, 2020). A search of the CINAHL database and Academic Search Premier database was utilized to find applicable literature related to the research questions that guided this study.

Participants were recruited from a community college in Northwest Arkansas for the research study. A pilot study was conducted with four participants from a separate cohort from the participants of the research study. Both cohorts were second year nursing students, the population identified for the research study. The interview questions were developed to collect data to answer the overall research question and the sub questions of the research study (See Appendix C). The survey utilized to collect data on the confidence level after the participation in a high-fidelity simulation on caring for a patient with COVID-19 is a modified form of the NLN (2005) self-confidence scale (See Appendix D). The findings of the study are further analyzed in the context of the current literature and by research question.

Conclusions

Conclusions to the impact of participation in a high-fidelity simulation of a patient with COVID-19 and the confident of a student nurse in caring for a patient with COVID-19

The overall research question had three sub questions to obtain data about how the participation in a high-fidelity simulation impacted the confidence level of nursing students in

the care of a patient with COVID-19. The participants of both the pilot study and research study stated that they had improved confidence in the care of patients with COVID-19. The importance of communication was a theme that was identified throughout the pilot study and research study. The importance of communication was not identified in other studies during the care of a patient with COVID-19. The participants in the research study conducted by Jensen et al. (2020) did not mention any concerns about communication. The participants in the pilot study identified the challenge of being about to communicate with the appropriate PPE on. The participants of the research study identified the importance of developing a plan and communicating with other members of the interdisciplinary team in the care of a patient with COVID-19.

Conclusions to concerns nursing students have about caring for a patient with COVID-19

The participants were asked about concerns both before and after participation in a high-fidelity simulation on a patient with COVID-19. Prior to the simulation the participants in the pilot study reported concerns about the rapid deterioration of a patient with COVID-19 and managing all the medications for the patient. The participants in the research study reported concerns in contracting COVID-19, the long-term effects of COVID-19, concerns about managing medications, managing a patient on a ventilator, and managing a disease process with rapidly changing protocols. The concerns about contracting the COVID-19 virus and transmitting it to family members of the participants is like the findings of nurses in a study completed by Huang et al. (2020). Huang et al. (2020) found that nurses were concerned that patients may have died due to lack of knowledge about how to care for patients with COVID-19 previously.

The participants were asked about concerns after the participation in a high-fidelity simulation. The participants in the pilot study identified concerns about managing comorbidities

and the complexity of caring for a patient with COVID-19. The participants of the research study expressed concerns about the long-term effects of COVID-19, developing a plan for care, patient safety, contracting COVID-19, and staffing.

Kadapurran & De Guzman (2020), Cosic et al. (2020), and O'Neal et al. (2021) studied PTSD, depression, anxiety, and fear related to caring for patients with COVID-19 among healthcare workers. One of the focus groups stated that lack of staffing was a concern after the participation in the simulation. The reason for the lack of staffing in the simulation was due to the number of participants in the study. The lack of staffing in the clinical setting may be due to PTSD, depression, anxiety, and fear that needs to be appropriately addressed to retain healthcare workers (Kadapurran & De Guzman, 2020; Cosic et al., 2020; O'Neal et al., 2021; Huang et al., 2020).

The participants of the study were not tested on the participants' knowledge of COVID-19 but on the participants' confidence level in caring for patients with COVID-19. The number of healthcare workers that have become infected with the COVID-19 virus can impact the participants' concerns of contracting the COVID-19 virus. Razzak et al. (2020) predicted the number of healthcare workers that would become infected with the COVID-19 virus and the number of healthcare workers that would die from the COVID-19 virus. The participants of the study recognize the risk to the participants as well as the participants' family members. The participants of the study had similar concerns to nurses from the Huang et al. (2020) study.

Conclusions to participating in a high-fidelity simulation preparation for nursing students to care for COVID-19 patients

The participants in the pilot study stated that the participants felt better prepared to care for patients after participating in a high-fidelity simulation. The participants of the research study

stated the participants felt more comfortable with the proning process, working around a ventilator, the importance of teamwork, and planning care for patients in isolation prior to entering the room. Nursing students can practice skills in the simulation that the students may not have the opportunity to practice skills in the clinical environment (Sharour, 2019; Hustad et al., 2019; Jang et al., 2019). High-fidelity simulation is an environment that is similar enough to the clinical environment that allows the transfer of knowledge (Hustad et al., 2019). The environment that was utilized for the research study was a simulation lab at a community college. Fadaak et al. (2021) and Jensen et al. (2020) prepared nurses for the care of COVID-19 patients using the units at the hospital that would be utilized to care for patients with COVID-19. The participants of the research study voiced the importance of practicing the skills in a lower pressure environment with a mannequin and not learning the skills when an actual patient's life may be in danger. The participants of the study had improved confidence and stated the importance of teamwork in the care of a critically ill patient diagnosed with COVID-19.

Conclusions to the confidence level of nursing students in the care of patients with COVID-19 prior to and immediately following a high-fidelity simulation

The participants of the study were asked about the participants' confidence level before the simulation and completed a questionnaire about the confidence level after the participation in the simulation. The participants in the pilot study stated that the participants had either no experience caring for patients with COVID-19 or had experience caring for patients with COVID-19 as a nurse tech (unlicensed assistive personnel). The participants in the research study had a similar confidence level and experience as the participants in the pilot study. The participants of the pilot and research study completed a questionnaire to identify the participants' confidence level after the participation in a high-fidelity simulation. The participants in the pilot

study and the research study had high confidence levels after the participation in a high-fidelity simulation on caring for a patient diagnosed with COVID-19. Hustad et al. (2019) completed a study that demonstrated improved confidence level after the participation in high-fidelity simulation. Dincer & Ataman (2020), Morrell-Scott (2018), and Sharour (2019) had similar findings for participants after participation in high-fidelity simulation. Participants of the research also had improved confidence after the participation in a high-fidelity simulation in the focus group interview conducted after the simulation.

Implications and Connections to Field

The theoretical components that are fundamental for simulation are Kolb's experiential learning theory, constructivist theory, scaffolding theory, and andragogy (Palaganas et al., 2015; Sharour, 2019; Wilson & Wittmann-Price, 2019). Kolb's experiential learning theory emphasizes the importance of performing a task to become experts on the task (Palaganas et al., 2015 & Wilson & Wittmann-Price, 2019). The participants in the research study had not previously proned a patient and the simulation provided an opportunity to prone a patient in the clinical setting. The participants of the pilot and research study stated that the participants appreciated the opportunity to prone a mannequin prior to completing the task on a patient that could be at risk.

The participants of the study were in the second year of nursing school. The participants in the research study had completed of the nursing school curriculum and had a foundation to build on and make decisions. The participants of the research study needed a foundation to make decisions on the best method to help with oxygenating the patient with COVID-19 according to the constructivist theory and scaffolding theory (Palaganas et al., 2015 & Wilson & Wittmann-Price, 2019). According to the andragogy learning theory, adult learners seek knowledge that is

important to the learner (Palaganas et al., 2015 & Wilson & Wittmann-Price, 2019). The participants of both the pilot and research study were provided with two videos to watch prior to participating in the simulation. The participants of the pilot and research study discussed the videos and how the videos prepared the participants for the simulation in the research study.

One of the participants of the study asked if the research study would impact the future of the curriculum. Pandemics present a challenge to healthcare workers and preparation for future pandemics should be identified and implemented in the curriculum. Sharour (2019) completed a study on caring for a patient with an oncologic emergency. The management of oncologic emergencies are standard in nursing school curriculum and have a standardized approach to treatment. Pandemics may not have a treatment regimen that is effective without completing research which takes time. Huang et al. (2020) identified a stressor for nurses that cared for COVID-19 patients as not having enough knowledge and that lack of knowledge leading to a patient's death. Strategies should be considered on how to prepare nursing students for future pandemics that may lack an appropriate treatment regimen.

Limitations

One of the limitations of the research study is the sample size of the study. The sample size of the study was 15 participants in the study and 4 participants in the pilot study. Another limitation is that the students in the pilot study interacted with the researcher as a classroom instructor but completed the study after grading was completed for the course. The participants of the research study interacted with the researcher as an instructor in the nursing lab and that could impact the answers given in the research study. The last limitation is the limited information available related to the treatment of COVID-19. One treatment protocol was used in

the simulation but may not be able to be duplicated in the future due to the changing nature of treatment protocol for COVID-19.

Strengths and Weaknesses

One of the strengths of the study was that a pilot study was conducted prior to the research study. The findings from the pilot study and the research study had similar results. The interview questions were asked the same way for each group and the simulation was run the same way each time. One of the weaknesses of the research study is the small sample size. The small sample size impacts the generalizability of the study. The research study was only completed at one nursing school in one area of the United States. This impacts the generalizability to this area of the country as well. Nursing students in a different nursing program may have a different experience of the COVID-19 pandemic and confidence in caring for a patient with COVID-19. The research study was completed in one part of the country and the results could be different. Another weakness is that the treatment protocol would need to change based on the latest research findings of the treatment of COVID-19.

Credibility

Various strategies were utilized to ensure the credibility of the study and the strategies included the use of a pilot study, asking the same questions to each focus group, and running the simulation the same way each time. A pilot study was completed prior to the research study to determine if the instruments utilized collected data that would answer the research questions posed. The participants of the pilot study and research study were in different cohorts at the small community college in Northwest Arkansas.

The participants of the research study were divided into focus groups of no more than four participants per focus group. The participants of the pilot and research study were asked the

same questions in the focus groups to gather data. The participants of the pilot and research study completed the same simulation and the protocol for the simulation did not vary to add to the credibility of the research study. The factors listed contributed to the credibility of the research study.

Generalizability

Christensen et al. (2014) defined generalizability as the ability to apply the findings of the research study to "other people, settings, treatments, outcomes, and times" (p. 175). The generalizability of the research study is impacted by whether the sample is randomized, different factors that may not be able to be replicated in another study, and the relationship between variables may be impacted by another factor (Christensen et al., 2014). The research study completed had a small sample size and the sample was from one nursing school in one part of the United States. These factors impact the generalizability of the study to a larger population of other nursing students across the United States.

The sample was a sample of convenience and was not randomly selected to be a part of the study. The participants of the research study completed the same simulation during the study. The lack of randomization was not practical for the research study due to the mixed methods research design but did impact the generalizability of the research study.

Recommendations

Recommendations on impact of participation in a high-fidelity simulation of a patient with COVID-19 and the confident of a student nurse in caring for a patient with COVID-19

The research would need to be repeated to ensure the similarity of findings for nursing students in the second year of nursing school in different nursing schools and different geographic locations. No studies were found on the impact of a high-fidelity simulation on the

confidence level of nursing students in caring for patients with COVID-19. Repetition of the research study lends to the credibility and generalizability of the research study.

The research study examined one pandemic and the participants of the research study participated in a simulation concerning one pandemic. Nursing students should be prepared for future pandemics, not just the one that occurred when the nursing students were in nursing school. The globalization of food supplies and the frequency of travel has led to the increase in transmission of various disease processes (Hinkle & Cheever, 2018). The curriculum of nursing schools should focus on preparation for future pandemics and include simulations with disease processes that have symptoms like other pandemics, but not quite the same. One of the participants of the research study asked if the researcher thought that changes would be made to nursing school curriculums based on the COVID-19 pandemic.

Recommendations to concerns nursing students have about caring for a patient with COVID-19

A major concern of some of the participants of the research study was contracting COVID-19 or infecting a family member with COVID-19 after being exposed by a patient that was diagnosed with COVID-19. One of the participants of the research study stated that a concern was that the PPE would fail, and that the participant would become infected with the COVID-19 virus. The lack of PPE was a concern at the beginning of the COVID-19 pandemic (Thomasian et al., 2020). Additional research is necessary to determine the confidence level of healthcare professionals in the PPE provided to protect the healthcare professional from COVID-19.

Some of the participants of the research study identified a concern was the long-term effects of COVID-19 and how it would impact the healthcare of patients that recovered from

critical illness of COVID-19. The long-term consequences of COVID-19 are being studied as this virus has recently diagnosed and will need to be addressed in nursing school curriculum as research is reported. The research on the long-term effects and management of COVID-19 was beyond the scope of the pilot and research study.

Recommendations to participating in a high-fidelity simulation preparation for nursing students to care for COVID-19 patients

The participants of the pilot and research study completed the study prior to graduation from nursing school. A longitudinal study on the impact of participating in a high-fidelity simulation on the preparation of nursing students and newly licensed registered nurses. The longitudinal study would need collect data prior to, immediately following, and periodically after the participant was licensed as a nurse. The participants of the research study could be interviewed about the impact the high-fidelity simulation and how prepared the participant was to care for patients with COVID-19. This study would provide additional knowledge about the long-term effects of the participation in a high-fidelity simulation.

Recommendations to the confidence level of nursing students in the care of patients with COVID-19 prior to and immediately following a high-fidelity simulation

The participants of the pilot and research study had similar findings to other research studies that examined the confidence level of nursing students after participating in high-fidelity simulation (Hustad et al., 2019; Dincer & Ataman, 2020; Morrell-Scott, 2018; Sharour, 2019). High-fidelity simulation has an important role in nursing education and can improve the confidence level of the participants in the simulation. The use of simulation in education provides a safe environment to learn that does not harm the patient or the learner (Palaganas et

al., 2015). The use of high-fidelity should continue to be a practice for students in nursing schools.

A standardized tool has not been identified in the research to determine the confidence level of participants prior to a simulation. There are instruments validated for confidence level after participation in a high-fidelity simulation. The self-reported confidence level prior to simulation would be useful to compare to the post simulation confidence level. There would need to be studies to develop an appropriate instrument to assess the confidence level of a participant prior to a high-fidelity simulation.

Other Recommendations

One of the focus groups in the research study recognized the importance of staffing to complete necessary tasks in the care of patients. Ferguson and Williams (2020) stated that an additional 6 million nurses were needed worldwide to meet the demand for nurses. There is a decrease in nurse retention and strategies to improve nurse retention should be examined and the impact that nursing schools can have on improving nurse retention. Additional research on factors that decrease nurse retention and how to meet the increasing demands for nurses.

Summary

A mixed methods phenomenological qualitative and survey research study was completed to investigate the impact of a high-fidelity simulation on the confidence level of nursing students in the care of patients with COVID-19. The CINAHL database and Academic Search Premier database were utilized to find applicable literature for the research study. The literature was examined for concerns of nursing students in the care of patients with COVID-19, impact of high-fidelity simulation on preparing students to care of patients with COVID-19, and how high-fidelity simulation impacts the confidence level of nursing students. The literature

review conducted identified gaps in the current knowledge. The literature review provided a basis and context for the research study.

The purpose of the research study was to evaluate how participating in a high-fidelity simulation impacts nursing students' confidence in caring for patients with COVID-19. The research sub questions included identifying concerns that nursing students have in caring for patients with COVID-19, how participating in a high-fidelity simulation prepared nursing student to care for patients with COVID-19, and the confidence level of nursing students prior to and immediately following a high-fidelity simulation.

The participants of the research study provided data on concerns caring for patients with COVID-19 and that data was compared to the current research to add to what is currently known. The participants of the research study provided data after participating in a high-fidelity simulation on the impact it had that on preparing the participants to care for a patient diagnosed with COVID-19. The participants were asked about the participants' confidence level in caring for a patient diagnosed with COVID-19 prior to participating in a high-fidelity simulation. The participants were asked about the participants' confidence level and the participants also filled out a survey on confidence level after participating in a high-fidelity simulation.

The tools utilized in the research study helped to meet the objectives of the study. The data gathered answered the research questions and added to the knowledge of what is currently known about confidence level of nursing students and the impact of high-fidelity simulation in caring for patients with COVID-19. There was not any current literature found on this topic.

Most of the participants of the pilot and research study had minimal or no experience in caring for patients diagnosed with COVID-19. The participants of the pilot and research study had improved confidence in the care of patients with COVID-19 after the participation in a high-fidelity simulation. Some of the participants of the research study identified a concern of being infected with COVID-19 or infecting a family member with COVID-19.
This is a variance from the current literature and additional studies will need to be completed to evaluate if the concern of the participants is unique to this study. Another concern was the long-term effects of COVID-19. The long-term effects of COVID-19 continue to be studied. The long-term effects of the COVID-19 virus may not be known for an extended period and the impact on the health of patients that were infected with COVID-19.

Preparation of nursing students for future pandemics is essential. The curriculum of nursing schools should be examined on better preparation for future pandemics. The COVID-19 pandemic impacted nursing schools across the world. There is an increase demand for nurses that is not met with the current supply (Ferguson & Williams, 2020). The retention of nurses should begin in nursing schools and should be a part of the curriculum. The research study supports the continued use of high-fidelity simulation as an effective strategy to improve nursing student confidence in the care of patients. The research study will need to be repeated to make the study the more generalizable or determine differences in nursing students in different settings and geographic locations.

References

Al Mutair, A., Amr, A., Ambani, Z., Salman, K. A., & Schwebius, D. (2020). Nursing surge capacity strategies for management of critically ill adults with COVID-19. *Nursing Reports, 10*(1), 23-32. doi:10.3390/nursrep10010004

Alshdefat, A., Natarajan, J., Joseph, M. A., Baker, R. A., & Ghalib, M. (2021). Knowledge, attitude, and practice of nursing students towards COVID-19 pandemic in Oman. *International Journal of Nursing Education, 13*(1), 23-30. doi: 10.37506/ijone.v13i1.13307

Available Instruments. (2021). *Description of available instruments.* National League for Nursing. http://www.nln.org/professional-development-programs/research/tools-and-instruments/descriptions-of-available-instruments

Bowman, C. L. (2020). *Teaching associate degree in nursing students caring behaviors using high-fidelity simulation: a basic qualitative study* (Publication No. 28029732) [Doctoral dissertation, Capella University]. ProQuest Dissertations and Theses Global.

Christensen, L. B., Johnson, R. B., & Turner, L. A. (2014). *Research methods, design, and analysis* (12th ed). Pearson.

Cosic, K., Popovic, S., Sarlija, M., Kesedzic, I., & Jovanovic, T. (2020). Artificial intelligence in prediction of mental health disorders induced by the COVID-19 pandemic among healthcare workers. *Croatian Medical Journal, 61*(3), 279-288. https://doi.org/10.3325/cmj.2020.61.279

Dincer, B. & Ataman, H. (2020). The effect of high reality simulation on nursing students' knowledge, satisfaction, and self-confidence levels in learning. *International Journal of Caring Sciences, 13*(2), 894-900.

Elliott, R. W. & Muirhead, L. (2020). Nursing academia: finding the silver lining in the midst of a pandemic. *The ABNF Journal, 31*(3), 78-79.

Esterhuizen, J. (2020). Reflection: the influence of the COVID-19 pandemic on nursing and nursing education. *Professional Nursing Today, 24*(4), 4-5.

Fadaak, R., Davies, J. M., Blaak, M. J., Conly, J., Haslock, J., Kenny, A., Pinto, N., & Leslie, M. (2021). Rapid conversion of an in-patient hospital unit to accommodate COVID-19: an interdisciplinary human factors, ethnography, and infection prevention and control approach. *PLoS One, 16*(1), 1-17. https://doi.org/10.1371/journal.pone.0245212

Ferguson, S. L. & Williams, M. A. (2020). The lamp still burns: nurses on the forefront of COVID-19, health disparities, and gender inequities. *Nursing Economic$, 38*(5), 252-253, 243.

Gaines, K. (2020, June 26). *This is how COVID-19 is changing the future of nursing for students and tenured nurses.* Nurse.org. https://nurse.org/articles/how-covid19-changing-future-of-nursing-students-rn/

Harma, T. R. (2019). *A mixed methods study comparing nursing preceptored clinical learning experiences and nursing simulation clinical learning experiences of nursing students in a midwest community college* (Publication No. 13886651) [Doctoral dissertation, Lindenwood University]. ProQuest Dissertations and Theses Global.

Hayden, J. F., Smiley, R. A., Alexander, M., Kardong-Edgren, S., & Jefferies, P. R. (2014). The NCSBN national simulation study: a longitudinal, randomized, controlled study replacing clinical hours with simulation in prelicensure nursing education. *Journal of Nursing Regulation, 5*(2), S1-S64.

Hedman, L. R. & Fellander-Tsai, L. (2020). Simulation-based skills training in non-performing orthopedic surgeons: skills acquisition, motivation, and flow during the COVID-19 pandemic. *Acta Orthopaedica, 91*(5), 520-522. doi: 10.1080/17453674.2020.1781413

Hinkle, J. L. & Cheever, K. H. (2018). *Brunner & Suddarth's textbook of medical-surgical nursing* (14th ed.). Wolters Kluwer.

Huang, L., Lei, W., Xu, F., Liu, H., & Yu, L. (2020). Emotional responses and coping strategies in nurses and nursing students during COVID-19 outbreak: a comparative study. *PLoS ONE, 15*(8), 1-15. https://doi.org/10.1371/journal.pone.0237303

Hustad, J., Johannesen, B., Fossum, M., & Hovland, O. J. (2019). Nursing students' transfer of learning outcomes from simulation-based training to clinical practice: a focus-group study. *BMC Nursing, 18*(1), 1-8. https://doi.org/10.1186/s12912-019-0376-5

Jang, K. I., Yoo, Y. S., & Roh, Y. S. (2019). Development and effectiveness of an oncology nursing standardized patient simulation program for nursing students. *Korean Journal of Adult Nursing, 31*(6), 595-604. https://doi.org/10.7475/kjan.2019.31.6.595

Jawed, F., Manazir, S., Zehra, A., & Riaz, R. (2020). The novel coronavirus disease (COVID-19) pandemic: knowledge, attitude, practice, and perceived stress among health care workers in Karachi, Pakistan. *Medical Journal of the Islamic Republic of Iran, 34*(1), 1-10. https://doi.org/10.34171/mjiri.34.132

Jensen, R. D., Bie, M., Gundse, A. P., Schmid, J. M., Juelsgaard, J., Gamborg, M. L., Mainz, H., & Rolfing, J. D. (2020). Preparing an orthopedic department for COVID-19: lessons learned from reorganization and educational activities. *Acta Orthopaedica, 91*(6), 644-649. doi: 10.1080/17453674.2020.1817305

Kadapurran, J. J. & De Guzman, R. (2020). The COVID-19 pandemic: level of depression, anxiety, stress among baccalaureate female nursing students in Kerala, South India. *Indian Journal of Health and Well-being, 11*(10-12), 483-485.

Kapucu, S. (2017). The effects of using simulation in nursing education: a thorax trauma case scenario. *International Journal of Caring Sciences, 10*(2), 1069-1074.

Khanmohammadi, S., Hajibeglo, A., Rashidan, M., & Bekmaz, K. (2020). Relationship of resilience with occupational stress among nurses in coronavirus ward of Khatam Al-Anbia Hospital, Gonbad Kavous, 2020. *Neuropsychiatry & Neuropsychology, 15*(1/2), 1-6. https://doi.org/10.5114/nan.2020.97397

Lateef, F. (2020). COVID-19 pandemic: disruption or a fertile experiential learning platform for emergency medicine residents? *Education in Medicine Journal, 12*(4), 39-47. https://doi.org/10.21315/eimj2020.12.3.5

Leedy, P. D. & Ormrod, J. E. (2013). *Practical Research planning and design* (10th ed). Pearson.

Leigh, J., Vasilica, C., Dron, R., Gawthorpe, D., Burns, E., Kennedy, S., Kennedy, R., Warburton, T., & Croughan, C. (2020a). Redefining undergraduate nurse teaching during the coronavirus pandemic: use of digital technologies. *British Journal of Nursing, 29*(10), 566-569.

Leigh, J., Bulpitt, S., Dunn, J., Heggs, K., Hopley, T., Le Blanc, C., & Sigley, H. (2020b). A guide to the NMC emergency standards for nurse education during the current deployment of student nurses. *British Journal of Nursing, 29*(11), 632-638.

Mehdipour-Rabori, R., Bagherian, B., & Nematollahi, M. (2021). Simulation-based mastery improves nursing skills in BSc nursing students: a quasi-experimental study. *BMC Nursing, 20*(10), 1-8. https://doi.org/10.1186/s12912-020-00532-9

Merriam-Webster. (n.d.). *Proning.* Merriam. Webster. https://www.merriam-webster.com/dictionary/proning

Mohammad, A. (2020). "She's dead!"-nursing simulation practices: a discourse analysis approach. *Journal of Public Health Research, 9*(1), 40-46.

Morrell-Scott, N. (2018). Confidence and deeper learning: simulated practice within pre-registration nurse education. *British Journal of Nursing, 27*(14), 827-830.

Mpeshe, S. C. & Nyerere, N, (2021). Modeling the dynamics of coronavirus disease pandemic coupled with fear epidemics. *Computational & Mathematical Methods in Medicine, 2021,* 1-9. https://doi.org/10.1155/2021/6647425

NLN. (2005). *Student Satisfaction and Self-Confidence in Learning*. National League for Nursing. http://www.nln.org/professional-development-programs/research/tools-and-instruments/descriptions-of-available-instruments

Omer, T. (2016). Nursing students' perceptions of satisfaction and self-confidence with clinical simulation experience. *Journal of Education and Practice, 7*(5), 131-138.

O'Neal, L., Heisler, M., Mishori, R., & Haar, R. J. (2021). Protecting providers and patients: results of an internet survey of health care worders' risk perceptions and ethical concerns during the COVID-19 pandemic. *International Journal of Emergency Medicine, 14*(1), 1-11. https://doi.org/10.1186/s12245-021-00341-0

Palaganas, J. C., Maxworthy, J. C., Epps, C. A., & Mancini, M. E. (Ed.). (2015). *Defining excellence in simulation programs*. Wolters Kluwer.

Patelarou, A. E., Konstatinidis, T., Kartsoni, E., Mechili, E. A., Galanis, P., Zografakis-Sfakianakis, M., Patelarou, E. (2020). Development and validation of a questionnaire to measure knowledge of and attitude toward COVID-19 among nursing students in Greece. *Nursing Reports, 10*(2), 82-94.

Razzak, J. A., Bhatti, J. A., Tahir, M. R., & Pasha-Razzak, O. (2020). Initial estimates of COVID-19 infections in hospital workers in the United States during the first wave of pandemic. *PLoS One, 15*(12), 1-9. https://doi.org/10.1371/journal.pone.0242589

Rippinger, C., Bicher, M., Urach, C., Brunmeir, D., Weibrecht, N., Zauner, G., Sroczynski, G., Jahn, B., Muhlberger, N., Siebert, U., & Popper, N. (2021). Evaluation of undetected cases during the COVID-19 epidemic in Austria. *BMC Infectious Diseases, 21*(1), 1-11. https://doi.org/10.1186/s12879-020-05737-6

Rudestam, K. E. & Newton, R. R. (2015). *Surviving your dissertation: a comprehensive guide to content and process* (4th ed.). Sage.

Sanko, J. (2017). Simulation as a teaching technology: a brief history of its use in nursing education. *Quarterly Review of Distance Education, 18*(2), 77-85.

Sarman, S. & Pardi, K. W. (2019). Satisfaction and confidence in using clinical simulation models among undergraduate nursing students in a public university in Malaysia: a cross-sectional study. *International Journal of Nursing Education, 11*(4), 130-134. doi: 10.5958/0974-9357.2019.00104.1

Sharour, L. A. (2019). Implementing simulation in oncology emergencies education: a quasi-experimental design. *Technology & Health Care, 27*(2), 223-232. doi 10.3233/THC-181543

Tamang, N., Raj, P., Dhungana, S., Sherchan, B., Shah, B., Pyakurel, P., & Raj, S. (2020). COVID-19: a national survey on perceived level of knowledge, attitude and practice among frontline healthcare workers in Nepal. *BMC Public Health, 20*(1), 1-10. https://doi.org/10.1186/s12889-020-10025-8

Thomasian, N. M., Garimella, R., & Adashi, E. Y. (2020). The personnel protective equipment crisis: to save or to build. *American Journal of Public Health, 110*(8), 1165-1166. doi: 10.2105/AJPH.2020.305756

Thorp, L. & Bassendowski, S. (2018). Caring values and the simulation environment: an interpretive description study examining select baccalaureate nursing students' experiences. *International Journal for Human Caring, 22*(3), 68-81. http://dx.doi.org/10.20467/1091-5710.22.3.68

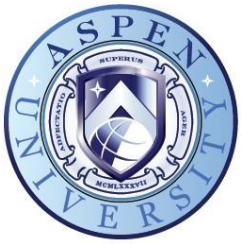
Tobin, C. D., Alfred, M., Wilson, D. A., MenkinSmith, L., Lehman-Huskamp, K. L., Schaefer, J. J., Catchpole, K., Zeiler, L., Fletcher, B., & Reves, J. G. (2020). Train-the-trainer: pilot trial for Ebola virus disease simulation training. *Education for Health, 33*(2), 37-45. doi: 10.4103/efh.EfH_262_19

Ward, G. D., Robinson, L., & Ware, L. J. (2017). The loved experience of nursing students participating in high-fidelity simulation at a school grounded in caring. *International Journal for Human Caring, 21*(4), 200-207.

Wilson, L. & Wittmann-Price, R. A. (Ed.). (2019). *Review manual for the certified healthcare simulation educator™ (CHSE™) exam* (2nd ed.). Springer Publishing.

Appendices

Appendix A. Informed Consent Form



Title of Study: Impact of High-fidelity Simulation on Confidence Level of Nursing students in the care of patients
with COVID-19.

Introduction:

The purposes of this form are to provide you (as a prospective research study participant) information that may affect your decision as to whether or not to participate in this research and to record the consent of those who agree to be involved in the study.

Research:

Faith Paine has invited your participation in a research study. I am completing this research as part of my doctoral degree.

Purpose of Study:

The purpose of the research is to determine how high-fidelity simulation impacts the nursing students' confidence
in the care of patients with COVID-19.

Eligibility:

You are eligible to participate in this research if you are in your second year of nursing school.

Description of the Research Activity:

If you decide to participate, then as a study participant you will be asked to participate in a focus group prior to a

high-fidelity simulation, participate in a high-fidelity simulation for a patient with COVID-19, fill out a questionnaire after the simulation, and participate in a focus group after participating in a high-fidelity simulation.

Approximately 15-30 subjects will be participating in this research study.

Risks:

If you decide to participate in this research study some risks may include feelings of discomfort or psychological distress related to participating in a simulation and slight discomfort of wearing full personal protective equipment during the simulation.

To decrease the impact of these risks, you can stop participation at any time, refuse to answer any interview question, skip any item on the questionnaire, and step out of the simulation to remove some of the personal protective equipment. If you have emotional distress the counseling center on campus is available free of charge to students.

Benefits:

Benefits of participating in this study include increased knowledge in care of patients with COVID-19 patients and the ability to care for COVID-19 patients in a simulated environment that does not have any risks.

Confidentiality:

All information obtained in this study is strictly confidential unless disclosure is required by law. The results of this research study may be used in reports, presentations, and publications, but the researchers will not identify you. In order to maintain confidentiality of your records, Faith Paine will not collect specific personal identifiers.

The people who will have access to your information are myself and my dissertation committee

Audio/Video recording will be utilized in the focus groups.

I will secure your information with these steps: I will secure the survey tool used on paper in a locked file cabinet and will secure all recordings made by either locking up the tape used or encrypting the data. I will keep your data for 3 years. Then, I will delete electronic data and destroy paper data.

Withdrawal Privileges:

It is okay for you to decline to participate in this research study. You are free to stop participating at any time and there will be no penalty to you.

If you decide to stop participation, you may do so by notifying me of your decision not to participate in the research study. This can be done via email. You may also notify that you would no longer like to participate in the research study during the pre-simulation focus group, during the simulation, or the post-simulation focus group.

Your decision will not affect your relationship with Aspen University or otherwise cause a loss of benefits to which you might otherwise be entitled. Your decision to withdrawal from the study will not impact your grade in class or your standing at NorthWest Arkansas Community College.

Costs and Payments

There is no financial cost to you as a participant in this study, nor is there payment for your participation.

Voluntary Consent:

Any questions you have concerning the research study or your participation in the study will be answered by Faith Paine. I can be contacted at faith.paine@gmail.com or 479-276-4630. My faculty mentor is Dr. Donald Dunn and he can be contacted at donald.dunn@aspen.edu.

If you have questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Institutional Review Board at IRB@Aspen.edu

This form explains the purpose, demands, benefits and any risk of the research study. By signing this form you knowingly agree to assume any risks involved. Remember, your participation is voluntary. A copy of this consent form will be offered to you. Your signature below indicates that you consent to participate in the above study.

_____ _____ _____

Participant's Signature Printed Name Date

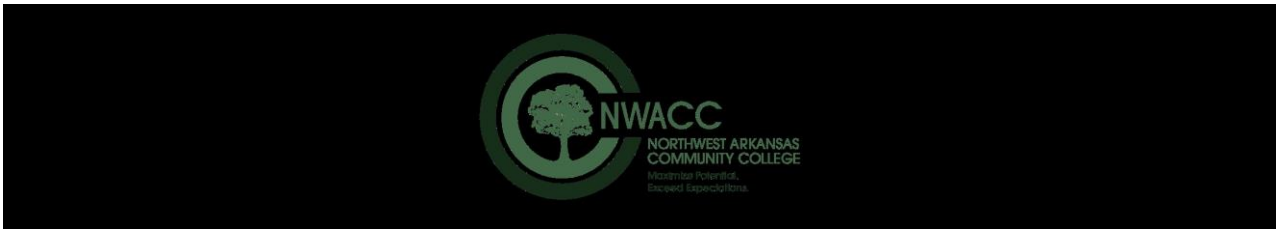
Investigator's Attestation:

"I attest that I have explained to the above individual the nature and purpose, the potential benefits and possible risks associated with participation in this research study and have answered any and all associated questions. I have provided (offered) the subject/participant a copy of this signed consent document."

Signature of Investigator_____

Date_____

Appendix B. Approval Letter to Conduct Research



July 8, 2021
Faith Paine
Subject: IRB Approval
Dear Faith,
This is to inform you that I have reviewed the documentation you submitted regarding your project titled Impact of High-fidelity Simulation on Confidence Level of Nursing students in the care of COVID-19 patients and have determined it is exempt under 45 CFR 46.104(d) (2).

This letter constitutes approval of the request you submitted to NWACC. Please contact me via e-mail at baguiar@nwacc.edu or cell 479-426-2603 if you have any additionalquestions or concerns regarding your request.

Bryan M. Aguiar, DBA
NWACC IRB Chair
Professor, Business Department
NorthWest Arkansas Community College
Shewmaker Center for Global Business Development Room 2006
900 S. E. Eagle Way, Bentonville, AR 72712

BUSINESS AND COMPUTER INFORMATION DIVISION
Shewmaker Center for Global Business Development
One College Drive
Bentonville, AR 72712
www.nwacc.edu

Appendix C. Guided Interview Questions

Guided Interview Questions

The guided interview questions for pre-simulation were:

1. What experience have you had caring for COVID-19 patients?
2. What, if any, concerns do you have in caring for patients with COVID-19?
3. What are your expectations for this simulation related to caring for COVID-19 patients?

The guided interview questions for post simulation were:

1. What was your experience in the simulation of a COVID-19 patient?
2. What impact, if any, will this simulation have on your practice of caring for COVID-19 patients?
3. What, if any, concerns that you mentioned in pre-simulation were addressed in the simulation?
4. Can you describe the interventions that you completed in simulation and your confidence level in completing these interventions?
5. What, if any, concerns do you have in caring for COVID-19 patients after participating in simulation?

Appendix D. Modified NLN Self-Confidence in Learning

Instructions: This questionnaire is a series of statements about your personal attitudes about the instruction you receive during your simulation activity. Each item represents a statement about your attitude toward your self-confidence in obtaining the instruction you need. There are no right or wrong answers. You will probably agree with some of the statements and disagree with others. Please indicate your own personal feelings about each statement below by circling the numbers that best describe your attitude or beliefs. Please be truthful and describe your attitude as it really is, not what you would like for it to be. This is anonymous with the results being compiled as a group, not individually.

Mark:
1=STRONGLY DISAGREE with the statement
2=DISAGREE with the statement
3=UNDECIDED-you neither agree or disagree with the statement
4=AGREE with the statement
5=STRONGLY AGREE with the statement

Self-confidence in Learning	SD	D	UN	A	SA
1. I am confident that I am mastering the content of the simulation activity that my instructors presented to me.	1	2	3	4	5
2. I am confident that this simulation covered critical content necessary for the mastery of caring for a patient with COVID-19.	1	2	3	4	5
3. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting related to COVID-19.	1	2	3	4	5
4. My instructors used helpful resources to teach the simulation.	1	2	3	4	5
5. It is my responsibility as the student to learn what I need to know from this simulation activity.	1	2	3	4	5
6. I know how to get help when I do not understand the concepts covered in the simulation.	1	2	3	4	5
7. I know how to use simulation activities to learn critical aspects of these skills.	1	2	3	4	5
8. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time.	1	2	3	4	5

Appendix E. Scenario of patient with COVID-19 for Simulation

Section 1: Scenario Overview

Scenario Title:	49-year-old male diagnosed with COVID-19
Estimated Scenario Time	15-20 minutes
Debriefing time	30-40 minutes

Brief Summary of Case:
Matthew Sanders is a 49-year-old male that was admitted to the hospital 2 days ago with COVID-19. Matthew has a history of diabetes, obesity, and hypertension. Matthew became severely hypoxic on the previous shift and required intubation and mechanical ventilation for respiratory failure. Matthew is on sedation and mechanical ventilation. He has an orogastric tube in place, right internal jugular triple lumen catheter, left chest tube, and foley catheter. The simulation has three states.
The first state involves the participants donning PPE and completing an assessment on the patient. The patient will have normal saline infusing at 75 mL/hr, midazolam infusing at 2 mg/hr, and fentanyl infusion infusing at 75 mcg/hr. Administering methylprednisolone 1 mg/kg/day divided dose every 6 hours, colchicine 0.6 mg every 12 hours per orogastric tube, and enoxaparin 1 mg/kg every 12 hours. The participant will need to administer insulin per the sliding scale. The patient continues to have decreased oxygen saturation despite maximum ventilator support and the participants will need to notify the provider of the current state.
The second state involves the participants assisting the patient to a prone position per the provider order. During this state the participants will need to ensure that no lines or tubes are removed.
The third state shows an improvement in the patient's oxygenation and the participants must take precautions to prevent skin breakdown. Ensure that the monitors are replaced accordingly.

Equipment Utilized:
MetiMan prehospital
Endotracheal tube
Simulated Insulin
Simulated Methylprednisolone
Simulated Colchicine
Simulated Enoxaparin
Alaris intravenous pump
Simulated Normal Saline
Simulated Midazolam infusion
Simulated Fentanyl infusion
Chest tube and atrium
Triple lumen Central line
Ventilator
Ambu bag
Skin protectant bandages
Personal Protective Equipment: N95 mask, face shield, googles, isolation gown, and ear loop mask

3 mL syringes
Insulin syringe
Foley catheter with simulated dark yellow urine
Student Preparation prior to Simulation:
Watch the video: https://www.youtube.com/watch?v=H4jQUBAlBrI from the CDC
Watch the video: https://www.youtube.com/watch?v=ECdxhNFLwVo on how to prone a ventilated patient
Student Roles:
Charge nurse: to notify the provider of any changes in the patient condition
Primary nurse: complete the assessment
Medication nurse: administer all medications during the simulation
Preceptor nurse: to assist the primary nurse and provide emotional support for the patient

Learning Objectives:

1. Designs an individual plan of care for the nursing management of a patient with COVID-19 in respiratory failure.
2. Prioritizes nursing interventions in the care of a patient with COVID-19 in respiratory failure.
3. Implements a nursing plan of care based on the pathophysiology of the patient with COVID-19 in respiratory failure.
4. Evaluates response to interventions and modifies nursing care as appropriate for the patient with COVID-19 in respiratory failure.