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A Delphi Study on the use of Simulation in Undergraduate Nursing Education

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Walden University
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Abstract

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MSN, Walden University, 2010

BSN, Colorado Mesa University, 1984

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The lack of traditional clinical sites for nursing students has prompted a surge in simulation as an innovative teaching strategy in undergraduate nursing education. The International Nursing Association for Clinical Simulation and Learning (INASCL) developed the INACSL Standards of Best Practice: Simulation^{SM} to direct schools of nursing in implementing high-quality simulations. As simulated experiences replace traditional clinical experiences, it is imperative that simulated experiences replicate real-life patient scenarios. The purpose of this Delphi study was to establish consensus on the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education. The conceptual frameworks guiding this study were Vygotsky's theory of social constructivism and Donabedian's structure/process/outcome model. Twenty-nine registered nurses with a minimum of a master's degree in nursing and at least 2 years of experience in simulation were the panelists for the study. The mean of each of the three rounds of the Delphi study and the interquartile deviation of Round 3 was calculated to determine expert consensus. Consensus between the expert panelists established that the INACSL Standards of Best Practice: Simulation are widely recognized in undergraduate nursing education, but they are not widely utilized. Panelists identified a lack of funding and faculty development, inconsistent use of a conceptual or theoretical framework, and inadequate policies, procedures, and institutional operations as items to consider as schools of nursing move to implementing the INACSL Standards of Best Practice: Simulation in undergraduate nursing education. The implications for positive social change are seen in highly prepared student nurses and positive patient outcomes.

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Table of Contents

List of Tables

Chapter 1: Introduction to the Study

A reduction in the number of clinical sites for undergraduate nursing students has prompted schools of nursing to consider using simulation to fulfill required clinical hours (Blodgett et al., 2018; Curl et al., 2016; Nehring et al., 2013; Shearer, 2016; White, 2017). The National Council of State Boards of Nursing (NCSBN) supports substituting simulated experiences for traditional clinical experiences (Hayden et al., 2014). In fact, the NCSBN has endorsed that up to 50% of traditional clinical experiences can be replaced with high-quality, simulated experiences (Hayden et al., 2014).

Established in 2010 by the International Nursing Association for Clinical Simulation and Learning (INACSL), the INACSL Standards of Best Practice: Simulation^{SM} is an evolving document that guides schools of nursing in the development of simulation programs that meet NCSBNs expectations in simulation (INACSL Standards Committee, 2018a; Rutherford-Hemming et al., 2015). Constructing simulated activities using the tenets of the comprehensive document as a roadmap results in better outcomes for student nurses in terms of confidence, competence, teamwork, and safety (Berragan, 2014; Sebold et al., 2017). As the use of simulation in undergraduate nursing education continues to grow, it is imperative that undergraduate nursing programs that utilize simulation incorporate the INACSL Standards of Best Practice: Simulation into every simulated experience. Simulated experiences that are poorly designed, facilitated, and/or evaluated have the potential to negatively impact patient care and safety (Hayden et al., 2014).

This modified Delphi study has several social implications. First, patients have the right to safe, high-quality healthcare. As clinical sites become harder to secure, it is imperative that nontraditional clinical experiences be utilized to satisfy required clinical hours. Simulation is a nontraditional clinical experience that has the potential to supplement traditional clinical hours. Applying what experts in the field of simulation identify as important in simulation, will assist schools of nursing in designing structured simulation programs that result in safe, high-quality healthcare practices by student nurses.

Second, a review of literature identified that a student nurses' level of confidence and skill acquisition is accelerated using simulation prior to actual patient encounters (Crowe et al., 2018; Hallin et al., 2016; Khalaila, 2014; Kiernan, 2018; McGaghie et al., 2011; Oermann & Gaberson, 2014; Ross, 2012; Shearer, 2016; Sujatta & Oberarztin, 2015). As more clinical experiences are being replaced by simulation, it is imperative that the INACSL Standards of Best Practice: Simulation are utilized in undergraduate simulation laboratories. High-quality simulated experiences support a student nurse's development from novice to competent. The INACSL's guidelines for simulation programs allow for student nurse practices in a safe, nonthreatening, evidenced-based learning environment.

Finally, positive social change involves the development of scholar-practitioners who knowledgeably and ethically add to the well-being of society (Walden University Catalog, 2021, Social Change section, para 1). When simulation in nursing education is used to supplement traditional clinical hours, it is important that faculty and simulation

staff be knowledgeable of the science behind simulation and be trained at a level that promotes success in the simulation laboratory. Knowledge gained from the results of this modified-Delphi study will aid schools of nursing in the development of high-quality simulation programs.

After an introduction and brief description of the topic, the reason for the study and potential social implications of the study was be identified. Chapter 1 includes a brief review of literature related to simulation. A gap in knowledge in the discipline is identified and the need for the study is recognized. The study's purpose and problem are detailed in Chapter 1. The phenomenon of interest and the research paradigm are identified and discussed. The research question is stated and the conceptual framework is acknowledged. The nature and rationale of the study is identified and supported. Chapter 1 includes a detailed description of the method of data collection including the identification of participants and how data were collected and analyzed. Chapter 1 clarifies terms and concepts with comprehensive definitions. Limitations and delimitations are identified. Assumptions are acknowledged. The significance of the study completes Chapter 1.

Background

Clinical experiences are at the cornerstone of nursing education. Hands-on, authentic patient experiences prepare student nurses to practice safely and confidently as professional registered nurses (RNs). A national shortage of RNs has led to an increase in nursing school admissions (Buerhaus et al., 2017; Richardson, 2018). Increases in nursing school admissions have contributed to an overflow of nursing students seeking

traditional clinical sites (Cantrell et al., 2017). Unfortunately, the increase of students needing clinical experiences has created a discrepancy between the number of clinical sites available and the number of students vying for placements. Nursing students who do not receive adequate clinical experiences are at risk for unsafe nursing practice (Quality and Safety Education for Nurses [QSEN], 2018a).

This trend prompted the NCSBN to devise a study to examine simulation as a viable substitute to traditional clinical placements. Traditional clinical placements include locations such as hospitals, outpatient clinics, and community settings (Hayden et al., 2014). Hayden et al. (2014) conducted a randomized, controlled, longitudinal study that examined differing amounts of simulated hours in nursing school and success 6 months after graduation and employed as an RN in the nursing profession. Results indicated that there was no difference in success as an RN between RNs who fulfilled all their clinical hours in a traditional setting, RNs who received 25% of their clinical hours in simulation, and RNs who received 50% of their clinical hours in simulation (Hayden et al., 2014). The findings of the study led to the recommendation by the NCSBN that up to 50% of traditional clinical hours can be fulfilled with simulated experiences. However, Hayden et al. (2014) cautioned that to use 50% of clinical time in simulation, the simulated experiences need to be high-quality experiences that are deliberately planned, facilitated, evaluated, and supported by the institution.

To promote the development of high-quality simulated experiences, the NCSBN along with the INACSL released simulation guidelines for prelicensure nursing programs (Alexander et al., 2015; Beroz, 2017). The INACSL Standards of Best Practice:

Simulation is a document that outlines eight areas of importance in the development of simulation programs (Sittner et al., 2015). Sittner et al. (2015) reported that adherence to the eight tenets described in the document produces safe, high-quality simulated experiences for nursing students.

As schools of nursing move to address a shortage of traditional clinical sites, it is important to identify the advantages and the barriers to simulation. In addition to augmenting traditional clinical hours, simulation increases basic psychomotor skill development (Hallin, et al., 2016; Kiernan, 2018; McGaghie, et al., 2011; Oermann & Gaberson, 2014; Sujatta & Oberarztin, 2015) and contributes to safe nursing practice and positive patient outcomes (Bashaw, 2016; Jarvill et al., 2018; Lee et al., 2017; Molloy, 2017). Simulation also decreases student nurses' anxiety and increases self-confidence (Kameg et al., 2014; Khalaila, 2014; Ross & Carney, 2017). Simulation plays a role in the development of critical thinking, clinical reasoning, and decision-making skills (Mok et al., 2016; Shin et al., 2015; Shinnick & Woo, 2013; Von Colln-Appling & Giuliano, 2017). A lack of adequately trained and staffed traditional clinical faculty is also improved by using simulation (Cantrell et al., 2017; Phillips et al., 2017). Even though there are many benefits of simulation, barriers do exist.

There are numerous barriers to the implementation of simulation (Al-Ghareeb & Cooper, 2016). Barriers include the lack of dedicated simulation space (Chinnugounder et al., 2015; Hosny et al., 2017; Jeffries, 2012; Sole et al., 2013), lack of technology (Aldridge, 2016), and faculty fear of technology (Al-Ghareeb & Cooper, 2016; Hollema, 2015; Hosny et al., 2017; Ryan et al., 2017). Faculty development and lack of time to

dedicate to simulation activities is also considered a barrier to simulation program development (Aldridge, 2016; Jeffries, 2012; Nordquist & Sundberg, 2015; Simes et al., 2018; White, 2017). Fortunately, the document published by the INACSL addresses and offers specific suggestions to overcome the barriers in implementing a simulation program into nursing education (Rutherford-Hemming et al., 2015).

In 2014, the NCSBN conducted a landmark study to examine the extent to which simulation could be substituted for clinical experiences (Hayden et al., 2014). The results of the study supported the use of up to 50% of clinical hours could be acquired in simulation. The NCSBN (Alexander et al., 2015) created a checklist to guide schools of nursing in simulation development. There is a gap in knowledge between whether the INACSL Standards of Best Practice: Simulation are being used as a foundation of simulation development. As the use of simulation increases in schools of nursing across the United States, it is imperative that simulated experiences be at a level that qualifies as an adequate substitution of an actual patient experience. This modified Delphi study on the use of the INACSL Standards of Best Practice: Simulation is needed to reinforce the importance of standards as a foundation to simulation program development. The study informs schools of nursing that are considering increasing their simulation use.

Problem Statement

A lack of clinical placement for nursing students is motivating schools of nursing to consider simulation as a substitute for traditional clinical hours (Blodgett et al., 2018; Curl et al., 2016; Nehring et al., 2013; Shearer, 2016; White, 2017). Using simulation to replace actual patient contact hours is acceptable if the simulated experiences mimic real-

life patient scenarios and are grounded in best practice in simulation standards. Unsystematically planned experiences lack the rigor and quality to substitute traditional clinical experiences. There is a lack of literature on how the INACSL Standards of Best Practice: Simulation are being implemented. If simulation is to replace traditional clinical experiences at the ratio of 50% simulation to 50% traditional clinical, as recommended by the NCSBN (Hayden et al., 2014), then simulated practices need to be closely monitored for adherence to INASCLs' guidelines. Failing to implement INASCL guidelines into nursing simulated experiences has the potential to advance under-prepared student nurses into professional practice. A lack of literature on the topic was the impetus for this study. The problem addressed in this study was how are the INACSL Standards of Best Practice: Simulation being implemented in undergraduate nursing education.

Patient safety and creating positive patient outcomes are the cornerstone of healthcare. Nurses are dedicated to providing patient care that is safe and evidenced-based. QSEN provides nurses with a foundation in which to base safe care practices (QSEN, 2018a). Even though steps are taken to protect patients, patient death from medical errors still occur. In a landmark study by the Institute of Medicine (IOM), it was estimated that there were between 44,000 and 98,000 patient deaths per year because of medical error (Institute of Medicine, 1999). James (2013), Makary and Daniel (2016) and Ranji (2017) reported that subsequent studies on the topic of medical error and patient death suggested that the number of deaths from medical error was much higher than what was reported by the IOM. James (2013) reported that the number of patient deaths due to medical error was 400,000 yearly. Makary and Daniel (2016) reported that 251,000

deaths per year are attributed to human error. Recent studies put preventable deaths from human error at 161,250 (Austin & Derk, 2019). Advances in technology, especially electronic medical records and better communication between healthcare providers, are cited as reasons for the decrease in patient death due to medical errors (Anderson & Abrahamson, 2017).

Purpose of the Study

The purpose of this qualitative Delphi study was to establish consensus on the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education. If it can be determined that schools of nursing are implementing the INACSL Standards of Best Practice: Simulation, then substituting up to 50% of traditional clinical hours with simulated experiences is feasible. If, however, experts cannot agree that the INACSL Standards of Best Practice: Simulation are being implemented, then using up to 50% of traditional clinical hours in simulation is questionable. A lack of standards to guide simulated experiences produces under-prepared nursing students and has the potential to put patients at risk for less than optimal health outcomes.

Research Question

Research Question 1 (RQ1): What is expert consensus regarding the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education?

Conceptual Framework

Vygotsky's theory of social constructivism provides the conceptual foundation for this study. Vygotsky believed that learning was a process where new knowledge is added to existing knowledge and experiences and results in the creation of new knowledge

(Bruning et al., 2011; Dewey, 1938; Vygotsky, 1978). The constructionist point of view envisions learning where teacher and learner engage with each other in mutual sharing of ideas. Learners, in a constructionist classroom, are active participants that are in charge of their own knowledge acquisition rather than passive recipients of information (Al-Weher, 2004; Amineh & Asl, 2015; Switzer, 2004).

Vygotsky's theory of social constructivism includes a focus on social interactions and their impact on learning. Vygotsky (1978) held the opinion that critical thinking and problem-solving skills are enhanced by social exchanges between learners, teachers, and colleagues (Clara, 2017; Erlam et al., 2017; Oermann, 2015; Sanders & Welk, 2005). Interacting with fellow learners creates an atmosphere of shared learning and exposes learners to the beliefs, ideas, and opinions of others. Classrooms based on the social constructionist theory encourage students to define what they want to learn and find ways to attain the knowledge they desire.

Vygotsky's theory of social constructivism aligns with this study on the INACSL Standards of Best Practice: Simulation by recognizing that simulation is social in nature. Students engage with facilitators and other learners to create their own meaning of a simulated experience based on interactions with others in the simulation. The INACSL committee (2016) reported that simulation is immersed in a constructionist point of view. Specifically, learning in a simulated environment builds on current and past knowledge and skill to create new knowledge and ways of doing things. Chapter 2 will provide a thorough explanation of Vygotsky's theory of social constructivism.

This study also utilizes the structure-process-outcome model by Donabedian (Donabedian, 1988). Donabedian contended that outcomes will be met if structure and process are identified, deliberately constructed, and supported. Structure refers to items such as buildings, rooms, equipment, and individuals. Process is the activity of interacting with others in the environment. This process is fluid in that communication is open and constantly flowing from and between participants. Outcomes are the product of structure and process. Outcomes in simulation refer to changes in attitudes, thoughts, and behaviors as the result of the simulated activity. In Donabedian's model, if structure and process are optimal, then outcomes will be met. If structure and/or process are lacking, poor outcomes are the result (Ayanian & Markel, 2016; Beitz, 2018; Berwick & Fox, 2016; Butts & Rich, 2011; Donabedian, 1988, 2005; Lawson & Yazdany, 2012; Neuhauser, 2004; Upenieks & Abelew, 2006).

Donabedian's model of structure, process, and outcome aligns with this study on the INACSL Standards of Best Practice: Simulation in that outcomes in the simulation laboratory are determined by structure and process. When simulation activities are supported by strong structures and fine-tuned processes, outcomes will most certainly be positive. Positive student outcomes in the simulation laboratory result in student nurses who are equipped with the necessary knowledge and skills to provide safe patient care. Positive student outcomes in the simulation laboratory also support the graduate nurse in the transition from student nurse to professional nurse. Included in Chapter 2 is a more thorough explanation of Donabedian's conceptual framework.

Nature of the Study

This study investigates standards-based simulation. A surge in the use of simulation as a substitute for traditional clinical hours has prompted a closer look at how schools of nursing provide high-quality simulation experiences for the nursing students. The optimal way to capture the needed information was accomplished by using a modified Delphi method of research. According to Sekayi and Kennedy (2017), the Delphi method is suggested when the research question can be answered using "group-based data" (p. 2752). The premise of the Delphi method of research is that the group opinion is stronger and more credible than individual opinion (Keeney et al., 2011). The Delphi method is recommended when trying to better understand complex issues through the point of view of experts in the discipline. The Delphi method is suggested when there is little literature on a topic or what is available is inadequate (Adler & Ziglio, 1996). The Delphi technique is also used for policy development and to determine evidenced-based practice guidelines (Morgan et al., 2007). Dalkey (1969), Dalkey and Rourke (1971), Hasson et al. (2000) and Hsu and Sandford (2007) reported that results from Delphi studies are used to identify trends, generate projections, and offer recommendations.

A panel of experts in the field of simulation in nursing education participated in three rounds of statements. Participants were asked to rate the importance of each statement. Panelists were asked to provide narrative responses to statements based on their experience with simulation in nursing education. The new responses became statements in Round 2. In addition to the original statements, Round 2 included the new statements along with a rating of statements consistent with the panelist responses.

Panelists rated statements on a scale of 1-4 where 4 was *highly agree*. Panelists were able to change their response in the second round based on the level of agreement between panelists on each statement. A third round was completed using the identical process as Round 2. Data from Round 3 were aggregated and evaluated in the same manner as data from Rounds 1 and 2. Final data were evaluated for level of consensus using the interquartile deviation (IQD) statistic.

Rationale for the Delphi Method

The Delphi technique is the preferred method when expert opinion is needed to fully understand an issue. This study seeks to understand how nurse educators use the INACSL Standards of Best Practice: Simulation in simulation laboratories in the United States. Other methods of qualitative research were considered for this study; however, the Delphi is one of the only methods that seeks to discern what experts know about a specific topic when there is little to no research about a topic (Keeney et al., 2011). Consensus (or lack of consensus) may guide schools of nursing in developing simulation laboratories and creating simulation experiences that meet the high-quality standards as recommended by the NCSBN.

Phenomenon Being Investigated

The phenomenon being investigated was whether the INACSL Standards of Best Practice: Simulation are being utilized in undergraduate simulation laboratories. The NCSBN (2014) recommended that up to 50% of traditional clinical hours can be substituted with simulated experiences. In response, the INACSL developed the INACSL Standards of Best Practice: Simulation to guide schools of nursing in the development of

standards-based simulation laboratories (INACSL Standards Committee, 2018a; Rutherford-Hemming et al., 2015). Even though there is a copious amount of literature on simulation usage in nursing education, very few studies directly state if and how the standards are being incorporated into the development of simulation programs. This study seeks the opinion of experts on the implementation of the INACSL Standards of Best Practice: Simulation into every aspect of simulation development. This study sought to identify what is going well and what difficulties are associated with implementing the standards into simulation programs.

Data Sources and Analysis

Participants for this study were experts in the field of nursing simulation. Random sampling of participants does not align with the Delphi method as participants must be knowledgeable in simulation in nursing education. Purposeful sampling yielded experts in the field who applied their experiences and knowledge to answer the research question (Hasson et al., 2000; Shariff, 2015). Panelists were invited to participate based on specific inclusion criteria. Criteria for inclusion were RNs with a master's degree and at least 2 years of experience planning and facilitating simulation experiences in schools of nursing in the United States

Although literature is not specific about an absolute number of participants needed for a Delphi study (Atkins et al., 2005; Baker & Edwards, 2012; Guest et al., 2006; Habibi et al., 2014; Merlin et al., 2016), reliability of the Delphi method is increased as the number of expert panelists increase (Hasson & Keeney, 2011). de Villiers et al. (2005), Habibi et al. (2014), and Wild and Torgersen (2000) reported that

panelist should not be less than 15 and can exceed 100. Sekayi and Kennedy (2017) stated that 30 panelists are advisable. Including more than 30 panelists has the potential to be unmanageable. Atkins et al. (2005) stated that “reliable outcomes” can be achieved using a small number of expert panelists (p. 10). One hundred and twenty-one potential panelists were contacted for participation in the study. Snowball sampling was utilized if it is determined that the number of verified panelists is too small. Thirty individuals meet the inclusion criteria and agreed to be included in the study as an expert panelist. Potential panelists received an email that provided details about the study including a detailed overview of the Delphi technique. Panelists who met inclusion criteria were sent an informed consent to participate in the study.

After securing Institutional Review Board (IRB) panelists received an email that provided a secure, anonymous link to participate in the study. Panelists had 5 days to complete the instrument. Laggards were notified on Day 4 to complete the instrument. Rounds 2 and 3 replicated Round 1 with the addition of new statements added by the experts. IRB approval was granted prior to Rounds 2 and 3. Data analysis immediately followed data collection. Data were downloaded into an Excel spread sheet. The mean of each round was calculated by Qualtrics. Consensus was determined using the IQD statistic calculated through Microsoft Excel at the conclusion of Round 3.

Definitions

21st Century Skills: 21st century skills are a defined set of skills that prepare today’s learners to think, problem solve, communicate, and collaborate. The acquisition

of 21st century skill, provide learners with the necessary tools to be leaders in a global society (Greenstein, 2012).

Affective Learning: Learning in the affective domain refers to identifying personal values and beliefs and developing strategies to positively defend values and beliefs in a way that fosters understanding and growth (Oermann & Gaberson, 2014).

Basic Psychomotor Nursing Skills: Psychomotor nursing skills are entry level nursing skills. For example, taking vital signs, giving medications, initiating intravenous infusions, applying oxygen and inserting a Foley catheter are considered basic psychomotor nursing skills (Potter et al., 2017).

Clinical Experiences: Clinical experiences refer to experiences derived from hospital, outpatient clinics, and community health settings. Experiences are supervised by clinical faculty in a ratio of eight to ten students per clinical faculty (Plemmons et al., 2018).

Cognitive Learning: Learning in the cognitive domain refers to the acquisition of knowledge through the assimilation of facts, information, and evidence (Oermann & Gaberson, 2014).

International Nursing Association for Clinical Simulation and Learning (INACSL): An international organization with a "mission to advance the science of healthcare simulation" (INACSL, 2018, para. 3).

INACSL Standards of Best Practice: Simulation*:* Simulation standards developed by the INACSL that are meant to guide all aspects of a simulated experience (INACSL, 2018). Each of the eight standards include specific information about the standard

including how to meet the standard and potential consequences of not meeting the standard.

National Council of State Boards of Nursing (NCSBN): A national organization with a mission to "promote evidenced-based regulatory excellence for patient safety and public protection" (National Council of State Boards of Nursing, 2019, para 1).

Medical Error: Actions in the process of giving care that have unplanned outcomes. Medical errors have the potential to cause serious bodily harm or death (Makary & Daniel, 2016).

Quality and Safety Education for Nurses (QSEN): QSEN is a national organization dedicated "preparing future nurses with the knowledge, skills, and attitudes (KSAs) necessary to continuously improve the quality and safety of the healthcare systems in which they work" (QSEN, 2018a, para 1).

Scenarios: Scenarios are life-like situations written for use in a simulated experience for the purpose of meeting specific student learning outcomes (Huffman et al., 2016).

Simulated Experiences: Simulated experiences are activities that replicate a clinical experience. Simulated experiences utilize a mannequin or an individual acting as a patient to imitate a real-life patient scenario. Simulated experiences are observed and evaluated by simulation faculty (Jeffries, 2012).

Simulation Fidelity: Simulation fidelity refers to the degree in which the mannequin replicates human functions. The more human functions incorporated into the device, the higher the degree of fidelity (Fritz et al., 2007).

Snowball Sampling: Snowball sampling refers to asking knowledgeable others for participant recommendations based on specific participant criteria (Patton, 2002).

Assumptions

Several assumptions accompany this Delphi study. It is assumed that there is a relationship between simulated experiences and the overall preparedness of student nurses. It is assumed that the Delphi panelists will provide truthful, unbiased responses to the statements on the Delphi instrument. Kim and Kim (2016) reported that bias may occur when participants misrepresent the importance of a statement due to personal experience or involvement with a statement on a questionnaire. It is also assumed that not all the panelists who begin the study will complete all three rounds of the study. It is assumed that panelists will reach consensus by the conclusion of the third round.

Scope and Delimitations

The focus of this study was simulation and the implementation of the simulation standards as outlined in the INACSL Standards of Best Practice: Simulation. Developed by the INACSL, the guidelines in Standards of Best Practice: Simulation are intended to guide all aspects of simulated experience in a simulation laboratory (INACSL, 2018). Each of the eight standards include specific information about the standard including how to meet the standard and potential consequences of not meeting the standard. This study was designed to look solely at simulation laboratories in schools of nursing; however, results of the study may have elements of transferability to other professions just as studies from medicine, physical therapy, engineering, military, and aviation informed this study. Simulation in nursing education is a topic that has gained attention on a national

level. For the purposes of this study, the geological location is restricted to nurses residing in the United States.

Limitations

Several potential limitations are associated with this study. The Delphi method consists of three rounds spaced a week apart. Panelists were allowed to withdraw which impacted the results of the study. As such, over recruitment was used to compensate for potential loss of participants. To further deter withdrawal from the study, participants were given clear instructions and the time between rounds was carefully considered. Varying levels of expertise in simulation was also considered a limitation. Lesser experienced panelists may change their response due to inexperience or intimidation. To control for this potential limitation, panelists were screened to ensure that all panelists had the minimum requirements to participate in the study. Reaching consensus was viewed as a limitation. Wide differences exist between simulation labs across the nation. Responses from panelists from schools of nursing who can afford up-to-date simulation equipment may have influenced the responses of panelists who have less resources. A final limitation is that the study focuses on the nursing profession. Although simulation is utilized in many areas of healthcare, this study was limited to RNs with a background in nursing simulation.

Significance

It is projected that from 2016-2026 the need for RNs will grow from 2.9 million to 3.4 million (AACN, 2019a, para. 2). Reasons associated with the increased need for RNs include a greater emphasis on preventive care, chronic care, and care for the aging

population (AACN, 2019b, para. 5). This increased need for more RNs is being felt by schools of nursing across the United States. According to AACN (2019a), schools of nursing in the United States turned away 75,029 qualified applicants due to a lack of qualified nursing faculty and a lack of available clinical sites (para. 3). In a survey of 872 schools of nursing, there were 1,715 vacant faculty positions in the classroom and clinical setting (AACN, 2019a). To accommodate the lack of clinical sites and clinical preceptors, schools of nursing are turning to simulation to augment traditional clinical experiences (Jeffries et al., 2015; Reimer-Kirkham et al., 2007; Taylor et al., 2016).

This study sheds light on the current usage of the INACSL Standards of Best Practice: Simulation in simulation laboratories in schools of nursing. Each of the eight standards include specific information about the standard including how to meet the standard and potential consequences of not meeting the standard. Implementing all eight standards into simulation programs ensures that nursing students are exposed to high-quality simulated experiences. Failure to implement the standards into simulation has the potential to negatively impact student outcomes and patient safety. This study advances knowledge in the science of simulation by highlighting the importance of using the INACSL Standards of Best Practice: Simulation to guide simulation programs across the United States.

Identifying what nursing simulation experts recognize as important to the development of simulation centers is the goal of this modified Delphi study. Implications for positive social change include adding to the body of knowledge in simulation science and assisting simulation program developers in the creation of high-quality simulated

experiences (Cant & Cooper, 2017; Doolen et al., 2016; Mariani & Doolen, 2016; O'Leary et al., 2015; Sevdalis et al., 2016; van-Vuuren et al., 2018). The ultimate outcome of a high-quality simulated nursing experiences is an educated student nurses who has the confidence and skill to care for patients in a safe and professional manner (Crowe et al., 2018). Positive patient outcomes are the result of highly educated and skilled nurses (Holle et al., 2019; O'Brien et al., 2018). Positive social change is a deliberate action that improves the human condition. Engaging in simulated activities will enhance the knowledge and skills of student nurses creating positive social change.

Summary

Chapter 1 of this modified Delphi study began with an introduction to the topic of the study including the need for the study and concepts associated with the topic. Chapter 1 also included the background of the study and a brief review of literature on the topic of simulation. Chapter 1 exposed readers to the problem and introduced the purpose of the study. The conceptual framework was introduced and briefly discussed in Chapter 1. The research question was presented and the nature of the study was outlined. Also included in Chapter 1 were definitions, assumptions, limitations, and scope and delimitations. Chapter 1 concluded with a statement regarding the significance of the study and the study's implication for positive social change.

Chapter 2 of this study includes an in-depth discussion of the conceptual foundation to the study. Chapter 2 provides an explanation of the literature search strategy and an expansive review of literature on the topic of simulation. Following the literature review, Chapter 2 includes a section that recognizes major themes derived from

the literature review. Chapter 2 concludes with detailed discussion on what is known and what is not known related to simulation. The gap in literature is outlined and how this study extends the discipline is disclosed.

Chapter 2: Literature Review

Introduction

The shortage of RNs in the United States has prompted schools of nursing to consider increasing enrollment in nursing programs. The problem with increasing enrollment in schools of nursing is the lack of qualified nursing faculty and clinical placement opportunities to accommodate an increase in the number of nursing students (Blodgett et al., 2018; Curl et al., 2016; Nehring et al., 2013; Shearer, 2016; White, 2017). The American Association of Colleges of Nursing (AACN) reported that 75,000 qualified applicants were denied admittance into baccalaureate in nursing (BSN) programs in the United States. (American Association of Colleges of Nursing, 2019a, para 3). Reasons for denied admittance were identified as a lack of qualified nursing faculty (25%), a lack of available clinical sites (45%), a lack of classrooms (25%), and other (17%; National League for Nursing, 2018).

The lack of clinical sites is the largest deterrent to nursing school acceptance. It is difficult to estimate the total number of clinical sites that are lacking due to the nature of clinical experiences. According to the Board of Nursing in the state of Colorado, a clinical experience is defined as “faculty planned, guided, and supervised learning activities designed to assist students to meet the course objectives in a clinical setting” (Department of Regulatory Agencies, 2020, p. 10). Clinical settings include hospitals, out-patient clinics, physician offices, and surgical centers, to list a few. Additionally, clinical experiences vary with each clinical setting. For example, an experience could include an 8 to 12-hour experience at a hospital or a 4-hour experience in a physician’s

office. It is important to note that the number of required clinical hours is determine state-by-state. For example, in Colorado, the minimum number of required clinical hours is 750 (Department of Regulatory Agencies, 2020, p. 17). Replacing traditional clinical experiences with simulated experiences is suggested to accommodate the need for required clinical experience.

Simulation is a viable option to traditional clinical experiences if the simulated experiences are guided by the INACL Standards of Best Practice: Simulation (Alexander et al., 2015). The problem is that not all simulated experiences are grounded in predetermined standards and guidelines. The purpose of this modified Delphi study is to establish consensus on the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education.

In addition to an extensive literature review, Chapter 2 covers several major sections. Vygotsky's theory of social constructivism and Donabedian's quality of care model are discussed in detail. The advantages and barriers to simulation are identified and discussed and the history of simulation is reported. Utilizing current peer-reviewed journals, books, government publications, and professional websites such as the AACN and the INACSL, Chapter 2 contains an extensive review of literature. Most literature falls within a 6-year time frame ending in 2021; however, due to the long-standing history of simulation, seminal works by the IOM and the National League for Nursing (NLN) are included in the review of literature. Chapter 2 includes the literature search strategy including databases used, key search terms, and combinations of search terms and a section that establishes the relevance of the problem. The conceptual framework is

also discussed in Chapter 2. Major themes derived from the literature review are identified and summarized. Chapter 2 identifies how the study fills a gap in the literature and extends knowledge in the discipline of nursing education.

A review of current literature on the topic of simulation returned a large volume of peer-reviewed articles. Many concepts related to simulation are represented in the literature. However, to narrow the field of potential resources, articles were chosen for inclusion in the literature review that pertained to the advantages and barriers of implementing simulation in nursing education, faculty development in nursing simulation, and patient safety and simulation.

Even though simulation in nursing education is not new (van-Vuuren et al., 2018) there is an expanded interest in simulation as a result of the NCSBN's report (Hayden et al., 2014; Jeffries et al., 2015). Simulation addresses many problems that currently face nursing education today. As clinical sites become harder to secure (Jeffries et al., 2015; Reimer-Kirkham et al., 2007; Taylor et al., 2016), schools of nursing turn to simulation to augment traditional clinical hours. A national shortage of qualified nursing faculty and an increase in the number of students admitted to schools of nursing have played a role in the increased use of simulation (Cantrell et al., 2017; Phillips et al., 2017).

Simulation allows for the development of basic psychomotor nursing skills (Hallin et al., 2016; Kiernan, 2018; McGaghie et al., 2011; Oermann & Gaberson, 2014; Sujatta & Oberarztin, 2015;) which in turn have a directly affect patient safety and patient outcomes (Bashaw, 2016; Jarvill et al., 2018; Lee et al., 2017; Molloy, 2017). Simulation helps develop self-confidence, communication and collaboration skills, and the ability to

work as a team (Berragan, 2014; Greenstein, 2012; Sebold, et al., 2017). Simulation decreases student nurse anxiety by allowing for practice prior to performing nursing skills on patients in the clinical setting (Kameg et al., 2014; Khalaila, 2014; Ross & Carney, 2017). Simulation also plays a role in the development of critical thinking, clinical reasoning, and decision-making skills (Mok et al., 2016; Shin et al., 2015; Shinnick & Woo, 2013; Von Colln-Appling & Giuliano, 2017).

Barriers to the delivery of simulation are identified and discussed in detail in the literature. Lack of dedicated space, funding, and available resources are recognized as a barrier to the implementation of simulation (Chinnugounder et al., 2015; Hosny et al., 2017; Jeffries, 2012; Sole et al., 2013). Also listed as a barrier to simulation is limited technology and the cost associated with purchasing and maintaining technology and equipment in simulation centers (Aldridge, 2016; Bleich et al., 2018). Faculty development and the time needed to develop, facilitate, and evaluate simulation is another barrier for consideration (Aldridge, 2016; Jeffries, 2012; Nordquist & Sundberg, 2015; Simes et al., 2018; White, 2017).

Snavely (2016) reported that 1.05 million open RN positions are predicted by 2024 (p. 99). The Bureau of Labor Statistics (2018) predicts a steady growth of RNs. The total number of RNs will increase from 2.9 million in 2016 to 3.24 million in 2026 (AACN, 2019a, para. 2). The projected shortage of RNs combined with the expected increase in the need for the services of RNs will challenge the quality of and access to healthcare across the United States (American Association of Colleges of Nursing, 2008;

Buerhaus et al., 2017). To meet this demand for RNs, schools of nursing must find a way to decrease the number of students not admitted to nursing school.

To fulfill current and projected needs for RNs in the United States, schools of nursing have either increased enrollment numbers or are considering increasing student enrollment numbers (Auerbach et al., 2017). Logically, it seems feasible that an increase in the number of students admitted to schools of nursing will lead to an increase in the number of practicing RNs. Unfortunately, it is not as simple as increasing enrollment. The lack of clinical placements for nursing students, along with a lack of qualified nursing faculty, directly impacts the number of students admitted to schools of nursing. Schools of nursing are required to supply clinical experiences in addition to classroom instruction. However, securing clinical placements to accommodate additional nursing students is challenging schools of nursing across the nation (American Association of Colleges of Nursing, 2008; National League for Nursing, 2018; Reimer-Kirkham et al., 2007).

The lack of clinical placement opportunities has prompted a rapid increase in the use of simulated experiences to satisfy required clinical hours. According to the NCSBN (2014), up to 50% of clinical hours can be substituted with simulated experiences. The high percent of clinical hours being replaced by simulation demands that simulated experiences be guided by the INACSL Standards of Best Practice: Simulation (Alexander et al., 2015). Many schools of nursing in the United States have state-of-the- art simulation centers. However, having a state-of-the-art simulation center does not

guarantee that simulated experiences are at a quality that rivals an authentic patient encounter.

Literature Search Strategy

The initial search for literature utilized the concepts of simulation, nursing education, INACSL, Standards of Best Practice: Simulation, nursing faculty, and nursing clinical. Nursing related databases explored included Cumulative Index of Nursing and Allied Health Literature (CINAHL), Medline, ProQuest Nursing and Allied Health Source, and Science Direct. Education focused databases included Academic Search Complete, Education Resources Information Center (ERIC), and Google Scholar. Key search terms included *simulation, simulation education, INACSL* Standards of Best Practice: Simulation*, nursing education, research, evaluation, undergraduate nursing, best practice, patient safety, nursing students, debriefing in simulation, innovation in simulation, simulation technology, health outcomes, quality in healthcare, Donabedian, scaffolding, constructionist, Vygotsky, critical thinking, decision-making,* and *clinical reasoning.*

Early in the search for literature it was evident that peer reviewed literature on simulation yielded a plethora of information, both past and present. Likewise, information regarding nursing education, nursing faculty, and clinical experiences in nursing education was abundant. Literature on the INACSL Standards of Best Practice: Simulation was available; however, it was difficult to find peer-reviewed literature on how the INACSL Standards of Best Practice: Simulation are being used to guide simulated experiences in nursing simulation labs. A librarian assisted with identifying

relevant peer-reviewed literature. Combining search terms and increasing the number of databases aided in locating several pertinent articles. To further narrow and limit the results of the literature search, Boolean terms and date restrictions were applied to searches. Additionally, reference lists of articles already selected for use in the study were examined. This strategy yielded several pertinent articles.

Conceptual Framework

Vygotsky

Vygotsky believed that an individual's reality of the world is constructed by personal experiences and cultural exchanges with others (Vygotsky, 1978). Vygotsky (1978) added to what was known about teaching and learning with his belief that a social interdependence between teacher and learner sparks critical thinking and problem-solving skills leading to the acquisition of new knowledge (Clara, 2017; Erlam et al., 2017; Oermann, 2015; Sanders & Welk, 2005). Dieckmann et al. (2007) determined that simulation provides a "social character" to experiences and participants (p. 160).

Passive learning and rote memory are artifacts from the past in a constructionist learning environment (Amineh & Asl, 2015). The learner takes an active role in the social-constructivist theory. The learner is not the recipient of information rather, the learner seeks information, responses, and answers to understand and construct significance (Driscoll, 2005; Erlam et al., 2017; Oermann, 2015). According to Al-Weher (2004), instruction has moved beyond a process of transferring information from teacher to learner to a process that gives the learner control over their learning. Switzer (2004) recognized the role of the teacher in a constructionist approach to teaching and learning

as “guides, monitors, coaches, tutors, coordinators, advisors, and facilitators” (p. 91). Communication is key in a social constructionist learning environment. Teachers and students must communicate by asking questions of each other to find answers that increase learning and create meaning (Amineh & Asl, 2015).

A social constructionist point of view also supports the idea that new knowledge is built upon old knowledge through lived experiences and collaborative interactions with knowledgeable others (Ah-Nam & Osman, 2017; Clara, 2017; Nordlof, 2014; Sanders & Welk, 2005; Utley, 2011; Wilson & Devereux, 2014; Wright, 2018). Dewey (1938) contended that learners can build their own knowledge by layering past and present experiences and interactions to create new knowledge. In addition, the social-constructionist theory realizes that learners come from different and unique backgrounds which require an individual approach to teaching, learning, and finding meaning (Driscoll, 2005; Oermann, 2015; Utley, 2011). Social constructivism also involves the concept of reflective learning. Driscoll (2005) reported that the “reflective use of knowledge” is one of the goals of constructionist instruction (p. 393). Reflection allows an opportunity for learners to consolidate what was learned from the experience. Consolidating learning adds meaning and perception which leads to new knowledge (Pollock & Biles, 2016).

Vygotsky’s theory of social constructivism was chosen for this study on the use of the INACSL Standards of Best Practice: Simulation for several reasons. The INACSL committee stated that “simulation is based on constructivist theories” (2016, p. S41). The INACSL (2016) reported that constructionist learning is a process whereby the learner

combines prior knowledge with new findings leading to the formation of new information and ultimately, new knowledge. Beginning nursing students engage in basic tasks and entry-level simulated experiences moving to more advanced procedures and simulated experiences as they gain more knowledge. For example, before a nursing student participates in a simulated experience the student needs to have mastered basic skills such as taking vital signs and giving medications. This supports Vygotsky's theory of social constructivism in that new knowledge is constructed on existing knowledge and experiences. It would be difficult, if not impossible, for a nursing student to successfully complete a simulated experience without knowing how to perform basic tasks such as taking vital signs and giving medications. Mastering basic skills and procedures allows for participation in advanced simulated experiences that expose the nursing student to situations that require higher level critical thinking skills. Vygotsky maintained that learning is social in nature. In a simulated environment, students and teachers work together. Social learning is forefront in a simulated environment where observations and communication allow students and teachers the opportunity to work and learn together. Vygotsky's theory of social constructivism respects the uniqueness of individuals and supports a learning environment that accommodates individuals from diverse backgrounds. A major component of being a nurse is the ability to care for a person without regard to ethnic backgrounds, socioeconomic status, or religious beliefs. Supporting a social constructionist belief in simulation involves respecting the unique, individual qualities of students and tapping into those qualities to promote learning and create further meaning for the learner. Vygotsky's theory of social constructivism

supports this study on the use of the INACSL Standards of Best Practice: Simulation by recognizing that reflective learning is a component of simulated experiences. At the completion of each simulated experience, students and faculty engage in reflection. It is during the reflection phase of simulation that students come to understand what they know and can do. Active reflection with self and others aids in the construction of personal meaning and the construction of new knowledge.

Vygotsky's theory of social constructivism is widely accepted in health science related research. A review of literature on the use of a social constructionist view in simulation related research revealed an abundance of peer-reviewed information. Bland and Tobbell (2015) supported a social-constructionist view while examining the process of learning in a simulated experience. Bland and Tobbell (2015) concluded that learning was a social process in which the learner is an active participant in all aspects of the simulation. In a similar study on learning styles in the simulation lab, Tutticci et al. (2016) reported that nursing students are more likely to complete tasks successfully when they work in collaboration with others in a social environment. Havnes et al. (2016) reported that for learning in a social setting to occur, peer interactions need to be planned and structured. In other words, it is necessary that faculty facilitating simulated experiences design and structure content prior to engaging students in simulation. The sole act of interacting does not ensure that learning is forefront in the simulation lab.

Equally important as social learning in constructionist theory is the concept of constructing new knowledge grounded from existing knowledge. Scaffolding is a popular term referring to the way a learner gains, retains, and adds new information (Nordlof,

2014; Sanders & Welk, 2005; Wilson & Devereux, 2014; Wright, 2018). The term is associated with Vygotsky and a constructionist's method of instruction. Wilson and Devereux (2014) reported that scaffolding a student's learning is an important element of learning. Scaffolding should be strategically planned if it is to be used to promote progressive learning. However, Wilson and Devereux (2014) cautioned that careful attention to providing tasks and instruction that stretch beyond the learner's present capabilities is an important element of scaffolding. Mariani (1997) suggested a scaffolding framework based on the quality and quantity of challenge and support. To maximize learning through scaffolding, high challenge and high support must be the goal (Mariani, 1997; Wilson & Devereux, 2014). According to Wilson and Devereux (2014), engagement and transformation are the results of a highly challenged and highly supported learning environment whereas pointlessness and boredom are the results of low challenge and low support. Supporting Vygotsky's idea of knowledge construction, Sanders and Welk (2005) identified five scaffolding strategies that boost learning and promote learner independence. When used in a layering manner, scaffolding strategies provide structure to learning and challenge the learner to attain new knowledge and skills. Scaffolding strategies enhance faculty confidence and expand teaching skills when used as a routine part of the teaching environment (Sanders & Welk, 2005). The concept of scaffolding knowledge is evident in the simulation laboratory. A student's experience in simulation begins with an understanding of basic concepts. With each new simulated experience, their knowledge grows and creates new meaning in their lives.

The research question guiding this study on the INACSL Standards of Best Practice: Simulation builds upon Vygotsky's theory of social constructivism in several ways. First, instruction based on a social constructionist view realizes that learning involves interacting with others. In the simulation lab, students and teachers work together to create situations that promote and guide learning. The work of learning is not isolated or independent. Rather, a social atmosphere is embraced in a simulated environment. The research question is further supported using Vygotsky's theory of social constructivism in that constructing knowledge is the aim of simulation. Students advance in simulation by linking new experiences and knowledge to prior experiences and knowledge. The action of linking past and present experiences and knowledge creates meaning and moves the student forward in learning. A final congruence between the research question and Vygotsky's theory of social constructivism is the awareness that reflection is vital in a social constructionist instruction. It is through the process of reflection that a learner realizes growth and progression in what they know and can do.

Donabedian

Donabedian believed that high-quality patient care is contingent upon three vital elements: structure, process, and outcomes (Ayanian & Markel, 2016; Beitz, 2018; Berwick & Fox, 2016; Braden, 1998; Butts & Rich, 2011; Donabedian, 1988, 2005; Gardner et al., Gentry et al., 2018; Kobayashi et al., 2011; Lawson & Yazdany, 2012; Neuhauser, 2004; Sund et al., 2015; Upenieks & Abelew, 2006). Structure refers to the environment in which care is being delivered and the human resources necessary to provide that care. Process includes the step-by-step plan for delivering care including the

communication necessary to implement the process. Outcomes are the observable and measurable results of care (Sidani et al., 2004). Donabedian stated the outcomes are measured by predetermined standards and criteria and should be the "criterion of quality in medical care" (Donabedian, 2005, p. 693). Donabedian (2005) contended that patient outcomes are the result of structure and process. If *structure* and *process* in healthcare delivery are present, positive *outcomes* will result. However, if structure and/or process are lacking, or not at the level they need to be, less than optimal patient outcomes will result.

According to Butts and Rich (2011), Donabedian is considered one of the first to focus on quality improvement in the healthcare. Beitz (2018) referred to Donabedian as a "pioneer in examining medical care quality" (p. 13). Donabedian's early work, borrowed from a business engineering model (Godfrey & Kenett, 2007) earned him the title of "father of quality assurance" and set the stage for continued research on quality in healthcare (Best & Neuhauser, 2004, p. 472). The article, "Evaluating the Quality of Medical Care," which is credited for being the most cited public health article for the last fifty years, was written by Donabedian (Ayanian & Markel, 2016). Donabedian is also known for his belief on caring and compassion in healthcare (Butts & Rich, 2011). Specifically, Donabedian held firm to the belief that for his structure, process, and outcome theory to be effective, healthcare providers must truly engage with and care about patients and their families. Donabedian's conceptual framework is widely recognized in nursing, medicine, and allied health professions (Beitz, 2018; Gardner et

al., 2014; Gentry et al., 2018; Kobayashi et al., 2011; Lawson & Yazdany, 2012; Sund et al., 2015; Upenieks & Abelew, 2006).

Donabedian's work created a national interest in quality healthcare outcomes resulting in the initiation of several agencies related to healthcare quality. One such agency, the IOM, was formed to research and report on public health issues (Boswell & Cannon, 2017). The Agency for Healthcare Research and Quality (AHRQ) was initiated to support safe, high-quality healthcare that is both accessible and affordable (U. S. Department of Health and Human Services, 2018). A final agency formed as a result of Donabedian's initial work on quality in healthcare is the National Quality Forum (NQF). The NQF works to create national healthcare quality goals and performance standards. Marjoua and Bozic (2012) reported that the NQF is considered the "gold standard" in quality in healthcare (p. 268). A review of literature on quality in healthcare using the Donabedian model revealed a wide range of peer-reviewed, healthcare related articles.

Gardner et al. (2014) reported that there is a plethora of information supporting the practice of using nurse practitioners to increases access to healthcare on a global scale. Gardner et al. (2014) used the Donabedian model of quality in healthcare to determine that patient safety and satisfaction increased with the use of nurse practitioners. Gardner et al. (2014) concluded that structure, process, and outcomes are dependent upon each other and if structure or process are impeded, outcomes will be affected.

Beitz (2018) used the Donabedian model in a study of quality of care in the bariatric patient population. Beitz (2018) concluded that the Donabedian model highlighted problems in process that impacted the quality of care bariatric patients

received. Specifically, interpersonal relationships between healthcare professionals and patients were identified as a major factor impeding quality outcomes. This revelation led to suggestions to increase therapeutic communication between patients and healthcare professionals. In addition, Gentry et al., (2018) utilized the Donabedian model to determine if befriending techniques support public health efforts in aiding vulnerable populations. Gentry et al. (2018) reported that structure was supported using policies and procedures; however, process was impeded due to a slow turnaround with referrals and lack of patient's immediate family in befriending treatment. Even though there were process issues, participants described outcomes as acceptable. Gentry et al. (2018) concluded that identifying and improving weaknesses in process has a beneficial effect on outcomes.

Kobayashi et al., (2011) and Sidani et al., (2004) used Donabedian's model to evaluate the quality of nursing care. Both studies highlight how a problem with structure can lead to less than optimal outcomes. Sidani et al. (2004) concluded that structure elements, specifically, patients, healthcare professionals, and environmental factors not only affect process but also have the potential to hinder high-quality nursing care. Likewise, Kobayashi et al. (2011) reported that patients' experiences and perceptions of nursing service, an element of structure, can be used to isolate weaknesses affecting outcomes.

The goal of healthcare is to provide a level of care that achieves quality outcomes for every patient. Donabedian's structure-process-outcomes model provides a framework that supports quality outcomes. This study benefitted from the use of Donabedian's

framework by providing a guide to creating and delivering simulated experiences that provide high-quality leaning outcomes for nursing students. In the end, simulated experiences must have a solid *structure* and an organized *process* in order to achieve quality learning *outcomes* for nursing students. When nursing students are trained using high-quality simulated experiences, patients will realize positive healthcare outcomes.

Structure

Structure in Donabedian's model of quality in healthcare includes several elements including the environment, the characteristics of the organization, and the human, environmental, and material resources available (Anderson et al., 2015; Braden, 1998; Butts & Rich, 2011; Hall & Roussell, 2014). In this study on the utilization of the INACSL Standards of Best Practice: Simulation, structure specifically refers to such items as the simulation lab and the surrounding environment including patient rooms, nurse's station, and debriefing room. Structure also includes high-fidelity mannequins, technology, lights, microphones, cameras, props, and any other items used to replicate a life-like simulated experience. The staffing ratio between faculty, assistive staff, and the number of nursing students in each simulated experience is considered an element of structure. A final consideration of structure is the education and simulation training level of faculty and simulation staff.

Process

Process refers to any task or activity that that produces an outcome (Anderson et al., 2015; Braden, 1998; Butts & Rich, 2011; Hall & Roussell, 2014). In this study, process refers to the actual simulated experience. Process includes all elements of the

simulation from planning and designing to delivering and evaluating. Process also includes communication between students and faculty, faculty-to-faculty, student-to-student, and student-to-patient (mannequin).

Outcomes

Measured by predetermined criteria, outcomes are changes that occur as the result of structure and process (Braden, 1998; Butts & Rich, 2011; Hall & Roussell, 2014). Positive changes (outcomes) reflect stability and congruence between structure and process (Hall & Roussell, 2014). In this study, outcomes are changes in a student's knowledge level, behavior, or performance after participating in a simulated experience. Projected outcomes from simulated experiences include an increase in critical thinking, clinical reasoning, decision making, self-reflective skills, mastery of psychomotor skills, refinement of communication and collaborative skills, and decreased anxiety (Bortolato-Major et al., 2018; Hollenbach, 2016; Megel et al., 2012; Smith et al., 2012). Positive outcomes increase student competence and self-confidence leading to improved safety outcomes and better healthcare outcomes for patients (Bortolato-Major et al., 2018; Hollenbach, 2016).

Literature Review

Simulation in nursing education is a viable option to clinical hours in nursing education as long as the clinical experiences rival actual patient experiences. According to the NCSBN, up to 50% of clinical experiences can be substituted with simulation (Hayden et al., 2014). If simulated experiences are loosely planned, executed, and assessed, nursing students run the risk of inadequate preparation for professional nursing

practice. Zimmerman and House (2016) reported that literature on the topic of simulation concluded that when simulations lack “rigor and quality” student outcomes suffer (p. 50).

The INACSL Standards of Best Practice: Simulation were devised to inform and guide simulation lab faculty on the creation and implementation of simulated experiences that prepare nursing students for safe professional nursing practice. The INACSL Standards of Best Practice: Simulation need to be incorporated into every simulated experience (Jones & Potter, 2017). Unfortunately, this is not the case as faculty struggle to incorporate the INACSL Standards of Best Practice: Simulation into simulated experiences (Aldridge, 2016; White, 2017).

To fully understand the full scope of the problem, careful attention to the selection of concepts is essential. As a starting point, the review of literature begins with a definition and a brief history of simulation in the United States. Next, different types of simulation are discussed and their role in nursing education explored. The next section of the literature review focuses on reasons that simulation in nursing education has gained popularity in recent years, barriers to simulation development, and the relationship between simulation and the development of critical thinking skills and problem-based learning. Finally, each INASCL *Standard of Best Practice: Simulation* is identified, defined, and discussed.

Simulation

Simulation in nursing education is a teaching strategy that utilizes life-like mannequins or human performers to emulate real-life clinical situations to foster the problem solving and critical thinking skills needed to care for patients (Breymier et al.,

2015; Hayden et al., 2014; Hetzel-Campbell & Daley, 2018; Jeffries, 2012; Moran et al., 2018). Simulated experiences are carried out in a setting of several students and one or two faculty. Following a pre-briefing, faculty observe and evaluate student participation and performance (Hetzel-Campbell & Daley, 2018; Jeffries, 2012). Following simulated experiences, a debriefing period allows for discussion, feedback, and personal reflection (Hetzel-Campbell & Daley, 2018; Jeffries, 2012; Moran et al., 2018). Simulation in nursing education is used to fill gaps in knowledge and skill due to the difficulty in providing clinical exposure to a wide diversity of patient diagnosis. Simulation in nursing education is not new; however, advances in technology and the increased availability of high-fidelity mannequins have escalated the use of simulation in nursing education and has greatly enriched student experiences in simulation (Hetzel-Campbell & Daley, 2018; Jeffries, 2012; Moran et al., 2018; Ryall et al., 2016). Theory and course content come alive with practice in simulation. “Scenarios are where you really learn. That’s when you get to put it all together, all the theory and practice” (Mills et al., 2014, p. 15).

History of Simulation

Simulation has deep roots in the aviation industry. The launch of World War I escalated the need for trained pilots (Macedonia et al., 2003; Ward-Smith, 2008). Lacking an adequate supply of training aircraft, the military turned to simulation to train pilots (Macedonia et al., 2003; Ward-Smith, 2008). After World War II, simulation in aviation grew to include commercial flights and independent pilot training (Macedonia et al., 2003; Rosen, 2008; Ward-Smith, 2008). Simulation in aviation saves time and money, is

less dangerous than real-time training in airplanes, and allows for a greater teacher-student ratio during training (Ward-Smith, 2008).

The IOM endorsed simulation as a teaching strategy in medical programs in the early 21st century (Sanford, 2010). During the same period, the NLN endorsed the use of simulation in nursing education citing that simulation increases patient safety by allowing for the practice of skills and knowledge in an environment that is "less threatening" than a hospital (Sanford, 2010, p. 1006). In 2003, the NLN instructed nurse educators to incorporate current findings regarding simulation into curriculum and teaching practices (Decker et al., 2008; National League for Nursing, 2003). In 2004, the members of the World Health Organization (WHO) highlighted the importance of patient safety in all facets of healthcare (Jong-wook, 2004). In response to WHO's position on patient safety, Hovancsek et al. (2009) reported that national leaders support the use of simulation to increase patient safety. As a result, the use of simulation in schools of nursing escalated. In a randomized, longitudinal study by the NCSBN, up to 50% of clinical hours in nursing education can be substituted with "high-quality simulation experiences" (Hayden et al., 2014, p. S3). With up to 50% of clinical hours being supported by the NCSBN, it is expected that the use of simulated hours to replace traditional clinical hours in nursing education will increase over the next decades (Alexander et al., 2015; Hansen & Bratt, 2017; Hayden et al., 2014).

Types of Simulation

There are several levels of simulation, each providing a different experience. Fidelity refers to the technology associated with the simulation and the extent is which

the mannequin exhibits human-like mannerisms (Lapkin et al., 2010). Low-fidelity simulation refers to replicated human body parts that are used to practice basic skills including cardiopulmonary resuscitation (CPR), catheterization, IV insertion, and nasogastric (NG) tube insertion. Low-fidelity simulation does not incorporate the use of technology.

Medium-fidelity simulation incorporates the use of technology on a limited basis. Mannequins in the medium range of fidelity use externally controlled software to mimic bodily function such as breathing, lung sounds, and bowel sounds. Medium-fidelity simulations are used for novice, entry level nursing students (Lapkin et al., 2010).

High-fidelity simulation refers to the highest level of technology available. High-fidelity mannequins are controlled using software that more closely represents the human condition than any other mannequins. In addition to the basic functions of medium-fidelity mannequins, high-fidelity mannequins can blink, talk, sneeze, cry, and exhibit a host of other human-like qualities (Lapkin et al., 2010).

Human patient simulation is a type of simulation that utilizes real-life human beings instead of mannequins in the simulation environment (Reeves et al., 2018). Reeves et al. (2018) reported that student often have trouble with suspension of disbelief (Muckler, 2017). Using high-fidelity human patient simulation (HFHPS) achieves a more complete experience for students who are unable to fully participate due to inability to pretend the simulation is real. In HFHPS *actors* play the part complete with costume and appropriate moulage (Reeves et al., 2018).

Simulation in Undergraduate Nursing Education Programs

Simulated activities for nursing students allow training in all areas of patient safety in a controlled setting where knowledge and skills are evaluated and reflected upon prior to providing direct patient care in a healthcare setting. Simulation in nursing education is not new (van-Vuuren et al., 2018). It is estimated that 300 million individuals worldwide have been trained in the simulation environment (van-Vuuren et al., 2018, p. 2). A decrease in clinical sites, a lack of trained clinical faculty, a national focus on patient safety, and a need to increase student confidence in basic nursing skills are cited as reasons for an increase in the use of simulation (Kim et al., 2017; King, 2018).

A landmark study on simulation in nursing education determined that simulated experiences deliver the same outcomes as traditional clinical experiences if simulated experiences are high-quality (Alexander et al., 2015; Hayden et al., 2014). The list of factors that promote high-quality simulated experiences include an adequate number of qualified faculty who are dedicated to the simulated process, a simulation lab that is designed and devoted to simulation, adequate and available resources, realistic scenarios, debriefing that highlights predetermined outcomes, and personal reflection (Alexander et al., 2015). As difficult as it may seem to satisfy the elements of a high-quality simulation, it is important to realize the many benefits of simulation in nursing education.

Advantages of Simulation

Simulation as a Substitute for Clinical Hours

Simulated experiences are effective teaching strategies in nursing education (Alexander et al., 2015; Hayden et al., 2014). As schools of nursing increase enrollment to accommodate for nursing shortages across the United States, traditional clinical sites are harder to secure (Jeffries et al., 2015; Reimer-Kirkham et al., 2007; Taylor et al., 2016). Simulated experiences offer a viable substitution for required clinical hours (Curl et al., 2016). Simulated experiences may be more beneficial to learning than a traditional clinical setting. Ironside et al. (2014) reported that nursing students fulfilling traditional clinical hours in a hospital setting are often more absorbed in completing basic tasks such as feeding, making beds, and taking vital signs than on more complex activities requiring critical thinking and the nursing process. In addition, students experience periods of "down time" while completing clinical hours due to an increase in outpatient procedures, shorter hospital stays, and a decrease in the number of patients needing care (AlHaqwi & Taha, 2015; Ironside et al., 2014, p. 189). A decrease in hospitalized patients limits opportunities for diverse clinical experiences (AlHaqwi & Taha, 2015). Simulation fills gaps in knowledge and skill due to difficulty of providing clinical exposure to a wide range of patient diagnosis and conditions.

Simulation and the Nursing Faculty Shortage

Simulation to address a widespread nursing faculty shortage, is another advantage of simulation (Cantrell et al., 2017; Phillips et al., 2017). Supervision of up to ten students by one faculty or RN mentor is common in the clinical setting (Colorado State Board of Nursing, 2020; Suling & Kenwood, 2006, p. 24). Ratios of this proportion, added to the limited number of qualified clinical faculty, leads to less than optimal

clinical experiences for students (Phillips et al., 2017). As the numbers of nursing faculty decrease, hospital-based RNs are expected to mentor nursing students in the clinical setting. Varying degrees of willingness and preparedness of hospital-based RNs to mentor nursing students, hinders the positive relationships needed to foster teaching and learning (Phillips et al., 2017). Akram et al., (2018) stated that faculty supervising in the clinical setting set the tone of the environment by being positive, supportive and acting in a professional manner. D'Souza et al. (2013) reported that "a supportive clinical learning environment (CLE) is vital to the success of the teaching learning process" (p. 26). Supportive CLEs need to be planned by nurse educators and carried out by those supervising nursing students. Discrepancies exist between what is planned and what is accomplished (D'Souza et al., 2013). Arkan et al. (2018) reported that in addition to positive relationships with faculty and mentors in the clinical setting, students prefer a lower ratio of students-to-faculty. High student-to-faculty and/or student-to-nurse mentor ratios negatively impacts student learning as students compete for patient experiences and available resources (Arkan et al., 2018). It is projected that the student-to-faculty ratio in the clinical setting will continue to increase as the number of nursing students in clinical setting increases and the number of qualified faculty decreases (Arkan et al., 2018).

Simulation and Safety in Healthcare

In addition to relieving high student-to-faculty ratios in the clinical setting, increasing patient safety is another advantage of simulation (Naik & Brien, 2013). Makary and Daniel (2016) and Ranji (2017) estimated that as many as 400,000 patients die yearly as a result of medical error. Despite efforts to decrease medical errors in

healthcare, the number of medical errors continue to rise. Medical errors are defined as unintended actions that are misaligned with predetermined patient outcomes. Medical errors are the result of a breakdown in the plan of care for patients or the selection and use of an inappropriate plan for care (Institute of Medicine, 1999). According to Daniel (2016) medical errors are due to a variety of factors including a failure to coordinate care, a lack of safety protocols, a disparity between physicians and the way procedures are carried out, and the absence of accountability.

In addition to the physical and emotional toll of medical errors, annual costs associated with medical errors is estimated at $17 billion (Institute of Medicine, 1999). Annual costs include additional patient care due to the original error, lost wages, and disability payments. Zimmerman and House (2016) estimated that $10.3 billion per year is associated with errors in incorrect medication administration. Zimmerman and House (2016) reported that 41% of new RNs were proficient in giving medications. The low percentage was attributed to the "preparation-practice gap" caused by a lack of qualified faculty in the clinical setting, inadequate clinical experiences, and an excess of nursing students at a given time in the clinical setting (Zimmerman & House, 2016, p. 49).

High-fidelity mannequins are expensive and it takes time to plan, implement, and evaluate simulation (Hallenbeck, 2012; Konieczny, 2016; Zimmerman & House, 2016). Hallenbeck (2012) reported that expenses related to simulation include mannequins, software, technology support, maintenance, simulation lab, employee training, and scenario construction. Zimmerman and House (2016) reported that after the initial investment in simulation including a mannequin, software and accessories, hospitals

could save $461,200 in approximately 7 months (p. 50). Hospitals reporting low error rates and lower costs associated with patient care, could recover expenses associated with simulation set-up and implementation much sooner than seven months (Zimmerman & House, 2016). Konieczny (2016) concluded that the financial investment in simulation is worth the initial cost. Students who receive training in simulation labs are better equipped to care for patients. Simulation increases critical thinking skills and knowledge, promotes safe nursing practice, and enhances student confidence (Konieczny, 2016).

The hallmark safety project, QSEN, was funded by the Robert Woods Foundation to address quality and safety in nursing practice (Quality and Safety Education for Nurses, 2018a). QSEN supports nurses by providing guidelines for the development of "knowledge, skills, and attitudes" that shape safe patient care (Quality and Safety Education for Nurses, 2018a, para. 1). QSEN is based on six essential competencies for quality nursing practice. Those qualities include, "patient-centered care, teamwork and collaboration, evidenced-based practice, quality improvement, safety, and informatics" (Quality and Safety Education for Nurses, 2018b, para. 5).

Bashaw (2016) conducted a surgical simulation where nursing students were required to care for a rapidly declining patient. In addition to basic life-saving care, students were required to focus on the QSEN competencies of patient-centered care, teamwork and collaboration, safety, quality improvement, and evidence-based practice. Bashaw (2016) reported that nursing students successfully demonstrated ability to address each competency citing specific actions and interventions taken to meet each competency.

Lee et al. (2017) reported that high fidelity simulation provides an environment where student nurses can practice newly acquired skills, including patient safety skills, without the fear of harming a patient. Using six predetermined patient safety activities as the goal of the simulation, Lee et al. (2017) evaluated competency in each area. Student nurses scored above 80% in successful completion in four of the six activities. Lee et al. (2017) stated that results of the study also indicate that orientation to the simulated environment is an essential element in simulation. When an orientation to simulation is absent or incomplete, it is possible that key criteria of the simulation is overlooked (Lee et al., 2017).

Jarvill et al. (2018) conducted a study where 85 nursing students were randomized into either a simulated medication administration group or a traditional medication administration group. A pretest guaranteed that all students had basic knowledge of medication administration. Students in both groups were evaluated on their ability to administer oral medications. Results of the study indicated that students in the simulated experience scored higher than students in the traditional group. Jarvill et al. (2018) concluded that simulated medication administration experiences increase a student nurse's ability to transfer knowledge to the clinical environment.

Molloy (2017) reported that clinical opportunities for practicing safe medication administration are declining. A student nurse's opportunity to administer medications is being challenged due to a decrease in the number of clinical sites a student nurse is assigned, shortened hospital stays, an increase in early morning discharges, lack of faculty to supervise medication administration, and controlled used of electronic medical

records including medication administration schedules and records (Molloy, 2017). Molloy (2017) conducted a pilot teaching project using junior and senior level nursing students in simulation. A simulated medication administration experience provided junior level nursing students the opportunity to practice safe medication administration. Results of the pilot study indicated that the junior level nursing students felt more confident in their ability to administer medication safely in the clinical setting after the simulation. Molloy (2017) stated that transitioning to role of RN is smoother when confidence in knowledge and skills is realized prior to graduating from nursing school.

Simulation and Skill Development

Simulation allows for the development of psychomotor skills in a setting where the risk of harming a patient is removed (Hallin et al., 2016; Kiernan, 2018; Oermann & Gaberson, 2014; Ross, 2012; Sujatta & Oberarztin, 2015). McGaghie et al. (2011) reported that skills taught and practiced during simulation are directly transferred to the clinical setting and have a direct impact on patient care. Simulation also gives participants the opportunity to practice the 21st century skills of communication, collaboration, and teamwork (Berragan, 2014; Greenstein, 2012). Students develop confidence and competence when allowed to practice in a nonthreatening environment prior to real-world patient care.

Pollock and Biles (2016) conducted a hermeneutic phenomenology study using semi-structured interviews to determine the lived experiences of nursing students in simulation laboratory. Senior level nursing students participated in the two, preplanned simulated experiences. Interviews, along with memos and journal notes, were transcribed.

Results of the study revealed five themes: “makes me think, making connections, testing capabilities, feeling anxious, and learning relationships” (Pollock & Biles, 2016, p. 315-316). As the use of simulation in nursing education increases, it is imperative for nursing faculty to understand student nurses’ views on simulation and find ways to validate and support student nurses in the simulation environment. Pollock and Biles (2016) reported that anxiety associated with simulation is to be expected, perhaps even constructive. Finding ways to make student nurses comfortable with simulation increases skills and knowledge which leads to better patient outcomes.

Sebold et al. (2017) conducted a qualitative study to determine if nursing students’ psychomotor, teamwork, and interpersonal skills improved after participating in simulated activities. At the completion of each simulation, students were required to journal about their experience. Results of the study indicated that students felt their hands-on nursing skills improved as did their ability to manage time. Students cited that their organizational abilities were positively affected as were their communication skills and contribution to teamwork (Sebold et al., 2017).

Curl et al. (2016) conducted a quasi-experimental study to examine the NCSBN’s claim that up to 50% of clinical hours can be substituted with simulation. Students voluntarily chose to participate in one of two groups: (a) 50% of total clinical hours replaced with simulated experiences (n=59) or (b) all clinical hours completed in a clinical setting (n=65). Results indicated that both groups met predetermined outcomes similarity; however, the group who replaced 50% of clinical hours with simulated hours scored higher on end-of-program exit exams. Curl et al. (2016) concluded that replacing

up to 50% of clinical hours with simulated hours, as endorsed by the NCSBN, is acceptable if simulated experiences include a pre-simulation assignment and a debriefing session. Additionally, to defray simulation laboratory costs, Curl et al. (2016) suggested schools of nursing work in partnership with other schools of nursing to develop mutually shared simulation laboratories, technology, and resources.

Berragan (2014) conducted a narrative case study to explore simulation from the views of nursing students (n=9), nurse educators (n=3), and nurse mentors (n=4). Students were exposed to eight simulated experiences that required the use of basic nursing skills, communication skills, and teamwork. Nurse educators and nurse mentors observed the student nurses in action. Semi structured interviews revealed that participants found four main benefits of simulation: skill development, growth in communication skills, growth in ability to evaluate data and make inferences, and a deeper understanding of nursing as a profession and what it means to be a nurse. “I think I feel like a nurse” (Berragan, 2014, p. 1146).

Similarly, Sundler et al. (2015) used a phenomenological approach to examine how nursing students viewed the use of simulation to evaluate the level of proficiency with basic nursing skills. Nurse educators observed students providing care to high-fidelity mannequins and evaluated their performance based on predetermined outcomes. Sundler et al. (2015) reported that using simulation to evaluate competency of basic skills prior to clinical exposure to the skill has value as a teaching strategy. In addition to evaluating skills, simulated activities also provide a venue for the evaluation of student knowledge and decision-making capabilities.

Kiernan (2018) report an increase in skill acquisition after simulation. In a pretest-posttest designed study, students reported an increase in their ability to perform basic nursing skills. Students also rated their self-confidence higher in the post simulation test than the pre-simulation test. Kiernan (2018) reported that patient safety increases when student have perfected their psychomotor skills and have elevated their self-confidence in performing the skill.

Simulation and Student Nurse Anxiety

Participating in a simulated experience prior to providing care at the bedside increases student nurses' confidence and reduces their anxiety (Kameg et al., 2014; Khalaila, 2014; Ross & Carney, 2017). Anxiety is defined as an "adaptive response to a threat" (Arroll & Kendrick, 2018, p. 125). Anxiety is a normal part of life; however, when anxiety is comparatively higher than the perceived threat, symptoms of anxiety are exhibited. Shearer (2016) reported that anxiety influences cognitive ability. Specifically, gains in knowledge and skills are limited during periods of high stress. The academic demands of nursing school coupled with the responsibility of caring for patients and the fear of making a mistake puts student nurses at risk for experiencing high levels of stress and anxiety. Shearer (2016) concluded that simulation is anxiety provoking for many students. Adequately preparing students for a simulated lab will result in decreased anxiety, increased confidence, and better patient outcomes (Shearer, 2016). Determining the anxiety levels of nursing students and utilizing strategies to decrease anxiety is the responsibility of nurse educators. Participating in simulation prior to clinical rotations has the potential to reduce anxiety.

Ross and Carney (2017) conducted a pre and post-test designed study to evaluate student nurse's anxiety and confidence following a simulated experience. Ross and Carney (2017) utilized the Spielberger State-Trait Anxiety Inventory tool along with the Nursing Anxiety and Self-Confidence with Clinical Decision-Making Scale. Ross and Carney (2017) concluded that student nurses' confidence increased, and their anxiety decreased when they were exposed to a simulated scenario prior to clinical experiences.

Kameg et al. (2014) conducted a quasi-experimental study using senior level nursing students. The State-Trait Anxiety Inventory tool was used pre- and post-simulation to evaluate anxiety levels. Kameg et al. (2014) reported a considerable difference in scores between the pre-test and post-test assessment. Kameg et al. (2014) concluded that when anxiety is reduced, students can focus more intently on the quality of nursing care they deliver at the bedside.

Khalaila (2014) conducted a descriptive quantitative study to determine if participating in simulation prior to initial clinical experience influenced student nurse's anxiety and self-confidence. Students were evaluated prior to their first simulation and clinical experiences and again four months later. Using a hierarchical linear regression, Khalaila (2014) concluded that simulation as a learning strategy decreased student preclinical anxiety and increased their self-confidence, which ultimately enhanced caring attitudes of student nurses.

Lubbers and Rossman (2017) conducted a quasi-experimental to evaluated self-confidence levels of nursing students. Lubbers and Rossman (2017) utilized the Educational Practices Questionnaire, Self-Confidence in Learning Questionnaire and the

Simulation Design Scale to determine if students' self-confidence increased after participation in a five-week pediatric simulation. Students reported an increased in self-confidence and stated approval of simulation as a teaching strategy for entry level nursing students in a pediatric clinical rotation.

Simulation and Interprofessional Education

The simulated environment provides students with the opportunity to practice teamwork and collaboration between healthcare professionals (Poore et al., 2014). Nursing relies on many disciplines to care for patients. It is essential that nursing students learn to effectively communicate with other departments to give smooth, continuous patient care. Utilizing Kolb's experiential learning theory, Poore et al. (2014) concluded that providing simulated experiences where students can practice interprofessional education (IPE) fosters collaboration and cooperative teamwork and leads to better patient outcomes.

Critical Thinking, Clinical Reasoning, and Decision Making

An additional advantage of the use of simulated experiences in nursing education is the development of critical thinking, clinical reasoning, and decision-making skills (Mok et al., 2016; Shin et al., 2015; Shinnick & Woo, 2013; Von Colln-Appling & Giuliano, 2017). According to AACN (2008) a hallmark outcome of nursing education in the ability to think critically. Jacob et al. (2017) echoed that patient care and safety are directly associated with the ability to think critically. Mok et al. (2016) reported that the ability to think critically is an essential factor in providing safe, high-quality patient care. Shinnick and Woo (2013) emphasized there is a direct link between providing safe

patient care and critical thinking skills. Literature frequently recognizes the terms critical thinking, clinical reasoning, and decision-making to be one in the same. However, the terms are separate and distinct.

Critical Thinking. Critical thinking is the ability to extract key information from a variety of sources and the aptitude to dissect, interpret, evaluate, and judge the information to make an informed decision (Von Colln-Appling & Giuliano, 2017). Macauley et al. (2017) defined critical thinking as a focused attempt to gather available information and the resultant process of "interpretation, analysis, evaluation, and inference" (p. 64). The concepts of "creativity and intuition" need to be added to the definition of critical thinking especially when connecting critical thinking in the nursing profession (Shinnick & Woo, 2013, p. 1062).

Clinical Reasoning. Sommers (2018) defines clinical reasoning as the ability to use current knowledge, past and present experiences, and personal values and beliefs to inform clinical practice. Clinical reasoning is defined by Macauley et al. (2017) as "a process of balancing patient interactions, health systems, clinical data, judgement, and knowledge" (p. 64).

Decision Making. Decision-making, on the other hand, is action oriented. Macauley et al. (2017) stated that clinical decision making is a process where information from a multitude of sources is scrutinized and appraised leading to an "evidenced-based action or decision" (p. 64). Tiffen et al., (2014) reported that decision-making is the act of gathering, evaluating, and prioritizing data to make a carefully thought out and intentional decision after weighing and considering several options.

Simulation and Critical Thinking, Clinical Reasoning and Decision Making

Cant and Cooper (2017) conducted a literature review on the use of simulation in undergraduate nursing education. Results of the study concluded that both knowledge and critical thinking skills of student nurses improved when simulation was added to curriculum. Participation in simulation improved standardized test scores, increased student confidence and competence, and fostered a learning environment that valued "knowledge, skills, and safety" (Cant & Cooper, 2017, p. 65).

Shinnick and Woo (2013) conducted a quasi-experimental study on junior level nursing students. Students completed the Health Sciences Reasoning test before and two weeks after a simulated experience on heart failure. Results indicated that all students realized a knowledge increase; however, critical thinking scores were highest among older students. Shinnick and Woo (2013) rationalized that older students have more life experience and time to develop critical thinking skills than younger, traditional college students. Even though the results were not what was expected, Shinnick and Woo (2013) reported that students recognized the importance of simulation and its role in the development of critical thinking skills in undergraduate nursing education.

Jacob et al. (2017) established a link between critical thinking and patient outcomes. Specifically, nurses with highly developed critical thinking skills experience better outcomes for their patients. As hospital stays for patients become shorter, it is more important than ever that graduate nurses have the critical thinking skills to support safe professional practice. Using an unfolding case study scenario, Jacob et al. (2017) reported that nursing faculty can assess readiness for professional practice by evaluating level of

critical thinking skills at or near graduation. Data gathered will inform the development of a standardized tool for assessing level of critical thinking skills in nursing students.

Noone and Seery (2018) stated that a student's disposition for critical thinking plays a role in the development of critical thinking skills. Characteristics that endorse a critical thinking deposition include: truth-seeking, open-mindedness, analyticity, systematicity, self-confidence, inquisitiveness, and cognitive maturity (p. 207). After exposure to a case study approach to simulation, 1st and 3rd year nursing students from differing schools of nursing were given the California Critical Thinking Disposition Inventory (CCTDI) questionnaire. Both groups scored highest in inquisitiveness and lowest in truth-seeking. Noone and Seery (2018) concluded that students satisfy their curiosity by asking questions and it is through asking questions and receiving answers that critical thinking skills are developed. Designing simulations that rouse curiosity and evoke questioning is the responsibility of nurse educators. Recommendation for nurse educators include embrace personal beliefs about the development of critical thinking, recognize the critical thinking dispositions of student nurses, and design simulations that stimulate questions and answers (Noone & Seery, 2018).

Critical thinking skills of nursing students were increased in four of seven areas after exposure to pediatric focused simulations (Shin et al., 2015). Using the Critical Thinking Disposition and the Simulation Effectiveness Tool, Shin et al. (2015) collected pre and post simulation data. Student nurses scored high in "prudence, systematicity, health skepticism, and intellectual eagerness" (Shin et al., 2015, p. 540). Shin et al. (2015) reported that students who participated in all three simulations, demonstrated the

largest growth in critical thinking skills. The researchers concluded that multiple exposures to simulation results in greater development and higher levels of critical thinking skills.

Woda et al. (2017) conducted a quasi-experimental study to determine if self-confidence, decision-making skills, and apprehension with decision making in undergraduate and master's level nursing students is affected by the order in which patient care experiences are delivered. Students were placed in one of two groups: (1) students who received clinical experience followed by simulated experiences, and (2) students who received simulated experiences followed by clinical experiences. Results indicated that the order in which students receive experiences does not affect self-confidence, decision-making skills, and apprehension with decision-making. Woda et al. (2017) reported that results from the study can be used to inform curriculum development in nursing education. Specifically, as clinical sites and resources become harder to secure, scheduling clinical experiences and simulated experience depending on availability of space and personnel is a viable option. Scheduling in this manner does not impact clinical decision making or apprehension in making decisions in the clinical setting (Woda et al., 2017).

Lee and Oh (2015) conducted a meta-analysis study to determine the effect of high-fidelity human simulation on physical skills, knowledge, and emotional growth of nursing students. Using 26 studies that met inclusion criteria, simulation was found to advance psychomotor skills. Simulation had questionable effects on students' affective

domain of learning. Lee and Oh (2015) reported a “tentative conclusion” that simulation advances students critical thinking and decision-making skills (p. 506).

Macauley et al. (2017) reviewed thirty-one articles on the use of simulation to increase critical thinking, clinical reasoning, and decision-making skills. Results of the systematic review revealed that simulation supports basic skill development and promotes cognitive growth in the areas of critical thinking, clinical reasoning, and decision-making skills. Results endorsed the need for multiple simulated experiences to realize progress in critical thinking, clinical reasoning, and decision-making skills. Finally, Macauley et al. (2017) suggested more research into the accuracy of the available tools to assess critical thinking, clinical reasoning, and decision-making skills. Even though Macauley et al. (2017) provided evidence that simulation increases cognitive skills, not all systematic reviews yield the same results. In fact, several systematic reviews on simulation report inconsistent findings.

Mok et al. (2016) conducted a review of literature on the use of high-fidelity simulation to increase clinical reasoning skills. Results of 11 studies suggested that high fidelity simulation is not any more effective in teaching clinical reasoning skills than traditional methods of teaching clinical reasoning skills. Mok et al. (2016) reported that further evidence is needed to support the financial investment in simulation and its impact on student learning.

Sommers (2018) reported on the importance of locating tools to evaluate the level of critical thinking, clinical reasoning, and clinical judgement skills. A review of available literature on the topic revealed 211 articles. Results from 53 selected articles

reveled a plethora of tools used to evaluate critical thinking, clinical reasoning, and clinical judgement. However, due to a lack of consistency in the way evaluative tools are used, small sample sizes, and an absence of a cultural component in the tools, Sommers (2018) concluded that more research is needed. Sommers (2018) suggested that attention be given to the development of tools that accurately evaluate critical thinking, clinical reasoning, and clinical judgement.

Adib-Hajbaghery and Sharifi (2017) reported inconsistent findings on the usefulness of simulation on the development of students' critical thinking ability. Of the 787 studies retrieved that met initial criteria on simulation, only 16 met all criteria for this review on simulation and the development of critical thinking skills. Eight of the studies reviewed supported a link between simulation and the development of critical thinking skills and eight studies reported no evidence to support a connection between simulation and the development of critical thinking. Adib-Hajbaghery and Sharifi (2017) stated that all 16 studies lacked rigor in terms of methodology, sample size, and data collection. The ineffective use of the wide array of critical thinking evaluation tools was identified as a shortcoming.

Incorporating simulation into nursing education yields many advantages. Specifically, literature provides evidence that simulation is a viable option to clinical hours in that simulation: enhances the development of basic nursing skills, increases student nurse self-confidence, increases patient safety, and lessens a concerning faculty shortage in the clinical environment. Even though literature is inconsistent regarding the degree to which simulation affects the development of critical thinking, clinical

reasoning, and decision-making skills, any gain in critical thinking, clinical judgement, and decision-making because of participation in simulation is considered advantageous.

Barriers to Simulation

Barriers to the delivery of effective, high-quality simulations exist. Barriers include lack of dedicated simulation space and institutional support, lack/fear of technology, lack of committed faculty, lack of faculty development in simulation, funding, and the high cost of running and maintaining a simulation center (Alexander et al., 2015; Al-Ghareeb & Cooper, 2016; Becker et al., 2020; Chinnugounder et al., 2015; Doolen et al., 2016; Hosny et al., 2017; Jeffries, 2012; Sole et al., 2013). As more schools of nursing utilize simulation as a teaching strategy, it is important to identify and examine the barriers to implementing simulation and find ways to overcome obstacles.

Simulation Center

As schools of nursing supplement clinical hours with simulated hours, it is vital that simulation centers replicate the clinical setting as much as possible (Moran et al., 2018). Having a dedicated physical space to facilitate simulation makes for a dynamic, real-life simulated experience. However, lack of space, funding, and available resources are factors that impede schools of nursing from having a dedicated simulation center (Chinnugounder et al., 2015; Hosny et al., 2017; Jeffries, 2012; Sole et al., 2013). Chinnugounder et al. (2015) stated the 41% of respondents to a simulation survey reported that a lack of available simulation centers was the reason for the limited use of simulation in a radiology program. Chinnugounder et al. (2015) recommended that the issue needs to be evaluated locally and nationally. Results of a survey in Florida by Sole

et al. (2013) indicated that less than half of survey respondents had a designated simulation space. A lack of financial support for a simulation center was listed as a barrier by 51.5 % of respondents (Sole et al., 2013). Hosny et al. (2017) reported that 33.89 % of participants in a qualitative, semi-structured interview study listed cost as the biggest barrier to implementation of simulation. Collaboration with other simulation centers was suggested to decrease cost and increase access (Hosny et al., 2017). Planning for and building a simulation center is a group effort (Barber et al., 2016). Having a clear vison that is supported by "flexibility, creativity and communication" is key (Barber et al., 2016, p. 568).

Technology

Advances in technology have expanded the possibility of high-fidelity mannequins in simulation centers (Bleich et al., 2018; Eyikara & Baykara, 2017). Today's mannequins' mimic real-life physical conditions ranging from baseline parameters to crisis situations with the click of a computer key. Unfortunately, high-fidelity mannequins come with a high price tag (Aldridge, 2016). It is common to pay more than $100,000 for a state-of-the-art, high-fidelity mannequin with accessories, technology, and warranty (L. Duncan, personal communication, January 10, 2020). Prices in this range hinder many schools of nursing from adopting simulation as a practical teaching strategy.

Faculty comfort and expertise with technology is recorded as a barrier to the use of simulation (Al-Ghareeb & Cooper, 2016; Hollema, 2015; Hosny et al., 2017; Ryan et al., 2017). Al-Ghareeb and Cooper (2016) reported that fear of technology ranked second

on a list of ten barriers to simulation. Fear was associated with the amount of time necessary to plan, facilitate, and debrief a simulated experience on already overloaded nursing faculty. Al-Ghareeb and Cooper (2016) reported that learning to operate mannequins and other high-tech devises presents a challenge for faculty who have no experience facilitating simulated experiences. Ryan et al. (2017) stated that student approval of simulation as a teaching strategy is impacted when faculty are not at ease with simulation technology. Hosny et al. (2017) conducted a qualitative study using a semi structured interviews to determine barriers to simulation. Participants reported that if technology is not up-to-date, mimicking real-life scenarios is difficult, leaving students with less than optimal learning opportunities. Hollema (2015) reported that level of competence with technology in simulation has an impact on overall comfort in the simulation environment. Hollema (2015) supported making a concerted effort to solicit faculty input regarding fears and using the information to guide faculty development in simulation.

Faculty Development and Time

Training and lack of time are identified as additional barriers to the successful implementation of simulation (Aldridge, 2016; Jeffries, 2012; Nordquist & Sundberg, 2015; Simes et al., 2018; White, 2017). Simes et al. (2018) reported that simulation is a teaching strategy that requires additional time and training before delivery as a simulated experience. Aldridge (2016) concluded that faculty struggle in the simulation environment due to teaching loads that leave no time for the high demands of simulation. Lack of institutional support and resources for faculty development further impede

faculty's comfort in simulation. Nordquist and Sundberg (2015) identified faculty development as a factor in the successful incorporation of simulation in nursing curriculum. Institutional support was recognized as a fundamental underpinning of faculty development. White (2017) recognized the importance of research in simulation. Specifically, research on the topic of simulation in nursing education, identifies faculty development and time as barriers to simulation development. Harder et al. (2013) reported that faculty comfort level in simulation impacts student learning. Training increases faculty confidence and leads to better learning outcomes for students. In addition to initial training, ongoing training in the form of workshops and other formal training practices ensures that faculty stay up-to-date with new developments and trends in simulation (Harder et al., 2013).

Jeffries et al. (2015) focused on consistent faculty development in preparation for the NCSBN simulation study. Prior to the start of the NCSBN study, a faculty development program was created and delivered to all verified participants in the study (Jeffries et al., 2015). The aim was to equally prepare all faculty participating in the study. This included creating and delivering materials uniformly. Materials included: specific instructions for simulation delivery including references for further learning, live sessions with research participants, demonstration of evaluation and debriefing standards, specific procedures for scenario development, and suggestions for supporting students during simulation (Jeffries et al., 2015). Adequately preparing faculty to facilitate the simulation environment in a consistent manner is vital not only for faculty success in simulation but for student success as well.

INACSL Standards of Best Practice: Simulation

The lack of clinical placements for an increase in the number of nursing students admitted to schools of nursing has prompted an increase in the use of simulation in nursing education (Blodgett et al., 2018; Curl et al., 2016; McDermott et al., 2017; Nehring et al., 2013; Shearer, 2016; White, 2017). The INACSL Standards of Best Practice: Simulation were developed to ascertain that simulated experiences provide learning opportunities that equal authentic, real-life patient experiences (King, 2018; McDermott et al., 2017; White, 2017). The INACSL Standards of Best Practice: Simulation define quality and excellence in simulation science and guide curriculum development in the implementation of simulation into nursing education (Aebersold et al., 2018; Alexander et al., 2015; Beroz, 2017; INACSL Standards Committee, 2016).

Definition of the INACSL Standards of Best Practice: Simulation

The INACSL Standards of Best Practice: Simulation is a document that offers schools of nursing a detailed strategy to create, facilitate, and appraise simulated experiences (INACSL Standards Committee, 2018a; Rutherford-Hemming et al., 2015). Currently, there are VIII standards that comprise the INACSL Standards of Best Practice: Simulation (INACSL Standards Committee, 2018b). The VIII standards include:

I. Simulation Design

II. Outcomes and Objectives

III. Facilitation

IV. Debriefing

V. Participant Evaluation

VI. Professional Integrity

VII. Simulation-Enhanced Interprofessional Education (Sim-IPE)

VIII. Operations

The INACSL Standards of Best Practice: Simulation are considered "living documents" (INACSL Standards Committee, 2018a, p. 1). Specifically, the INACSL Standards of Best Practice: Simulation document is continuously being reviewed and updated to reflect changes in healthcare, nursing, and teaching/learning pedagogies that affect best practice in simulation. The document includes a detailed discussion of each standard along with specific criteria for meeting the standard and consequences for not incorporating the standard into the simulated experience.

History of the INACSL Standards of Best Practice: Simulation

The INACSL committee is committed to the development of simulation science in nursing education (INACSL Standards Committee, 2018a). With a growth in the amount of simulation being used in nursing education and other areas of healthcare, the INACSL found it necessary to formulate a list of standards to guide simulated activities. The first INACSL Standards of Best Practice: Simulation document was comprised of comprised seven standards (INACSL Standards Committee, 2018a). After feedback and revisions, a second document was drafted (INACSL Standards Committee, 2018a). The current 3rd edition consists of eight standards (INACSL Standards Committee, 2018a).

INACSL Standards of Best Practice: Simulation - Standard I

With ultimate regard to predetermined objectives, Standard I, simulation design, focuses on the deliberate attention to design details of each simulated activity.

Simulation design integrates concepts from “adult learning, education, instructional design, clinical standards of care, evaluation, and simulation pedagogy” (INACSL Standards Committee, 2016a, p. S5). Attention is given to facilitation and evaluation of simulated experience Standard I. Simulation design incorporates the goals and mission of the institution. Consequences for poor simulation design is the potential for substandard student performance in simulation, unfulfilled student and program outcomes, and misuse of available simulation resources (INACSL Standards Committee, 2016a).

INACSL Standards of Best Practice: Simulation – Standard II

Standard II, outcomes and objectives, recognizes the importance of objectives and outcomes as a determinate of student learning. Objectives and outcomes provide the structure needed to evaluate student learning. The INACSL Standards Committee (2016b) recommended that outcomes be written prior to creating objectives. Outcomes define what the student will know or can do at the end of the simulation. Objectives define how learning outcomes are met. According to the INACSL Standards Committee (2016b) objectives are detailed statements that define specific student behaviors needed to meet the outcomes. Possible consequences of not including outcomes and objectives include vagueness surrounding the simulated experience, unfulfilled outcomes, unexpected outcomes, and inadequate student learning leading to safety and quality concerns (INACSL Standards Committee, 2016b).

INACSL Standards of Best Practice: Simulation – Standard III

The method of facilitation, Standard III, is dependent upon several variables (INACSL Standards Committee, 2016c). First, the type of simulation needs to be

considered. For example, high-fidelity simulation requires a different type of facilitation than human patient simulation. Second, participants' level of skill and knowledge must be assessed along with personal ideas and beliefs surrounding simulation as a teaching strategy. Learning outcomes and how to meet them must be factored into the facilitation method. In addition, the facilitator training and qualifications must be assessed (Moulton et al., 2017). Possible consequences of not aligning the facilitation method with the type of simulation is confusion and the potential to not meet the outcomes of the simulation (INACSL Standards Committee, 2016c).

INACSL Standards of Best Practice: Simulation – Standard IV

Debriefing is the focus of Standard IV. Debriefing occurs at the end of the simulation to connect the simulated experience with current and prior knowledge. Debriefing also allows for evaluation of student learning (INACSL Standards Committee, 2016d). Personal reflection is a key element in debriefing. Reflection, either personal or group, is a method of discussion that connects the essence of the simulated experience with current and past knowledge. Reflection seeks to establish meaning and create new behaviors. Reflection highlights the importance of actions and their effect on student learning (INACSL Standards Committee, 2016d, p. S25). An unproductive exchange of ideas and participant uneasiness are consequences of not meeting Standard IV (INACSL Standards Committee, 2016d).

INACSL Standards of Best Practice: Simulation – Standard V

INACSL Standards Committee (2016e) reported that to determine if simulation outcomes have been met, evaluation of student performance on a cognitive, affective, and

psychomotor level is essential. Formative assessment assures collaboration and professional behavior in the simulation environment. Summative assessment verifies fulfillment of objectives and outcomes. “High-stakes” evaluations have repercussions in the form of grade lowering or halted progression (INACSL Standards Committee, 2016e, p. S26). Regardless of the type of assessment, evaluation serves to determine level of progress and readiness for entry into professional nursing practice. Several items are needed for a consistent process of evaluation. Those items include a verified assessment tool, planned intervals for evaluation, trained evaluators, and candid analysis and reporting of evaluation results. Failure to adequately and accurately assess student performance has the potential to misrepresent student learning and distort analysis of outcomes (INACSL Standards Committee, 2016e).

INACSL Standards of Best Practice: Simulation – Standard VI

Professional integrity is the substance of Standard VI. Standard VI guides faculty, students, and simulation staff in maintaining behaviors that are ethical in all phases of simulation. INACSL Standards Committee (2016f) defined professional integrity as a deep desire to do what is right even under pressure to do otherwise. Professional integrity encompasses the qualities of “confidentiality, compassion, honestly, commitment, collaboration, mutual respect, and engagement in the learning process” (INACSL Standards Committee, 2016f, p. 30). The INACSL Standards Committee (2016f) reported that the equal distribution of power is essential to the success of simulation. It is common for some simulation participants to feel timid during simulation resulting in discrimination between participants and faculty. Such discrimination has the potential to

destroy a safe learning environment. Self-confidence, grades, personal relationships, and job opportunities are also at risk of being jeopardized. Creating an environment where all participants are on equal ground from start to finish promotes professional integrity.

INACSL Standards of Best Practice: Simulation – Standard VII

The complexity of healthcare demands that professionals from a variety of backgrounds collaboratively work together as a team. Standard VII reinforces the fact that no single entity in the healthcare system can deliver the complex care that is expected in today's healthcare settings (INACSL Standards Committee, 2016g). Learning to work as a team is imperative for patient safety and positive patient outcomes. Standard VII, Simulation Enhanced Interprofessional Education (Sim-IPE) recognizes the effort involved in the planning of a simulated experience that utilizes a diverse selection of ancillary services (INACSL Standards Committee, 2016g). Consequences of not providing interprofessional collaboration opportunities in simulation include compromised ability to work as part of a team, strained relationships with coworkers, and inability to define specific role responsibilities (INACSL Standards Committee, 2016g).

INACSL Standards of Best Practice: Simulation – Standard VIII

The final standard, Operations, provides a detailed overview of the required components for set-up, managing, and sustaining a simulation program. Operations includes human resources, technology, and specific processes that guide simulation. (INACSL Standards Committee, 2018b). An initial plan that is supported by the institution, clears the way for successful operation of a simulation center. The INACSL Standards Committee (INACSL Standards Committee, 2016h) suggested a team

approach to the operations of a simulation center utilizing the ideas of “business, education, and technical skills” (p. 681). Merging ideas from several disciplines allows for a broader view and closer inspection of all aspects of simulation operations. Devising a simulation program is an expensive financial commitment and failure to devise a sound operational plan could hinder or even halt simulation. A lack of sound simulation infrastructure also has the potential to impede realization of simulation objectives, program outcomes, and ultimately, student learning (INACSL Standards Committee, 2016b).

Summary and Conclusions

The use of simulation as a teaching strategy is not new. However, an increase in the use of simulation to satisfy clinical hours is changing the landscape of simulation. From planning and development to facilitation, debriefing and evaluation, the INACSL Standards of Best Practice: Simulation guide schools of nursing through the process of incorporating simulation into nursing curriculum.

Chapter 2 of this modified Delphi study on how the INACSL Standards of Best Practice: Simulation are utilized in schools of nursing covered many concepts related to the simulation. Specifically, a definition of simulation and the history of simulation were discussed. An in-depth review of literature identified advantages and barriers to simulation. The conceptual framework was identified, discussed, and aligned to the study. Finally, each of the eight INACSL Standards of Best Practice: Simulation were identified and analyzed including consequences for not incorporating the standard into simulation.

The review of literature revealed several major themes. First, simulation is recognized as an evolving science (Aebersold, 2016; Aebersold et al., 2018; & Beroz, 2017). Advances in technology and acceptance of simulation as a valuable teaching strategy has boosted simulation use in nursing education. The growing interest to supplement clinical hours with simulated hours prompted the NCSBN to conduct a study to define the parameters of simulation use in nursing education (Hayden et al., 2014). Results of the study indicated that up to 50% of traditional clinical hours can be substituted with simulated experiences (Beroz, 2017; National Council of State Boards of Nursing, 2019). As more schools of nursing exchange simulated experiences with traditional clinical experiences, the science of simulation will continue to evolve.

A second major theme derived from literature is the need for more research in all areas of simulation (Cant & Cooper, 2017; Doolen et al., 2016; van-Vuuren et al., 2018). Literature identified that research into the science behind simulation is lacking. Part of the reason for the lack of simulation research is the realm of possibilities of simulation in the nursing profession. For example, O'Leary et al. (2015) reported that research on simulation in the pediatric intensive care unit (ICU) has been limited, thus restricting evidenced-based changes as a result of simulation training in the pediatric population. The same holds true for other settings in nursing practice as research struggles to keep up with the increase use of simulation. Mariani and Doolen (2016) reported the need for more rigor in simulation research. Findings from simulation research need to be shared between faculty, clinical experts, and other researchers to add to and expand existing

knowledge. However, costs and lack of research funding impedes research efforts (Mariani & Doolen, 2016).

Another theme that emerged from the data is a lack of consistent research findings. Adib-Hajbaghery and Sharifi (2017) conducted a systematic review of literature on simulation and the development of critical thinking skills. Sixteen articles that met inclusion criteria were evaluated for an increase in critical thinking skills after simulation. Eight articles supported that simulation increased critical thinking skills and eight articles denied that simulation increased critical thinking skills. Similarly, Mok et al. (2016) reported that simulation is at least as effective as other teaching strategies for the development of clinical reasoning skill, but stopped short of recommending simulation over traditional methods of teaching clinical reasoning due to the costs associated with simulation

A final theme from the review of literature is that basic nursing skills and self-confidence are increased after simulated activities. Literature overwhelmingly supports the use of simulation on the development of psychomotor skills and confidence (Hallin, et al., 2016; Kiernan, 2018; McGaghie et al., 2011; Oermann & Gaberson, 2014; Sujatta & Oberarztin, 2015). Literature also supports the theme that patient safety is increased when student nurses have had an opportunity to practice skills and achieve proficiency prior to providing patient care in the clinical setting (Bashaw, 2016; Jarvill et al., 2018; Lee et al., 2017; Molloy, 2017). Literature also acknowledges barriers to the implementation of simulation including a lack of simulation centers due to costs associated with set-up and maintenance, lack of trained, committed faculty, lack of

institutional support, lack of/fear of technology, and lack of dedicated time for simulation development.

Hayden et al. (2014) reported that simulation is an effective teaching strategy in undergraduate nursing education prompting the NCSBN to recommended that schools of nursing can exchange up to 50% of clinical hours with simulated hours. To utilize the 50% simulation hours, schools of nursing must have a theoretical model to guide simulated experiences, a dedicated space for simulation, enough trained faculty to plan, facilitate, debrief, and evaluate simulated experiences, up-to-date technology, and available resources for the upkeep and maintenance of equipment (Alexander et al., 2015). The INACSL Standards of Best Practice: Simulation were developed to assist schools of nursing in all aspects and phases of simulation development and implementation (INACSL Standards Committee, 2018a). It is also known that widespread research in all areas of simulation is lacking and the tools needed to evaluate critical thinking and clinical reasoning are inconsistent resulting in inconclusive research findings (Cant & Cooper, 2017; Doolen et al., 2016; van-Vuuren et al., 2018).

Literature from peer-reviewed journals found insufficient material regarding how the INACSL Standards of Best Practice: Simulation are being holistically incorporated into nursing education simulation. There is a plethora of information on simulation and individual approaches to incorporate many of the elements, such as planning, evaluating, and debriefing. However, there is little information that highlights the step-by step implementation of the INACSL Standards of Best Practice: Simulation of all eight standards into nursing simulation. Doolen et al. (2016) echoed this finding. “Future

research efforts should include adherence to the INACSL Standards of Best Practice: Simulation" (Doolan et al.) p. 302)

A search of literature using the search terms *simulation,* INACSL Standards of Best Practice: Simulation, *undergraduate nursing education, NCSBN guidelines, and faculty development* produced few articles that met all the criteria. If satisfying up to 50% of required clinical hours becomes common-place in nursing education in the United States, it is imperative that every simulated experience be guided by the INACSL Standards of Best Practice: Simulation. This modified Delphi study provided information on what the experts in the field of simulation identify as the best strategy or process to support novice nursing simulation faculty in incorporating all eight INACSL Standards of Best Practice: Simulation into simulation laboratories in the United States.

The Delphi Method of research seeks to find consensus between experts on an issue associated with the profession. Responses are analyzed to better understand a specific issue. The concept behind the Delphi method is that group opinion is more powerful than individual opinion (Adler & Ziglio, 1996). The Delphi method of research aligns with this study on the INACSL Standards of Best Practice: Simulation. Specifically, this study seeks to understand what experts in the field of simulation deem important to the incorporation of simulation standards into nursing education. Using the Delphi technique to collect information is the only method that will provide the data needed to answer the research question and fill a gap in the literature.

Chapter 3 of this study will focus on the research method and rational. The central phenomenon and the research question were presented along with a discussion regarding

the role of the researcher including ethical issues and potential bias. The methodology of the study is identified, and the population, the sampling strategy, and participant selection and instrumentation is presented. Data analysis is discussed in detail. Chapter 3 includes an examination of trustworthiness including credibility, transferability, dependability, confirmability, and ethical procedures.

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Chapter 3: Research Method

Introduction

The purpose of this qualitative Delphi study was to establish consensus on the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education. To address the projected shortage of 3.4 million RNs by 2026 (AACN, 2019a), the nursing school enrollment has increased (Blodgett et al., 2018; Curl et al., 2016; Nehring et al., 2013; Shearer, 2016; White, 2017). Even though nursing school enrollment has increased, there are thousands of nursing school applicants who are denied admission to schools of nursing due to the lack of qualified nursing faculty and/or clinical sites (AACN, 2019a). A strategy to make up for the lack of clinical sites is the use of simulation. The NCSBN supports the use of simulation to augment clinical experiences at a ratio of 50% simulated experiences to 50% clinical experiences.

Chapter 3 presents the research method and rationale. The role of the researcher is outlined along with an explanation of potential bias and the instrument and its utilization are discussed. Also included in Chapter 3 is a discussion regarding inclusion criteria, participant selection, and individual rights as human research participants. Ethical procedures and considerations are addressed along with issues of credibility and trustworthiness.

Research Design and Rational

Research Question

RQ 1: What is expert consensus regarding the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education?

The focus of this research study was to determine if the INACSL Standards of Best Practice: Simulation are recognized and utilized in nursing simulation across the United States. The Delphi method of research was used to answer the research question. The Delphi method solicits opinions from experts in a specific field and weighs their responses to better understand a specific issue. The Delphi utilizes subjective opinions and personal views to examine problems and offer possible solutions (Adler & Ziglio, 1996; Dalkey, 1969; Dalkey & Rourke, 1971; Hasson et al., 2000; Hsu & Sandford, 2007; Keeney, et al., 2011). Sekayi and Kennedy (2017) reported that the Delphi is recommend when "group-based data" is needed to answer the research question (p. 2757). The Delphi method supports the idea that group opinion is more reliable than individual opinion during decision-making (Adler & Ziglio, 1996; Keeney et al., 2011). Thangaratinam and Redman (2005) reported that the Delphi technique produces harmony among people with differing viewpoints by removing barriers that stand in the way of giving an honest opinion. The Delphi technique is the preferred research method when little is known about a topic, when there is a lack of agreement on a topic, or when the topic requires subjective insight and intuitive clarification (Adler & Ziglio, 1996; Shariff, 2015; Thangaratinam & Redman, 2005). In addition, the Delphi method of research is highly suited for projects that require long-range forecasting and prioritization (Keeney et al. (2011). Yousuf (2007) suggested that the Delphi method of research is preferred when panel members are unable to be together in the same location at the same time.

Experts disagree on the basic tenets of the Delphi method (Sekayi & Kennedy, 2017). Some believe that the Delphi method represents a qualitative method while others

deem the Delphi technique a quantitative method. Sekayi and Kennedy (2017) suggested that, in the "purist form," the Delphi represents a mixed method type of research (p. 2755).

Researchers taking a positivist paradigm point of view, cite scientific inquiry and the use of statistical measures to answer the research question. Quantitative research attempts to find associations in data through numerical generalizations. In a Delphi study, expert panelists rate their endorsement of statements on a questionnaire using a Likert scale. The ratings are reported in terms of percentage of consensus to each statement. From this point of view, the Delphi is considered quantitative in nature (Keeney et al., 2011). Qualitative researchers view the Delphi method of research belonging to the interpretative paradigm where the researcher tries to understand and interpret the subjective experiences of individuals (Keeney et al., 2011). This can also be referred to as social constructivism where the experiences of a group are mutually constructed creating a new view and bringing meaning to the experience. This new meaning provides greater insight into the phenomenon (Stewart, 2001; Vygotsky, 1978). The Delphi method has also been considered a mixed method form of research due to the combination of qualitative and quantitative aspects of data collection (Keeney et al., 2011).

This study utilized a qualitative frame of reference guided by the Delphi method. Habibi et al. (2014) reported that **if** the goal of the Delphi study is to "examine" the phenomenon, then a statistical approach is warranted (p. 10). However, **if** the researcher wants to "measure" the phenomenon, expert opinion is preferable (Habibi et al., p. 10). Although the researcher verified consensus through quantitative analysis of data, there

was an emphasis on constructing insight into the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing programs. Expert panelists contributed to the understanding of the issues surrounding simulation in undergraduate nursing education. The Delphi method consisted of three rounds with the opportunity for panelists to add their thoughts and personal opinions during each round. Expert panelists had time between rounds to consider the views of other panelists to find parallel meaning or highlight areas of disagreement. The researcher analyzed data by interpreting the responses during each round of the Delphi process. Analysis linked together existing knowledge and attempted to create new knowledge which can lead to problem identification and resolution. The qualitative Delphi method aligns with Vygotsky's theory of social constructivism which suggests that individuals learn from each other and knowledge is co-created. Social constructivism is based on the belief that language, communication, and collaboration produce reality. It is through new-found reality that individuals grow, problems are solved, and change is recognized.

The Delphi method of research, which guided this study, consisted of three rounds of statements in which expert panelists were asked to respond to statements, review the responses of other participants, and keep or modify their response based on the responses of other expert panelists (Keeney et al., 2011; Sekayi & Kennedy, 2017). Literature surrounding the use of the Delphi technique indicates that the Delphi technique has withstood scrutiny since first recognized in the mid-20th Century.

The Delphi methodology was originally developed by the RAND Corporation in the mid-20th century to better understand military operations (Keeney et al., 2011). In the

years following, the Delphi method was used to forecast disease patterns, population trends, and needs in human services (Keeney et al., 2011). Shortly after, the Delphi method experienced a “threefold increase” in use and was recognized as a valid research method by a wide array of disciplines (Keeney, et al., 2011, p. 34). Thangaratinam and Redman (2005) reported that the use of the Delphi is rising especially in the disciplines of “nursing and healthcare” (p. 122).

The iterative nature of the Delphi includes three rounds spaced a week apart. In the first round, panelists are asked to respond to statements about a specific topic. The statements are derived from literature on the topic. In addition to providing narrative feedback to statements on the Delphi instrument, the panelists rate their agreement to the statements rating the statement on a scale of 1-4 where 4 was *highly agree*. Panelist responses are included in the next round for review and statement revision in subsequent rounds until consensus is reached (Keeney et al., 2011; Sekayi & Kennedy, 2017). Participants exit the study after the third round. No debriefing or other exit processing is required.

There is an abundance of current literature on simulation use in undergraduate nursing education programs. However, there is insufficient literature on ways to incorporate the INACSL Standards of Best Practice: Simulation into undergraduate simulation experiences. Therefore, the use of the Delphi method of research aligns with and supports the goal of this research project.

Role of the Researcher

The role of the researcher in this qualitative Delphi study was one of observer-participant. Observer-participant researchers interact with participants and fully disclose their role as a researcher (Patton, 2015). According to Patton (2015) participation in observer-participant research ranges from complete observation with no interaction with participants to heavy involvement in the setting and with the participants.

Avella (2016) defined the role of the researcher using the Delphi method as one of planner and facilitator. Planning involves determining the number of panelists needed and evaluating their level of expertise with a topic. Planning also includes developing the Delphi instrument and determining the method and process for communication (Avella, 2016). Avella (2016) reported that the researcher also assumes the role of facilitator in a Delphi study.

Acting as an observer-participant, the researcher in this Delphi study selected participants based on pre-determined qualifications and interacted with participants before and during all rounds of the study. The researcher fully disclosed the role as researcher to the panelists. The researcher communicated with panelists by Walden University and Qualtrics email.

One of the key features of the Delphi technique is confidentiality of participants (Adler & Ziglio, 1996; Keeney et al., 2011). To ensure confidentiality, participants were invited to participate by blind copy email. To further ensure confidentiality, panelists were emailed the link to the instrument via blind copy email.

Managing Researcher Bias

Wa-Mbaleka (2019) reported that researcher investment in personal analysis of "self as researcher" with full disclosure of the relationship between the researcher and focus of research will reduce potential bias (p. 35). I had 40 years of experience in the nursing field and at the time of the study, was working as a nurse educator in a leadership position. One area of leadership was personnel in the simulation lab. It is important to note that my relationship with the research focus may present bias. Disclosing this relationship and owning preconceptions will reduce potential bias.

Because the researcher has daily contact with colleagues in simulation, panelists were not recruited from the place of employment. After panelist selection, interaction with participants was limited to: (a) answering questions regarding the purpose of the study; (b) answering questions regarding the three round Delphi process and (c) to prompt laggards to complete the study. The researcher did not engage with panelists regarding their response to the statements on the questionnaire. Data collection focused solely on the research problem, purpose, and question. Wa-Mbaleka (2019) reported that it is difficult to eliminate all instances of bias, but the potential for bias can be reduced when the researcher focuses data collection on answering the research problem, purpose, and question.

Methodology

Population

The population for this study was RN nurse experts in the field of nursing simulation who are employed by schools of nursing that design and facilitate simulated

experiences. Editors and contributors of simulation focused journals as well as presenters at simulation-focused conferences were also invited to participate. Participants must hold a master's degree in nursing and have two years of experience in the undergraduate simulation lab.

Sampling Strategy

This Delphi study utilized purposeful sampling to recruit participants. Participants recruited using purposeful sampling were chosen based on their knowledge about the phenomenon under investigation (Hasson et al., 2000; Patton, 2015; Shariff, 2015). Hasson et al. (2000) and Shariff (2015) reported that participants in a Delphi study are referred to as expert panelists. Patton (2002) reported that using expert opinion produces in information that can be used to answer the research question.

Participant Selection

Panelists were invited to participate based on their level of knowledge and involvement in undergraduate nursing simulation. As more schools of nursing use simulation in nursing education as an innovative way to expand clinical experiences, it was expected that the field of qualified participants could be quite large. Panelists were invited to participate based on the following criteria for inclusion. All participants were RNs with a master's degree and at least two years of experience planning and facilitating simulation activities in schools of nursing in the United States. Potential participants were identified using Google Scholar, professional conferences, and schools of nursing websites. A higher consideration was given to those who have published on the topic of

simulation in nursing education or who have presented on simulation at nursing conferences.

Participant Numbers and Rational

There is a wide-range of opinions on sample size in a Delphi study (Baker, & Edwards, 2012; Guest et al., 2006; Habibi et al., 2014; Merlin et al., 2016). Participant numbers can exceed 100 but should not be less than 15 (de Villiers et al., 2005; Habibi et al., 2014; Wild & Torgersen, 2000). Ibrahim et al. (2013) suggested that the number of participants is determined by several items including the number of potential experts in the field and researcher competency. Hasson and Keeney (2011) reported that reliability in a Delphi study increases as the number of expert panelists increase. Sekayi and Kennedy (2017) stated that the number of participants in a Delphi study "rarely exceeds" 30 (p. 2757). Due to the iterative nature of the Delphi method, numbers larger than 30 are foreseeably unmanageable (Sekayi & Kennedy, 2017). Furthermore, Sekayi and Kennedy (2017) reported that 20-30 purposely selected panelists would be adequate to provide the diversity of opinion needed to answer the research question.

Purposeful sampling did not produce an adequate number of participants. Snowball sampling was utilized and provided the remaining number of participants needed. Snowball sampling is an appropriate recruitment strategy for a Delphi study (Lai et al., 2015; Wester & Borders, 2014). Snowball sampling involved contacting individuals who had agreed to participate in the study and asking for recommendations of additional participants who met the specific qualifications. After securing permission, an email was sent to members of a Simulation Coalition. Careful attention was given to

confidentiality while utilizing the snowball recruitment process (Lai et al., 2015; Wester & Borders, 2014).

Using Sekayi and Kennedy's (2017) rational for panelist selection, the target number of panelists for this Delphi study on the use of the INACSL Standards of Best Practice: Simulation was determined to be 30. Due to the iterative nature of the Delphi, attrition was estimated at 10% to 40% (Annear et al., 2015; Brody et al., 2014; Day & Bobeva, 2005; Munck et al., 2015). According to Sampaio et al. (2017) oversampling will compensate for probable attrition. One hundred and thirty panelists were invited to participate with the goal of 30 panelists meeting inclusion criteria and 25 panelists completing all three rounds of the study.

Identifying, Contacting, and Recruiting Participants

After identifying possible panelists and examining their credentials, a list of names and email addresses was compiled. From this list, each potential expert panelist was contacted via email. The invitation to participate provided the purpose of the study, an overview of the study including detailed information about the Delhi technique, researcher name and contact information, and inclusion criteria. Inclusion criteria was clearly defined in the invitation to ascertain that participants are true experts in their fields (Sampaio, et al., 2017). Panelists with a master's degree and a minimum of two years of experience as nursing faculty planning and facilitating simulated experiences in the United States were invited to participate. Interested participants who met selection criteria were sent, via email, the IRB approved consent form that outlined their rights as a research participant.

Instrumentation

This Delphi research study on the use of the INACSL Standards of Best Practice: Simulation utilized a researcher-produced instrument comprised of statements related to the phenomenon of interest drawn from peer reviewed literature of the field or related fields. The statements were rated on a scale of one to four where four was high. de Villiers et al. (2005) reported that statements should be derived from literature on the research topic and each statement should include a reference (de Villiers et al., 005). The instrument was updated by the researcher at the end of each round to include panelists' statements which were added for review and rating in the second and third round. IRB approval was granted prior to the start of data collecting and prior to rounds 2 and 3. Panelists received an email that provided a secure, anonymous link to each round. Rounds 1 and 2 were five days in length and due to the Labor Day holiday, round 3 was seven days in length. Laggards were contacted on the day before the instrument closed and were reminded to complete the instrument. Data analysis immediately followed data collection. The mean of each statement in each round was calculated by Qualtrics Data collected at the conclusion of round 3 was downloaded into a Microsoft Excel spreadsheet. Consensus was determined using the interquartile deviation statistic calculated through Microsoft Excel.

Content Validity

DeVon et al. (2007) reported that content validity refers to the instrument and whether the statements on the instrument accurately represent the content under study.

Content validity is reinforced when the statements are derived from the literature and referenced in the instrument (DeVon et al., 2007; Keeney et al., 2011). Providing a citation for each statement allows the content expert to examine the reference prior to responding to the statement. Content validity is strengthened as expert panelists respond to the statement in each iterative round of the study (DeVon et al., 2007; Keeney et al., 2011). The tenets of INACSL Standards of Best Practice: Simulation guided the development of the instrument. Each statement on the instrument was taken directly from concepts in the literature and was individually referenced.

Data Collection

The purpose of this qualitative Delphi study was to establish consensus on the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education. The research question was: What is expert consensus regarding the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education? A modified, three round Delphi research method was utilized to collect data.

Round 1

Participants were sent a link to the instrument on the Qualtrics site. The expert panelists respond to a rating scale of one to four where four is high for each statement on the instrument Expert panelists suggested new statements to be added to successive rounds for consideration by other panelists. Comments made by panelists were along with the mean of each statement included as new statements in round two. Prior to beginning round two, the instrument with new statements was submitted to IRB for approval.

Round 2

Round two was an iteration of round one. However, participants were provided with the statements suggested by other panelists along with the mean of each statement during round one to consider in round two. As in round one, the new instrument was submitted to IRB for approval prior to the start of round two.

Round 3

Round three was an iteration of rounds one and two. Expert panelists were provided with the statements suggested by other panelists in rounds one and two along with the mean of each statement during rounds one and to consider in round three. Expert panelists responded by rating each statement based on their opinion and the opinion of fellow experts on the topic, as reported from rounds one and two. Expert panelists exited the study after round three. No follow-up or debriefing was required. Expert panelists were thanked for their time.

Data Analysis

The goal of the Delphi method of data collection is reaching consensus between a panel of experts on a topic. This is accomplished by asking experts to rate statements on an instrument on a scale of 1-4 where 4 is highly agree. Panelists are also invited to respond in text to any statement on the instrument. At the end of each round, any text provided is incorporated into the next round as new statements. During each round, the average of the ratings is given to the panelists. The panelists may keep or change their response based on the response of the other panelists. Consensus was determined using the interquartile deviation. According to Ab Latif et al. (2017) consensus is realized when

the interquartile deviation is less than or equal to one. The interquartile deviation statistic was calculated at the conclusion of round three using Microsoft Excel. Since no values were calculated above 1.0, a fourth round was not conducted.

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Issues of Trustworthiness

Validity and reliability in qualitative studies is difficult to achieve because of a lack of numerical data**.** Qualitative scholars rely on the concept of trustworthiness rather than valid and reliable when confirming study results (Keeney et al., 2011; Noble & Smith, 2015; Patton, 2015). Keeney et al. (2011) reported that the hallmarks of trustworthiness are “credibility, transferability, dependability, and confirmability” (p. 103).

Credibility

Credibility is the foundation of trustworthiness. When there is confidence in the accuracy of the study's finding, the study is believed to be credible. Credibility in a Delphi study is achieved by using the opinions of experts. The results are further strengthened during each of the three rounds of the study (Keeney et al., 2011).

Transferability

As with credibility, researchers must confirm transferability in qualitative studies. Transferability refers to the ability of the study's results to be applied to other contexts (Hadi & Closs, 2016; Keeney et al., 2011). It is the responsibility of the researcher to provide evidence of transferability. This is accomplished by providing a detailed explanation of every step in the research study. The goal is to provide enough information so that researchers interested in the topic will be able to evaluate the study's relevance to other situations and contexts (Hadi & Closs, 2016; Keeney et al., 2011). To support transferability, the researcher will provide a precise and thorough account of actions taken at each step of the research process.

Dependability

Dependability in a Delphi study refers to the strength and consistency of the data (Anney, 2014; Hasson & Keeney, 2011). Anney (2014) reported that dependability involves participants reviewing and assessing the data for accuracy. Dependability is reinforced when data analysis and study recommendations align with what participants reported in each of the three rounds. Dependability is further supported with the use of experts in the field. For this study on the use of the INACSL Standards of Best Practice:

Simulation, experts were selected based on the conditions of the inclusion criteria. Experts will also evaluate and confirm that the data represents their collective thoughts and opinions.

Confirmability

The final hallmark of trustworthiness in qualitative research is confirmability. According to Anney (2014) confirmability refers to the ability of other researchers to agree on the results of the study. When other researchers agree on the results of the study, it confirms that the results are not "figments of the inquirer's imagination" (p. 279). Keeney et al. (2011) reported that confirmability can be evaluated by providing a detailed account of data collection and analysis. Confirmability is further strengthened by audit trails (Skulmoski et al., 2007). An audit trail sheds light on all "theoretical, methodological, and analytical decisions made in the research from beginning to end" (Skulmoski et al., 2007, p. 11). The researcher will provide a detailed description of all decisions made throughout this research endeavor. The researcher will also use the survey site, Qualtrics, to administer the Delphi instrument. Qualtrics is a secure, confidential, and password-protected platform that administers online surveys (Qualtrics, 2018). The Delphi instruments and all panelists' responses will be saved for review.

Ethical Procedures

The IRB at Walden University requires that students receive approval for all research activities prior to conducting research (Walden University Catalog, 2019, Institutional Review Board Approval Process section, para1). IRB seeks to confirm that the benefits of the study outweigh the risks involved. IRB approval ensures that ethical

standards at the international, federal, state, and university level are realized. The researcher obtained Walden University IRB approval on July 25, 2020 (reference number 06-26-20-0069909) prior to commencing any research activities. All research activities were conducted in a manner that supports the highest research standards.

Panelists were enlisted from the United States. The identity of panelists will remain confidential. Confidentiality of participants is a central element in the Delphi method of data collection (Adler & Ziglio, 1996; Keeney et al., 2011). However, confidentiality may be breached if participants reveal their identity to each other. Keeney et al. (2011) reported that identity breaches between participants is out of the control of the researcher. Details about the study, including time commitment, risks associated with the study, the lack of incentives to participate were made know to participants. A statement about the voluntary nature of the study was included. Participants can withdraw from the study for any reason without reproach by the researcher. Data was collected and saved on the researches personal, password protected home computer. After ten years, the file containing all data will be deleted.

Summary

The purpose of this modified Delphi study was to establish consensus on the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education. The Delphi method of research was the appropriate method to answer the research question because the Delphi method elicits expert opinion. The Delphi brings experts together to discover what is known about a specific topic. The Delphi method offers confidentiality which is known to provide independent and unbiased views

(Keeney et al., 2011). Results of the study will be used to enhance the simulation experience for both faculty and students and has the potential to promote positive patient outcomes and increase patient safety.

In addition to a detailed description of the Delphi method of inquiry, Chapter 3 included a discussion on trustworthiness in qualitative studies, specifically, the topics of credibility, transferability, dependability, and confirmability were described. Strategies to ensure trustworthiness were discussed. The population for the study was identified along with selection criteria and recruitment approach. In addition, Chapter 3 identifies and discusses the researcher's personal bias on the topic and possible ways to decrease bias. Ethical concerns related to human participants, including consent to participate, potential risks and benefits, confidentiality, and incentives is addressed. Also addressed are ethical concerns regarding the collection, protection, and destruction of data.

Chapter 4 of this study identified demographic characteristics of participants. Chapter 4 provided detailed information about how the data were collected and analyzed. A detailed table displays the results of the study.

Chapter 4: Results

Introduction

The purpose of this modified Delphi study was to establish consensus on the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education. The study addressed the need to incorporate the tenets of the INACSL Standards of Best Practice: Simulation into simulation labs. Incorporating the INACSL Standards of Best Practice: Simulation in undergraduate nursing education ensures that simulated experiences are at a quality that replicates traditional clinical experiences. The research question for the study asked, what is expert consensus regarding the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education?

Chapter 4 details the research process and summary of results. Panelists rated statements on a Likert scale from 1 - 4 where 4 was *highly agree* and 1 was *highly disagree*. The mean of each statement was calculated. Consensus was determined using the IQD statistic after Round 3. In each round, panelists rated existing statements and added new statements for consideration by panelists in the next round. A total of 52 new statements were included by Round 3. The new statements were rated by the panelists in subsequent rounds.

Setting

Panelists were recruited from schools of nursing across the United States. Emails were sent to individual RNs who fit the inclusion criteria. This recruitment strategy did not result in the number of needed participants. Snowball sampling recruitment was then used which resulted in successful recruitment of needed panelists.

Qualtrics, an online survey platform, was used to deliver the instrument. The expert panelists completed the instrument fully online. Maintaining confidentiality, a premise of the Delphi method of research, was achieved as panelists never met face-to-face and communication was limited to the additional comments submitted by individual panelists. Additional comments were not associated with any information that would identify a panelist.

At the time of the study, faculty at schools of nursing were responding to the COVID-19 pandemic and the impact restrictions had on the teaching/learning process. While transitioning to remote leaning, participants were investigating virtual simulation as an alternative to clinical and simulated experiences. Participants were devising policies for masking, gowning, gloving, and maintaining a 6-foot distance between students and faculty. Participating in a 41-day, three round Delphi study added to the demands of the COVID 19 pandemic. Top concerns for administrators at schools of nursing during the COVID-19 pandemic was attempting to secure clinical or simulated experiences for nursing students and maintaining a learning environment that supported students. The panelists who agreed to be participants in the study were experts in nursing simulation who dedicated their time and expertise while in the midst of a global pandemic.

Demographics

Female participants outnumbered male panelists. Of the 30 panelists, 27 were female. Male panelists accounted for approximately 10% of the total number of panelists. This is consistent with the male/female RN workforce population. According to NCSBN (2020) 9.1% of the RN work force in the United States is male. Demographic data related

to location or age were not collected. Inclusion in the study was based solely on RN status, educational level, and number of years working in the simulation environment. Thirty RNs accepted the invitation; however, only 29 signed the consent form.

All expert panelists met the inclusion criteria discussed in Chapter 3. All panelists were RNs with a minimum of a master's degree in nursing and at least 2 years' experience working in simulation. Most of the panelists had degrees higher than a master's degree. Specifically, seven panelists were educated at the doctor of nurse practice (DNP) level, 11 panelists were Ph.D. prepared, and one panelist was Ed.D. prepared. The number of doctor-level prepared expert panelists in the study does not align with national statistics regarding educational levels of RNs. According to AACN (2020) 17.1% of the RN workforce are educated at a master's level, 1.2% are educated at the DNP level, 0.6% are educated at the Ph.D. level, and 0.1% with other doctorate degrees. In addition, 20 of the 29 panelists had published in peer reviewed journals and/or book chapters. Table 1 lists the educational level and publication status of the participants.

Table 1

Educational Level and Publication Status of Participants

	MSN	DNP	Ph.D.	Ed.D.	Published
Number of Participants	29	7	11	1	20

Data Collection

Invitations were sent to 121 to potential panelists via email. Twenty-six individuals accepted the invitation. Snowball sampling yielded the remaining four need for the study. Of the 30 panelists, 29 emailed the "I Consent" as requested on the consent form. Of the 29 that consented to be in the study, 25 completed the first round, 15 completed the second round, and eight completed the third round. Data collection commenced on August 2, 2020 and concluded on September 11, 2020. After Rounds 1 and 2, the instrument with new statements was submitted to IRB for approval of the new statements.

Round 1

The Delphi instrument in Round 1 contained 141 statements. Round 1 yielded 490 comments by the expert panelists. Most comments were in affirmation of the statement. Some comments were several sentences in length, others were a word or two. Forty-one comments were added to the Round 2 instrument making the Round 2 instrument 182 statements. The mean of each statement in Round 1 was included for panelist's consideration in Round 2. Round 1 was conducted over five days. Laggards were contacted on the fourth day and reminded to complete the instrument.

Round 2

After IRB approval of the Round 2 instrument, the link to the instrument was sent to the 25 participants who completed Round 1. Fifteen panelists completed Round 2. Round 2 yielded 100 new comments. As with Round 1, most comments were in affirmation of the statement. Eleven of the new comments were included in the Round 3

instrument making the Round 3 instrument 193 statements. The mean of each statement in Round 1 and Round 2 were included for panelists' consideration in Round 3. Round 2 was conducted over five days. Laggards were contacted on day four and reminded to complete the instrument. Fifteen expert panelists completed Round 2.

Round 3

After IRB approval of the Round 3 instrument, the link to the instrument was sent to the 15 expert panelists that completed Round 1 and Round 2. To allow expert panelists the opportunity to celebrate a national holiday, the length of Round 3 was extended to seven days. Panelists were contacted on day six and reminded to complete the instrument. Eight expert panelists completed all three rounds of the Delphi study. Round 3 yielded an additional 68 new statements. The results of Round 3 were downloaded to an Excel spread sheet to determine the IQD of each statement. After calculating the IQD, it was determined that consensus was achieved thus eliminating the need for a fourth round.

Data Analysis

The data were downloaded from Qualtrics to an excel spread sheet. Using the ratings of each statement in Round 3, the first and third quartiles were determined. The third quartile was subtracted from the first quartile and the resulting value was divided by two *[Q3 - Q1 /2 = IQD] (*Ab Latif et al., 2017). The IQD statistic was used to determine level of consensus. The mean of each round, the IQD, and consensus is listed in Tables 2-15.

Evidence of Trustworthiness

Credibility

Credibility in this study was established by the expert panelists' extensive knowledge and experience in simulation in undergraduate nursing education. All panelists met the inclusion criteria; however, most panelists held degrees higher than the required master's degree. The majority of the expert panelists were also published and had presented on the topic of simulation in undergraduate nursing education. Anonymity of panelists further strengthens credibility in this study. Anonymity gave participants the freedom to rate the statements without fear of intimidation. The three rounds of the Delphi allowed the panelists the opportunity to change their answer based on the mean of the statement and any new information added during each round. Comments by the panelists accurately represented panelists views in subsequent rounds. After Round 1 and Round 2, the new instrument was submitted to IRB for approval prior to sending the new instrument. To further establish credibility, data were analyzed utilizing the same Delphi process for each round.

Transferability

Transferability in this study was accomplished by providing a detailed description of each step of the research process. The background and context of the research was thoroughly described as were the assumptions of the study. Participant selection was detailed. The process for data collections and analysis was explained. Readers of this study who may want to replicate the study or use the results of the study in their own context, setting, or population, have enough information to make an informed decision.

Although this study focused on simulation in undergraduate nursing education, the results may be of value to other professions in the medical setting.

Dependability

Dependability refers to the degree in which those interested in the results of the study concur with the researcher's analysis of the same raw data. This is accomplished by presenting the data accurately and transparently. At the conclusion of each round of this Delphi study, the results were downloaded and saved to an excel spread sheet. The mean of each statement was recorded for the next round with 100% accuracy. The interquartile deviation was verified and recorded with 100% accuracy after the third round. To further support data dependability, there were no modifications made to the design of the study. IRB approval of the new instrument was granted prior to each of the three rounds.

Confirmability

The findings of this study are based solely on the opinions of the panelists. All new statements were derived from the panelists' comments. All decisions made during data collection, analysis, and interpretation were thoroughly explained. Data reporting and interpretation were neutral and unbiased. The processes and standards of the Delphi method of research were strictly followed with consideration for consistency and rigor. In addition, the Qualtrics site is a secure platform that provides anonymity of participants and protection of data. The mean, standard deviation, and variance were determined at the end of each round by Qualtrics. Interquartile deviation was calculated in Microsoft Excel at the completion of the study.

Results

The Delphi instrument was divided into 14 categories: Simulation in Nursing Education, Traditional Clinical Experiences, Registered Nurses, Nursing Faculty, Nursing Students, The INACSL Standards of Best Practice: Simulation, Standard I: Simulation Design, Standard II: Outcomes and Objectives, Standard III: Facilitation, Standard IV: Debriefing, Standard V: Participant Evaluation, Standard VI: Professional Integrity, Standard VII: Simulation-Enhanced Interprofessional Education, and Standard VIII: Operations. The initial instrument included 141 statements. Forty-one statements were added after Round 1 and 11 new statements were added after Round 2. The combined instrument, including all statements added in Round 2 and Round 3 of the study, is displayed in Tables 2-15. Statements added by the expert panelists are identified by the word NEW and are labeled a., b., and c. directly beneath the original statement. The mean of each statement in Round 1 (R1), Round 2 (R2), and Round 3 (R3) along with the IQD and consensus are listed in Tables 2-15. Consensus was reached at the conclusion of Round 3. A fourth round was not conducted.

Section 1 of the Delphi instrument explored expert panelists' overall opinions regarding simulation in undergraduate nursing education. Statement #4c was added in Round 2. Experts reached consensus by disagreeing (IQD = 0.75) that there should be no limitation on the percentage of simulation that can be substituted for clinical experiences. Experts consensually disagreed (IQD = 0) that simulation in nursing education is moving to augmented reality and virtual reality. In Round 1, statement 9 received a mean rating of 3.04. In Round 2, the mean was 2.67 and Round 3 yielded a 2.25. Expert panelists

initially agreed to the statement that standardized test scores are increased due to participation in simulation. However, by Round 3 consensus (IQD = 0.5) indicated that experts did not support the thought that standardized test scores are increased by participation in simulation. Expert panelists concurred that time is a barrier in the simulation laboratory due to not enough simulation faculty and too many nursing students needing clinical hours. In Round 1, statement #11, expert panelists agreed that there is a lack of funding for simulation. A new statement in Round 2 suggested that simulation can be implemented with low cost, effective solutions. Table 2 lists the means of the ratings in R1, R2, and R3, and the IQD and consensus.

Table 2

Simulation in Nursing Education Delphi Results

Delphi Statements	R1 Mean	R 2 Mean	R 3 Mean	IQD	Consensus
1. Simulation is gaining popularity as an innovative teaching strategy in nursing education.	3.84	3.80	3.63	0.5	Yes
1a. NEW Due to the cost involved in running a simulation lab, some organizations are looking at virtual simulation instead of in-person simulation.			3.00	1.0	Yes
2. The National Council of State Boards of Nursing supports the use of simulation in nursing education.	3.84	3.93	4.0	0	Yes
3. Simulated experiences are a viable option to traditional clinical experiences.	3.64	3.73	3.63	0.5	Yes
3a. NEW Simulated experiences are easier to schedule to match the students at their place in curriculum.		3.21	3.38	0.5	Yes
3b. NEW Simulation-based experiences is a better term to use than simulated experiences.		3.60	3.50	0.5	Yes
4. It is acceptable to substitute up to 50% of traditional clinical experiences with simulated experiences.	3.72	3.60	3.75	0.25	Yes
4a. NEW Whether or not it is acceptable to substitute up to 50% of traditional clinical experiences with simulated experiences depends on the Board of Nursing in each state.		3.60	3.88	0	Yes
4b. NEW In some states, if you are CCNE accredited, there is no limitation to the amount of simulated experiences that can		2.20	2.13	0.5	Yes

Delphi Statements	R1 Mean	R 2 Mean	R 3 Mean	IQD	Consensus
be substituted for traditional clinical experiences.					
4c. New There should be no limitation to the percentage of simulated experiences that can be substituted for traditional clinical experiences.			2.00	0.75	Yes
5. The availability of traditional clinical sites for nursing students is a motivating factor in the implementation of simulation into nursing education.	3.32	3.67	3.63	0.5	Yes
5a. NEW In rural areas, the lack of clinical sites is a significant factor contributing to the growth of simulation centers in schools of nursing.		3.80	3.38	0.5	Yes
6. Advances in technology have enhanced the simulation experience for student nurses.	3.52	3.60	3.25	0.25	Yes
6a. NEW Schools of nursing are moving to AR (augmented reality) and VR (virtual reality).		2.87	2.25	0	Yes
7. Pre-simulation assignments are important to the overall experience in simulation.	3.64	3.87	3.75	0.25	Yes
7a. NEW Pre-assessments are more important than pre-assignments and are a better indicator of readiness for the simulation activity.		2.73	2.13	0.25	Yes
8. Participation in simulation prior to clinical rotations increases patient safety.	3.44	3.67	3.38	0.5	Yes
8a. NEW Even though it is believed that participation in simulation prior to clinical rotations increase patient safety, there is not		3.80	3.75	0.25	Yes

Delphi Statements	R1 Mean	R 2 Mean	R 3 Mean	IQD	Consensus
a wealth of studies that support this conclusion.					
9. Participating in simulation increases standardized test scores.	3.04	2.67	2.25	0.5	Yes
9a. NEW More evidence is need to support the statement that participation in simulation increases standardized test scores.		3.80	4.0	0	Yes
10. Time constraint is a barrier in simulation lab.	3.16	3.47	3.13	0.75	Yes
10a. NEW If time is considered a barrier, then not enough was allocated to the simulation.		2.53	2.75	0.5	Yes
10b. NEW Time is a barrier due to the number of students that need simulated experiences.			3.25	0.75	Yes
10c. NEW Time is a barrier due to not enough simulation instructors.			3.63	0.5	Yes
11. A barrier to the implementation of simulation is a lack of funding.	3.20	3.60	3.25	0.5	Yes
11a. NEW Simulation can be implemented with low cost solutions that can be very effective.		3.34	3.50	0.5	Yes

Section 2 of the instrument was dedicated to traditional clinical experiences. Traditional clinical experiences include hospital-based and other face-to-face clinical experiences. Citing increases in nursing school enrollment, shorter hospital stays, and changes in the delivery of healthcare, expert panelists agreed that there is a lack of

traditional clinical opportunities for student nurses. Experts agreed that the competition for clinical hours will continue to be an issue until schools of nursing find alternate opportunities for clinical hours. Experts agreed (IQD = 0) that the controlled environment of the simulation lab allows for evaluation of a student nurses skill acquisition. Table 3 lists the means of the ratings in R1, R2, and R3, and the IQD and consensus.

Table 3

Traditional Clinical Sites Delphi Results

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
12. There is a lack of traditional clinical sites for nursing students.	3.28	3.53	3.63	0.5	Yes
13. Traditional clinical sites are challenged by increases in nursing school enrollment.	3.48	3.60	3.75	0.25	Yes
13a. NEW There will always be competition for traditional clinical sites when schools of nursing insist on using hospitals as training facilities.		3.60	3.75	0.25	Yes
14. There is a decline in opportunities for student nurses to administer medications in the traditional clinical setting.	3.32	3.67	3.75	0	Yes
15. Shortened hospital stays impact traditional clinical experiences for student nurses.	2.80	3.07	3.38	0.5	Yes
15a. NEW Nursing schools need to adapt to the changing environment of healthcare, where acute care in a hospital is diminishing.		3.60	4.0	0	Yes
16. The controlled environment of simulation provides an opportunity for evaluating a nursing student's skill acquisition.	3.48	3.87	3.88	0	Yes

Registered nurses were the focus of Section 3 of the Delphi instrument. Expert panelists agreed that there is a shortage of RNs in the United States. The shortage of RNs impacts patient quality of care, patient safety, and hampers access to the services RNs provide. The panelists agreed that the shortage of RNs, especially nurse educators, has an impact on nursing school enrollment. Enrollment is schools of nursing has increased in response to current and projected needs for RNs. Table 4 lists the means of the ratings in R1, R2, and R3, and the IQD and consensus.

Table 4

Registered Nurses Delphi Results

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
17. There is a shortage of registered nurses in the United States.	3.42	3.60	3.63	0.5	Yes
17a. NEW Some new graduates in parts of the country are having a hard time finding a job.		3.13	3.13	0.25	Yes
18. A shortage of registered nurses in the United States has a negative influence on nursing school enrollment.	2.32	1.87	1.88	0.5	Yes
18a. NEW A shortage of nurse educators is having an impact on the number of students admitted to schools of nursing.		3.13	3.13	0.75	Yes
19. By the year 2024, there will be 1.05 million open positions for registered nurses.	3.42	3.67	3.38	0.5	Yes
20. The projected shortage of RNs will impact patient quality of care.	3.68	3.80	3.38	0.5	Yes
21. The projected shortage of RNs will impact patient safety.	3.76	3.80	3.38	0.5	Yes
22. The projected shortage of RNs will hamper access to the services RNs provide.	3.48	3.73	3.50	0.5	Yes
22a. NEW Other health care professions will step in to provide the needed services. For example, there is currently overproduction of pharmacists. Pharmacies are taking on the roles of immunization, assessment, and education which used to be very much a nursing function.		2.93	2.38	1	Yes

23. The increased need for RNs in the United States directly impacts schools of nursing.	3.56	3.47	3.50	0.5	Yes
24. To fulfill current and projected needs for RNs in the United States, schools of nursing have increased enrollment in schools of nursing.	3.48	3.33	3.50	0.5	Yes

Section 4 of the Delphi instrument discussed nursing faculty. The expert panelists agreed that there is a shortage of qualified nursing faculty. The panelists agreed that most simulation scenarios are not purchased, rather nursing faculty are responsible for the design, facilitation, and evaluation of simulated experiences. Nursing faculty's comfort with simulation, especially technology, is an important factor in the facilitation of simulated experiences. Expert panelist came to consensus (IQD = 0) that faculty training and development in simulation improves student learning outcomes and is vital to the success of simulate experiences. Panelists agreed that a barrier to the implementation of simulated experiences is faculty development in simulation. The increase availability of simulation resources, preparation courses, and experienced mentors is making a positive impact on faculty development in simulation. Five statements in Section 4 of the Delphi instrument were related to faculty/student ratios in traditional clinical setting. The expert panelist agreed that a faculty to student ratio of one to ten negatively affects student learning. The panelists furthered agreed that a faculty to student ratio of one to ten is not common. According to panelist consensus, a lower faculty to student ratio is difficult because of the need to hire more faculty. The level of the leaner should be considered

when determining appropriate faculty to student ratios. Table 5 lists the means of the ratings in R1, R2, and R3, and the IQD and consensus.

Table 5

Nursing Faculty Delphi Results

Delphi Statements	RD1 Mean	R2 Mean	R3 Mean	IQD	Consensus
25. There is a shortage of qualified nursing faculty in the United States.	3.44	3.73	3.63	0.5	Yes
26. A ratio of ten nursing students to one faculty is commonplace in a traditional clinical setting.	2.40	2.93	2.25	0.25	Yes
26a. NEW A lower student to faculty ratio is more difficult because of the need to hire more faculty.		3.67	3.88	0	Yes
27. One nursing faculty to ten nursing students in the clinical setting is sufficient to guide student learning.	1.84	1.87	1.63	0.5	Yes
27a. NEW The level of the learner should be taken into consideration when determining an appropriate faculty to student ratio.		3.47	3.25	0.25	Yes
28. A ratio of ten nursing students to one faculty in the clinical setting negatively affects student learning.	3.20	3.00	3.00	0.25	Yes
29. It is customary for nursing faculty to design simulated experiences.	2.92	2.53	2.75	0.75	Yes
29a. NEW Most simulation scenarios are purchased.		2.33	2.13	0.25	Yes

30. Nursing faculty's comfort with simulation is an important factor in the facilitation of simulated experiences.	3.68	3.47	3.63	0.5	Yes
30a. NEW It is less about comfort and more about training to prepare and conduct simulation correctly.		3.40	3.63	0.5	Yes
31. A barrier to the implementation of simulation is a lack of trained simulation faculty.	3.64	3.60	3.75	0.25	Yes
31a. NEW The increased availability of simulation resources, preparations courses, and experienced mentors, is making a positive impact on faculty.		3.47	3.13	0.25	Yes
32. Faculty training in simulation leads to improved student learning outcomes.	3.84	3.67	3.75	0	Yes
33. It is customary for nursing faculty to facilitate simulated experiences.	3.48	3.27	3.25	0.5	Yes
34. It is customary for nursing faculty to evaluate simulated experiences.	3.44	3.60	3.25	0.75	Yes
35. Nursing faculty's comfort with technology is an important factor in the facilitation of simulated experiences.	3.36	3.27	3.00	0	Yes
36. Faculty development in simulation is vital to the success of simulated experiences.	3.80	3.93	4.00	0	Yes

The focus of Section 5 was nursing students in simulation. The expert panelists came to consensus (IQD = 0.5) that simulated experiences provide greater opportunities for student nurses to practice critical thinking skills than traditional clinical experiences. The expert panelists agreed that the simulation laboratory is a safe environment for

nursing students to practice communication skills. Panelists agreed that the ability of nursing students to develop effective communication skills in the simulation lab depends on the quality of the simulation and the quality of the facilitators. Psychomotor skills learned in simulation lab can be transferred directly to the clinical setting. The experts agreed that that simulated experiences prior to clinical experiences increase a student nurse's confidence. While the experts agreed to this statement they also agreed that a student's nurse's competence is more important than confidence. Table 6 lists the means of the ratings of R1, R2, R3, the IQD, and consensus.

Table 6

Nursing Students Delphi Results

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
37. Simulated experiences provide greater opportunities for student nurses to practice critical thinking skills than traditional clinical experiences.	3.48	3.87	3.50	0.5	Yes
38. The simulation laboratory is a safe environment for nursing students to practice nursing skills.	3.76	3.87	3.88	0	Yes
39. Psychomotor skills learned during simulated experiences can be transferred directly to the clinical setting.	3.44	3.53	3.75	0.25	Yes
40. Nursing students can develop effective communication skills in the simulation.	3.64	3.06	3.75	0.25	Yes
40a. NEW The ability of nursing students to develop effective communication skills depends on the quality of the simulation and the quality of the facilitators.			4.00	0	Yes
41. Simulated experiences prior to clinical experiences increases a student nurse's confidence.	3.64	3.73	3.88	0	Yes
41a. NEW Competence is more important than confidence.			3.63	0.5	Yes
42. Participating in simulation increases a student nurse's ability to think critically.	3.64	3.80	3.75	0.25	Yes

Section 6 was devoted to introducing the INACSL Standards of Best Practice: Simulation. Consensus was met on every statement. The IQD was 0 on 10 of the 16 statements in the section. Expert panelists agreed that the INACSL Standards of Best Practice: Simulation are widely recognized in nursing education. Even though the INACSL Standards of Best Practice: Simulation are widely recognized in nursing education, experts agreed that the INACSL Standards of Best Practice: Simulation are not widely utilized in nursing education. Experts agree the INACSL Standards of Best Practice: Simulation define quality in simulation science. The INACSL Standards of Best Practice: Simulation support the creation of simulated experiences by providing guidelines for developing simulation objectives, scenarios, debriefing, and evaluation. The INACSL Standards of Best Practice: Simulation address professional and ethical standards in simulation. The INACSL Standards of Best Practice: Simulation provide guidelines for the development of a strategic plan. Table 7 lists the means of the ratings of R1, R2, R3, the IQD, and consensus.

Table 7

Standards of Best Practice: Simulation Delphi Results

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
43. *The* INACSL *Standards of Best Practice Simulation*[SM] are widely recognized in nursing education.	3.16	3.20	3.00	0	Yes
43a. NEW They are recognized, but not widely.		2.80	2.75	0.75	Yes
44. *The* INACSL Standards of Best Practice: Simulation are widely utilized in nursing education.	2.84	2.47	2.38	0.5	Yes
44a. NEW People may know about the standards but many are not integrating them into their systems.		3.40	3.50	0.5	Yes
45. *The* INACSL Standards of Best Practice: Simulation define quality in simulation science.	3.64	3.73	4.00	0	Yes
46. Simulated experiences must be designed with a specific purpose in mind.	3.84	4.00	4.00	0	Yes
47. The INACSL Standards of Best Practice: Simulation provide guidelines for the creation of simulated experiences.	3.88	4.00	4.00	0	Yes
48. The INACSL Standards of Best Practice: Simulation provide guidelines for the development of objectives for a simulated experience.	3.88	4.00	4.00	0	Yes
49. The INACSL Standards of Best Practice: Simulation provide guidelines for faculty development in simulation.	3.64	3.87	3.63	0.5	Yes

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
50. The INACSL Standards of Best Practice: Simulation provide guidelines for debriefing after simulated experiences.	3.80	4.00	3.88	0	Yes
51. The INACSL Standards of Best Practice: Simulation provide guidelines for the evaluation of simulated experiences.	3.72	3.80	3.88	0	Yes
52. The INACSL Standards of Best Practice: Simulation address professional standards in simulation.	3.80	4.00	4.00	0	Yes
53. The INACSL Standards of Best Practice: Simulation address ethical standards in simulation.	3.76	3.87	3.88	0	Yes
54. The INACSL Standards of Best Practice: Simulation provide guidelines for developing an interprofessional approach to simulated experiences.	3.76	3.93	4.00	0	Yes
55. The INACSL Standards of Best Practice: Simulation provide guidelines for developing a technology infrastructure to support simulation operations.	3.60	3.60	3.38	0.5	Yes
56. The INACSL Standards of Best Practice: Simulation provide a strategic plan that outlines the resources needed to maintain a simulation lab.	3.36	3.67	3.50	0.5	Yes

Section 7 of the Delphi instrument was devoted to Standard I of the INACSL Standards of Best Practice: Simulation. The focus of Standard I is simulation design. Conducting a needs assessment provides evidence of the necessity for a particular simulation. Expert panelist agreed that a needs assessment is not routinely and consistently conducted by simulation facilitators. Expert panelists agreed that it is best practice to use a theory or a conceptual framework to guide simulated experiences. The panelists also agreed using theories or conceptual frameworks is not being done universally. Fidelity in simulation creates realism in a simulated experience. The experts agreed that physical, conceptual, and psychological fidelity is being realized in simulation labs. To standardize simulated experiences, the expert panelists agreed that the elements of repeatability and reliability are being met by using a detailed script. The panelists agreed that simulation facilitators are consistently providing prebriefing immediately before simulated experiences. Table 8 lists the means of the ratings of R1, R2, R3, the IQD, and consensus.

Table 8

Standards of Best Practice: Simulation-Standard I Delphi Results

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
57. Simulation facilitators routinely conduct a needs assessment to provide evidence of the need for simulation.	2.64	2.07	1.88	0.25	Yes
57a. NEW A needs assessment is best practice but it is not done in a consistent manner.		3.73	3.63	0.5	Yes
58. Simulation facilitators should use a theory to guide simulated experience.	3.36	3.53	3.38	0.5	Yes
58a. NEW A theory should be used to guide the debriefing process but not the whole simulation process.			2.00	1	Yes
59. Simulations facilitators use a conceptual framework to guide simulated experiences.	2.76	2.53	2.38	0.5	Yes
59a. NEW It is best practice to use a conceptual framework to guide simulated experiences but it is not being done universally.		3.53	3.88	0	Yes
60. Simulation facilitators combine various methods of fidelity to create a presence of realism in the simulated experience.	3.44	3.67	3.75	0.25	Yes
61. Physical fidelity is realized when the physical environment of the simulation lab resembles the environment that the actual scenario would occur.	3.76	3.87	3.88	0	Yes
62. Conceptual fidelity is realized when all elements of the scenario are related and align in a way that make sense to the student.	3.68	3.80	4.00	0	Yes

63. Psychological fidelity is realized by adding emotional language to the scenario.	3.28	3.60	3.50	0.5	Yes
64. To increase repeatability, simulation facilitators use a detailed script to standardize the simulated experience.	3.48	3.73	3.50	0.5	Yes
65. To increase reliability, simulation facilitators use a detailed script to standardize the simulated experience.	3.52	3.73	3.63	0.5	Yes
66. Simulation facilitators consistently provide prebriefing immediately before simulated experiences.	3.40	3.27	3.25	0.5	Yes

Section 8 of the Delphi instrument explores expert panelist opinions on Standard II of the INACSL Standards of Best Practice: Simulation: Outcomes and Objectives. Experts agreed that that the outcomes of a simulated experience must be developed before developing specific objectives. Measurable goals are an element in simulation design. The means of statement #68 were 3.20, 3.13, and 2.88 indicating that experts changed their scores to a lower mean in Rounds 2 and 3. The experts came to consensus on statement #68 however, it is interesting to note that a mean of 2.88 in Round 3 indicates that the experts agreed to disagree with the statement. Incorporating learning domains into simulation-based experiences is a component of Standard II. The experts agreed that the cognitive and psychomotor domains are being incorporated into simulated experiences. The means of # 70 trended downward from a 3.12 in Round 1 to a 2.88 in Round 3 providing evidence that the affective domain of learning is not being incorporated into stimulated experiences. Table 9 lists the means of the ratings of R1, R2, R3, the IQD, and consensus.

Table 9

Standards of Best Practice: Simulation-Standard II Delphi Results

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
67. Simulation facilitators determine the expected outcome of the simulated experience before developing specific objectives.	3.36	3.27	3.25	0.25	Yes
68. Simulation facilitators consistently incorporate measurable goals in each simulated experience.	3.20	3.13	2.88	0	Yes
69. Simulation facilitators are careful to incorporate the cognitive domain of learning into simulated experiences.	3.48	3.27	3.13	0.25	Yes
70. Simulation faculty are careful to incorporate the affective domain of learning into simulated experiences.	3.12	3.13	2.88	0.25	Yes
71. Simulation faculty are careful to incorporate the psychomotor domain of learning into simulated experiences.	3.40	3.60	3.75	0.25	Yes

The emphasis of Standard III of the INACSL Standards of Best Practice: Simulation is facilitation of simulation-based experiences. The expert panelists agreed the simulation laboratories lack faculty that have been trained in simulation pedagogy. The expert panelists come to consensus regarding giving cues during the simulation-based experiences. The experts agreed that giving cues is a positive facilitation method as it redirects participants toward information critical to the context of the simulation. Panelists agreed facilitators routinely use unplanned cues to engage students in the

critical thinking necessary to meet the expected learning outcomes of the simulation. Expert panelists agreed that using unplanned cues leads to inconsistencies between cohorts giving some students an advantage over other students. Panelists agreed that if facilitators are using unplanned cues to redirect students it is imperative to explore why students were off-task. Experts agreed that unanticipated actions by students are the result of limited piloting not as a result of unprepared students. Experts were in census regarding limiting cues to preserve the integrity and fidelity of the simulation-based experience. Table 10 lists the means of the ratings of R1, R2, R3, the IQD, and consensus.

Table 10

Standards of Best Practice Simulation -Standard III Delphi Results

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
72. Simulation labs employ nursing faculty who are specifically trained in simulation pedagogy.	2.36	2.13	1.88	0.25	Yes
72a. NEW Many simulation faculty have little or no training in simulation.		3.47	3.13	0.75	Yes
73. Facilitators are responsible for assigning pre-sim activities for participants.	2.92	2.60	2.63	0.5	Yes
73a. NEW Many times, pre-sim activities are assigned by full time faculty while adjuncts facilitate the simulation.		2.93	2.88	0.5	Yes
74. A positive facilitation method is the delivery of cues during the simulation experience.	3.21	3.20	3.00	0	Yes
75. Facilitators give cues to direct participants toward information critical to the context of the scenario.	3.20	3.20	3.00	0	Yes
76. Faculty facilitating simulated experiences use predetermined cues to engage student nurses in critical thinking.	3.28	3.33	2.88	0.25	Yes
77. Predetermined cues are integrated into the simulation script based on predicted actions by participants.	3.32	3.40	3.00	0	Yes
78. Facilitators routinely use unplanned cues to aid students in meeting the expected outcomes of the simulation.	2.64	2.33	2.25	0.25	Yes
78a. NEW Using unplanned cues leads to inconsistencies between cohorts giving		3.53	3.12	0.75	Yes

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
some students an advantage over other students.					
79. Facilitators use unplanned cues to redirect participants.	2.92	2.87	3.00	0	Yes
79a. NEW If facilitators are using unplanned cues to redirect participants it is imperative to explore why the learners are off task.		3.67	3.75	0.25	Yes
80. Participants often need redirection because of unanticipated actions.	2.80	2.67	2.75	0.25	Yes
80a. NEW Simulations that have had limited piloting are more likely to generate unanticipated actions.		3.40	3.75	0.25	Yes
80b. NEW Unanticipated actions are the result of unprepared students, not from the lack of piloting.			1.63	0.5	Yes
81. In order to preserve the integrity of the simulated experience, facilitators use caution when delivering cues.	3.20	3.13	2.75	0.25	Yes
82. In order to preserve the fidelity of the simulated experience, facilitators use caution when delivering cues.	3.16	3.20	3.00	0.5	Yes
83. To standardize simulation experiences, facilitators deliver cues in a consistent manner to cohorts of participants.	3.08	3.00	2.88	0.25	Yes

Section 10 of the Delphi instrument explores Standard IV of the INACSL Standards of Best Practice: Simulation*:* Debriefing. Expert panelists agree that debriefing is an important element in simulated experiences. The panelist agreed that nursing faculty facilitating simulated experiences are not formally trained and are not competent in debriefing techniques. Using a debriefing framework is suggested by the INACSL Standards of Best Practice: Simulation. Experts agreed that a utilizing a debriefing framework has increased over the years but using a debriefing framework is not universal or typical. Several frameworks for debriefing are identified in the INASCL Standards of Best Practice: Simulation. The expert panelists came to consensus that the most popular debriefing frameworks are the PEARLS (Promoting Excellence and Reflective Learning in Simulation) and the DML (Debriefing for Meaningful Learning). The expert panelists agreed that debriefing criteria are determined by the objectives and expected outcomes of the simulated experiences. Panelists agreed the self-reflection is an important element of the debriefing process. Table 11 lists the means of the ratings of R1, R2, R3, the IQD, and consensus.

Table 11

Standards of Best Practice: Simulation-Standard IV Delphi Results

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
84. Debriefing is an important element in a simulated experience.	3.88	4.00	4.00	0	Yes
85. Nursing faculty facilitating simulated experiences are competent in the debriefing process.	2.44	2.13	2.00	0	Yes
85a. NEW Many faculty facilitators have no formal training and are not competent in debriefing.		3.27	3.63	0.5	Yes
86. Nursing faculty routinely use a debriefing framework to guide debriefing in a focused way.	2.96	2.13	2.00	0	Yes
86a. NEW Using a debriefing framework has increased in recent years but, using a debriefing framework is not universal nor typical.		3.20	3.50	0.5	Yes
87. The GAS (Gather, Analyze, and Summarize) framework is a commonly used debriefing framework.	2.40	1.93	2.00	0	Yes
87a. NEW The GAS (Gather, Analyze, and Summarize) is known but, not commonly used.		2.67	2.88	0.25	Yes
88. The Debriefing with Good Judgement framework is a commonly used debriefing framework.	3.12	2.80	2.50	0.5	Yes
89. The PEARLS (Promoting Excellence and Reflective Learning in Simulation) framework is a commonly used debriefing framework.	3.32	3.20	3.00	0	Yes

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
90. The DML (Debriefing for Meaningful Learning) framework is a commonly used debriefing framework.	3.20	3.07	3.13	0.25	Yes
91. The 3D Model of Debriefing (Defuse, Discover, and Deepening) framework is a commonly used debriefing framework.	2.52	2.00	1.63	0.5	Yes
91a. NEW The 3D model of debriefing (Defuse, Discover, and Deepening) is known but, not commonly used.		3.00	3.00	0	Yes
92. The OPT Model of Clinical Reasoning framework is a commonly used debriefing framework.	2.12	1.80	1.63	0.5	Yes
92.a NEW The OPT model of Clinical Reasoning framework is known but, not commonly used.		2.73	2.13	1	Yes
93. Self-reflection is a necessary element of debriefing process.	3.84	4.00	4.00	0	Yes
94. Nursing faculty rely on the objectives to determine the debriefing criteria.	3.20	3.20	3.13	0.75	Yes
95. Nursing faculty rely on the expected learning outcomes to determine the debriefing criteria.	3.36	3.33	3.13	0.25	Yes

Standard V of the INACSL Standards of Best Practice: Simulation is Participant Evaluation. The expert panelists were in consensus that assessment criteria must be determined prior to the simulation-based experience. Panelists agreed that formative assessment is routinely used to monitor student nurse progress. Panelists agreed that summative assessment is not routinely used to monitor a student nurses' ability to meet the expected outcomes. The panelists agreed that summative assessment in the simulation arena requires a different way of thinking than formative assessment. Expert panelist came to consensus that nursing faculty use simulation-based experiences to identify gaps in knowledge and safety issues. Panelists agreed that schools of nursing lack faculty resources to have more than one faculty evaluate student performance in simulation laboratory. Table 12 lists the means of the ratings of R1, R2, R3, the IQD, and consensus.

Table 12

Standards of Best Practice: Simulation- Standard V Delphi Results

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
96. Faculty facilitating simulated experiences determine assessment criteria before the simulated experience.	3.24	3.13	3.13	0.25	Yes
97. Nursing faculty routinely use formative assessment to monitor a student nurses' progress in the simulated environment.	3.68	3.67	3.75	0.25	Yes
98. Nursing faculty routinely use summative assessment to assess the student nurses' ability to achieve the expected outcomes of the simulation experience.	2.40	2.13	2.00	0	Yes
98a. NEW Summative assessment requires a different way of thinking than formative assessment and the scenario must be written and conducted differently.		3.67	3.75	0.25	Yes
99. Nursing faculty use simulated experiences to identify gaps in knowledge.	3.44	3.53	3.25	0.25	Yes
100. Nursing faculty use simulated experiences to identify safety issues.	3.48	3.40	3.25	0.5	Yes
101. More than one nursing faculty is routinely used to assess student performance in the simulation lab.	2.36	1.67	1.75	0.25	Yes
101a. NEW Most schools of nursing lack faculty resources to have more than one faculty assess student performance in simulation lab.		3.80	3.75	0.25	Yes

Section 12 of the Delphi instrument addresses Standard VI of the INASCL Standards of Best Practice: Simulation. Expert panelists agreed Standard VI: Professional Integrity is realized by ensuring that the simulation laboratory is a safe learning environment. The experts agreed that nursing students do not visualize the simulation environment as safe, rather nursing students visualize the simulation environment as stressful. Panelists agreed that that confidentiality during and after simulated experiences is vital to the integrity of the experience. Unethical and unprofessional behavior is a tenet of Standard VI. Expert panelists agreed that student nurses are aware of unethical or unprofessional behavior displayed during simulation before the behavior is documented in the evaluation. Table 13 lists the means of the ratings of R1, R2, R3, the IQD, and consensus.

Table 13

Standards of Best Practice Simulation-Standard VI Delphi Results

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
102. Facilitators visualize the simulation lab as a safe learning environment.	3.68	3.87	3.88	0	Yes
103. Nursing students visualize the simulation lab as a safe learning environment.	3.00	2.93	2.50	0.5	Yes
103a. NEW Nursing students visualize the simulation lab as stressful.			3.75	0	Yes
104. Facilitators recognize that confidentiality during the simulated experience is vital to the integrity of the experience.	3.64	3.80	3.75	0.25	Yes
105. Facilitators recognize that confidentiality after the simulated experience is vital to the integrity of the experience.	3.68	3.87	3.63	0.25	Yes
106. Many times, student nurses are not aware of unethical behavior until the behavior is documented during assessment.	2.76	2.80	2.63	0.5	Yes
106a. NEW Unethical behaviors are most often related to communication issues- ie wrong tone of voice.		2.27	2.25	0.75	Yes
106b. NEW Unethical behaviors are most often related to communication issues- ie. imposition of one's own value system.		3.07	2.63	0.5	Yes
107. Many times, student nurses are not aware of unprofessional behavior until the behavior is documented during assessment.	2.76	2.80	2.50	0.5	Yes

Section 13 of the Delphi instrument represents Standard VII of the INACSL Standards of Best Practice: Simulation*:* Simulation-Enhanced Interprofessional Education. Expert panelists agreed that the complexity of the healthcare team requires healthcare professionals to communicate and collaborate. However, the panelists agreed that nursing faculty are not utilizing an interprofessional approach in the simulation laboratory. The panelists agreed that implementing an interprofessional approach in simulation is hindered by scheduling issues in the simulation laboratory and lack of availability of other disciplines to collaborate in a simulation-based experience. The expert panelists agreed that nursing faculty are not utilizing theoretical or conceptual frameworks to guide simulation-enhanced interprofessional education. Mutual goals are a focus in Standard VII. Expert panelists agreed mutual goals between professions should support student learning and be agreed upon prior to delivering the simulated experiences. The panelists agreed that mutual goals should be developed in alignment with the student nurses' knowledge base and skill level. Table 14 lists the means of the ratings of R1, R2, R3, the IQD, and consensus.

Table 14

Standards of Best Practice Simulation-Standard VII Delphi Results

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
108. The complexity of the healthcare system requires healthcare professionals to work in collaboration.	3.76	4.00	3.88	0	Yes
109. Safe patient care requires communication between healthcare professionals in all areas of healthcare.	3.80	4.00	4.00	0	Yes
110. Nursing faculty utilize an interprofessional approach in the simulation lab.	2.88	2.33	2.25	0.5	Yes
110a. NEW Utilizing an interprofessional approach in the simulation lab is hindered by lack of space.		2.43	2.38	0.75	Yes
110b. NEW Utilizing an interprofessional approach in the simulation lab is hindered by scheduling issues.		3.53	3.75	0.25	Yes
110c. NEW Utilizing an interprofessional approach in the simulation lab is hindered by a lack of the availability of other disciplines.			3.75	0.25	Yes
111. Nursing faculty utilize a theoretical approach to simulation-enhanced interprofessional education.	2.84	2.27	2.00	0	Yes
112. Nursing faculty utilize a conceptual framework to guide simulation-enhanced interprofessional education.	2.84	2.33	2.00	0	Yes
113. Mutual goals between professions should be developed prior to delivering a simulation-enhanced interprofessional education scenario.	3.64	3.87	4.00	0	Yes

114. Mutual goals support student-learning outcomes.	3.64	3.93	3.88	0	Yes
115. Mutual goals are developed in congruence with the student nurse's knowledge base.	3.36	3.40	3.63	0.5	Yes
116. Mutual goals are developed in congruence with the student nurse's skill set.	3.20	3.47	3.75	0.25	Yes

The final section of the Delphi instrument relates to Standard VIII of the INACSL Standards of Best Practice: Simulation. Standard VIII: Operations, focuses on the operations of the simulation laboratory. The expert panelists agreed on the necessity of a strategic plan. The experts agreed that schools of nursing do not set immediate, short term, or long-term goals and that stakeholders ae not routinely involved in goal setting and strategic planning. The experts agreed that to sustain a simulation program, formal training is necessary. The experts agreed that simulation labs differ on the depth of formal training required. The panelists agreed that schools of nursing do not employ individuals with the expertise to support and sustain simulation activities. The panelists agreed that schools of nursing do not articulate the scope of practice for employees in the simulation laboratory and they do not make employment dependent on keeping up-to-date with simulation technology. The experts came to consensus regarding policies in the simulation lab. The experts agreed that policy development is the responsibility of the simulation manager, not faculty and administration. The experts agreed that schools of nursing do not have policies in place to monitor the maintenance records of manikins, cameras, videotaping equipment, microphones. The panelists agreed that schools of nursing do not have policies in place that monitor defibrillators, medication supplies, and moulage. The expert panelists agreed that schools of nursing have policies in place that monitor sharp supplies and sharp containers. Table 15 lists the means of the ratings of R1, R2, R3, the IQD, and consensus.

Table 15

Standards of Best Practice: Simulation-Standard VIII Delphi Results

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
117. Schools of nursing implement a strategic plan for the development of a simulation lab.	2.84	2.53	2.13	0	Yes
118. Schools of nursing set immediate strategic goals (less than a year).	2.88	2.67	2.25	0.25	Yes
119. Schools of nursing set short-term goals (1-2 years).	2.92	2.53	2.13	0	Yes
120. Schools of nursing set long-range goals (3-5 years).	2.80	2.07	1.88	0	Yes
121. Stakeholders are routinely involved in the strategic planning process.	2.88	2.00	2.00	0	Yes
122. Schools of nursing use simulation literature reviews as a way to inform best practice in simulation.	3.24	3.07	2.88	0	Yes
123. In order to sustain a simulation program, schools of nursing must ensure that simulation personnel are formally trained in the science of simulation.	3.64	3.93	3.75	0.25	Yes
124. Simulation labs differ on the depth of formal training necessary for simulation employees.	3.44	3.73	4.00	0	Yes
125. Schools of nursing articulate the scope of practice for each employee in the simulation lab.	2.72	2.47	2.25	0.25	Yes
126. Ongoing employment in the simulation lab is dependent on keeping up-to-to-date with latest technology in simulation.	3.04	3.07	2.71	0.75	Yes

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
127. Schools of nursing provide resources to maintain a simulation program.	2.88	2.27	2.00	0	Yes
128. Schools of nursing provide resources to sustain a simulation program.	2.84	2.40	2.13	0.25	Yes
129. Schools of nursing employ individuals with the expertise to support simulation activities.	2.80	2.53	2.25	0.25	Yes
130. Schools of nursing employ individuals with the expertise to sustain simulation activities.	2.80	2.33	2.38	0.5	Yes
131. A duty of the simulation manager is policy creation.	3.24	3.27	3.38	0.5	Yes
131a. NEW Policy creation is the duty of faculty and administration.			2.75	1	Yes
132. Schools of nursing are successful in creating policies to support success in the simulation lab.	2.72	2.40	2.13	0.25	Yes
133. Schools of nursing have policies in place that monitor the maintenance records of manikins.	2.80	2.73	2.00	0	Yes
134. Schools of nursing have policies in place that monitor the maintenance records of cameras.	2.56	2.40	1.63	0.5	Yes
135. Schools of nursing have policies in place that monitor the maintenance records of videotaping equipment.	2.64	2.47	2.25	0.25	Yes
136. Schools of nursing have policies in place that monitor the maintenance records of microphones.	2.28	2.40	1.63	0.5	Yes

Delphi Statements	R1 Mean	R2 Mean	R3 Mean	IQD	Consensus
137. Schools of nursing have policies in place that monitor the management of moulage supplies.	2.36	2.27	1.88	0	Yes
138. Schools of nursing have policies in place that monitor the management of simulation medication supplies.	2.76	2.53	2.00	0	Yes
139. Schools of nursing have policies in place that monitor the management of sharps supplies.	3.20	3.20	3.13	0.75	Yes
140. Schools of nursing have policies in place that monitor the management of sharp containers.	3.04	3.33	3.13	0.75	Yes
141. Schools of nursing have policies in place that monitor the management of defibrillators.	2.56	2.40	2.13	0	Yes

The research question explored the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education. Consensus was determined to be achieved with an IQD of less than or equal to 1. A total of 193 statements were included in the Round 3 instrument. Consensus was met on 126 statements on the instrument at the 3.0 to 4.0 Likert scale rating. Sixty-seven statements met consensus at the 1 to 2.9 Likert scale rating indicating that even though the expert panelists met consensus, the consensus was to disagree with the statement. Ratings of 1 and 2.9 were related to barriers in simulation, limitations on the amount of simulation that can be substituted for clinical experiences, faculty development in simulation, faculty to student ratios in the clinical setting, the use of cues during simulation, and maintenance of equipment and supplies in the simulation center. The research question for this study asked what is expert consensus regarding the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education? Results of expert opinion on statement 44 support that the INACSL Standards of Best Practice: Simulation are not widely utilized in nursing education. The statement received means of 2.84, 2.47, and 2.38. The IQD was 0.5.

Summary

Expert panelists rated statements on a Likert scale of 1-4 where 4 was *highly agree* and 1 was *highly disagree*. Round 1 included 141 statements, Round 2 included 182 statements, and Round 3 included 193 statements. Consensus was determined to be met if the IQD was less than or equal to 1. Consensuses was recognized on all 193

statements on the instrument. The mean of Rounds 1, 2, and 3 along with the IQD are listed in Tables 2-15.

Chapter 4 of this Delphi study on the use of the Standards of Best Practice: Simulation in undergraduate nursing education presented and described the process and results of the study. Chapter 4 provided evidence of the study's credibility, transferability, dependability, and confirmability. Chapter 5 of the study summarizes and discusses the findings of the study. Chapter 5 compares the study's findings to current peer-reviewed literature on the topic. The findings of the study are analyzed and interpreted in context to the conceptual framework. Chapter 5 discusses why the Standards of Best Practice: Simulation are not widely utilized in undergraduate nursing education. Chapter 5 presents the presents the limitations of the study, recommendations, and implications for positive social change.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this Delphi study was to examine the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education. Experts in the field of simulation in undergraduate nursing education programs rated statements on a Likert scale of 1 – 4 where 4 was *highly agree* and 1 was *highly disagree*. As the shortage of clinical sites becomes more evident, schools of nursing must consider using simulation to augment traditional clinical experiences. However, simulated experiences must be as real and authentic as actual patient encounters to guarantee that nursing students are getting the experiences they need to be successful in the profession. A way to guarantee that simulation-based experiences are high quality experiences that promote clinical reasoning and critical thinking skills is to incorporate the INASCL Standards of Best Practice: Simulation in undergraduate nursing education. Utilizing the INACSL Standards of Best Practice: Simulation to guide simulation-based experiences, ensures that simulated experiences are comparable to hospital-based or other face-to-face clinical experiences.

After a reiteration of the purpose and nature of the study and why the study was conducted, Chapter 5 includes a concise summary of the key findings of the study. Interpretation of the findings confirm what is found in the literature. The conceptual framework is analyzed as it relates to the findings of the study. Chapter 5 also discusses the limitations of the study and addresses recommendations for further research.

Implications for positive social change are explored and recommendations for practice are suggested.

The key findings of the study indicate that the *INACSL* Standards of Best Practice: Simulation are widely recognized in undergraduate nursing education; however, they are not widely utilized in undergraduate nursing simulation programs. The experts agreed that the INACSL Standards of Best Practice: Simulation are a comprehensive guide that gives schools of nursing a process for the development of simulation programs. The results of this study highlight the barriers that hinder utilization of the *INACSL* Standards of Best Practice: Simulation in undergraduate nursing education.

Other key findings of the study indicate a lack of nursing faculty to facilitate simulation-based experiences, a shortage of traditional clinical sites, and an increase in the number of nursing students were identified as major barriers to the implementation of the *INACSL* Standards of Best Practice: Simulation in undergraduate nursing education. The lack of funding to develop and maintain a simulation lab was also identified as a barrier. Other barriers to implementation of the *INACSL* Standards of Best Practice: Simulation include lack of faculty agreement on simulation as an innovative teaching strategy, lack of institutional support of simulation laboratories, and lack of faculty time to develop simulation scenarios due to classroom teaching responsibilities. The experts agreed that theoretical and conceptual frameworks were not routinely used in simulation development. The experts identified that policy and procedure development, the responsibility of the simulation manager, is inconsistent between schools of nursing.

Interpretation of Findings

The findings of this study confirm what has been found in the peer-reviewed literature presented in Chapter 2. According to Hayden et al. (2014) the shortage of traditional clinical experiences for nursing students has led to the increased use of simulation in undergraduate nursing education. The NCSBN's landmark study concluded that substituting up to 50% of tradition clinical experiences with simulation-based experiences resulted in no difference in National Council Licensure Examination (NCLEX) pass rates between nursing students who had 100% traditional clinical experiences and those who had 50% simulation and 50% traditional clinical experiences.

The expert panelists confirmed that the use of simulation in undergraduate nursing education has increased due to a shortage of traditional clinical sites. Traditional clinical sites are becoming more difficult to secure due to the increased number of nursing students needing clinical hours combined with shorter hospital stays and changes in the healthcare system. The experts agreed that up to 50% of traditional clinical experiences can be substituted with simulation-based experiences without reducing NCLEX pass rate results.

The expert panelists agreed that faculty development in nursing simulation is lacking. This is consistent with peer-reviewed literature on the topic (Aldridge, 2016; Jeffries, 2012; Nordquist & Sundberg, 2015; Simes et al., 2018; White, 2017). Aldridge (2016) suggested that the time needed for standard faculty teaching loads interfere with faculty development in simulation. Nordquist and Sundberg (2015) reported that successful simulation programs invest in faculty development and recognize that

institutional support for simulation is an important aspect of faculty development. Harder et al. (2013) reported that there is a connection between faculty development and comfort in simulation. When faculty are trained in simulation, they are more confident in the simulation environment (Harder et al., 2013).

The experts agreed that faculty development is a highly suggested but often overlooked aspect of simulation. Many times, the decision to forego faculty development is based on a lack of resources to fund faculty development. Administrators at some schools of nursing reason that simulation development is something a nurse should be able to accomplish without training by using actual patient encounters as the foundation for the simulated experience. There is more to developing a simulation experience than reiterating a patient encounter. Debriefing and giving cues are two essentials of a high-quality simulation that take training and practice to perfect.

Expert panelists agreed that a high student to faculty ratio in the clinical setting negatively impacts student learning. Nursing students, especially entry level nursing students, need to be supervised at the bedside. Hospitals do not allow nursing students to administer medications or perform skills without faculty supervision. When the student to faculty ratio is high, faculty struggle to supervise every medication administration or procedure in a timely manner. Waiting for faculty availability diminishes a student's chance to perform skills or administer medications to patients. Many times, the floor nurse will continue with procedures and medication administration while the student nurse waits for the instructor to arrive to supervise the procedure or medication administration. Arkan et al. (2018) reported that student competition for faculty time,

clinical experiences, and resources are the result of high student to faculty/mentor ratios. Zimmerman and House (2016) reported a phenomenon referred to as the “preparation-practice gap” where new graduate RNs are unqualified due to insufficient clinical experiences, an increase in the number of nursing students requiring clinical experiences, and the lack of qualified clinical nursing faculty (p. 49).

The expert panelists agreed that a simulation lab allows students the opportunity to practice critical thinking, clinical reasoning, and decision-making in a safe learning environment. Caring for a patient who is quickly deteriorating in the clinical setting can be overwhelming for student nurses especially if they have not yet developed the necessary skill to participate in resuscitation. The simulation lab is a safe environment to practice preparing and administering medications and performing procedures such as inserting an intravenous catheter or nasogastric tube. A high-quality simulation allows students time to think about the nursing care required to stabilize the patient. This is accomplished by talking with other students and coming to a conclusion based on their ability to think critically and arrive at a clinically reasonable judgement. Students can pause and collaborate as a team to form a plan going forward in the simulation. The expert panelists agreed that simulated experiences contribute to the growth of nursing students from novice to graduate nurse. The expert panelists agreed that critical thinking skills, clinical reasoning, and decision-making skills are developed during high-quality simulated experiences that are supported by the *INACSL* Standards of Best Practice: Simulation.

Literature supported that critical thinking, clinical reasoning, and decision-making skills are practiced during simulated experiences (Mok et al., 2016; Shin et al., 2015; Shinnick & Woo, 2013; Von Colln-Appling & Giuliano, 2017). Students working together in a simulated experience have the opportunity to explore ideas without the fear of making a mistake and hurting a patient. Debriefing sessions with students and faculty allow for the exchange of ideas which foster the development of critical thinking and decision-making skills.

The expert panelists came to consensus regarding the use of a conceptual framework to guide simulation-based scenarios. The panelists agreed that even though a conceptual framework is best practice, many simulation laboratories are not using a conceptual formwork to guide simulated experiences. The literature supports this claim. According to Shepherd and Burton (2019) conceptual frameworks are essential but evidence demonstrates that they are not being utilized in simulation laboratories.

The results of the study extended what was in the literature. The literature identified an array of debriefing frameworks utilized in simulation labs in the United States (Cheng et al., 2016; INACSL Standards Committee, 2016d; Kolbe, et al., 2015). Expert panelists rated the Promoting Excellence and Reflective Learning in Simulation (PEARLS) and the Debriefing for Meaningful (DML) as the two most recognized and commonly used debriefing frameworks in nursing simulation. There were no study results that conflicted with what was in the literature.

Conceptual Framework

The conceptual framework that grounded this study was Vygotsky's theory of social constructivism. Vygotsky believed that creating understanding and meaning was a process where newly acquired information is added to existing knowledge (Sanders & Welk, 2005). When new ideas merge with current knowledge students grow in understanding, confidence, and competence. The constructivist point of view includes a learning relationship between student and teacher where mutual sharing of thoughts, ideas, and conclusions is appreciated and respected. Learners are not passive recipients of information in a constructivist leaning environment (Amineh & Asl, 2015). Learners actively pursue their own learning and personal meaning in a learning situation (Driscoll, 2005; Erlam et al., 2017; Oermann, 2015).

Vygotsky's theory of social constructivism also emphasizes that learning is social in nature. Vygotsky argued that social interactions between students, teachers, and peers are the foundation to learning (Clara, 2017; Erlam et al., 2017; Oermann, 2015; Sanders & Welk, 2005). Learners in a constructivist environment rely on the flowing and merging of ideas to gain a new level of understanding. In simulation, students and faculty work together to solve complicated patient situations. The social characteristic of the simulation lab provides opportunities for the development of critical thinking and problem-solving skills. It is through the process of solving a problem that students learn to think critically and make sound clinical decisions. In this study, experts rated simulation-based statements associated with the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education on a scale of 1-4 where four was

highly agree. The findings of this study support Vygotsky's social constructivist framework. Vygotsky endorsed the idea that learning was not the passive retention of information, rather, leaning happens when students engage with each other and the instructor in a socially collaborative environment. In the simulation laboratory, nursing students engage with facilitators and other nursing students in realistic nursing scenarios. Expert panelists agreed that learning begins during a prebrief meeting prior to the start of simulation and continues until the debrief session at the end of the simulation. The social based learning that is evident in the simulation laboratory aligns with Vygotsky's social constructionist framework.

The scaffolding of knowledge (Sanders & Welk, 2005), another element of Vygotsky's theory of social constructivism is evident in the results of this study. Introductory simulations examine a student's basic skill and knowledge acquisition. As students' progress through the nursing program, higher level concepts and skills are added to simulation-based experiences. Complex connections are the result of joining basic skills and knowledge with higher level concepts and skills. As a student nurses' knowledge expands, they experience a new reality and grow as individuals within the profession.

A second framework, the Donabedian model, provided additional grounding for this study. Donabedian believed that positive patient outcomes are the result of high-quality healthcare (Donabedian, 1988). Donabedian (1988) maintained that when a sound structure and a firm process are evident, positive outcomes will result. However, when structure and/or process are lacking, outcomes will be less than optimal. The results of

this study on the INACSL Standards of Best Practice: Simulation support Donabedian's structure, process, outcomes framework.

The Delphi instrument consisted of 141 statements. By agreeing or highly agreeing, the expert panelists confirmed that 114 of the 141 statements were adequately being met in simulation laboratories in the United States. Expert panelists agreed that the remaining 27 are elements of the INACSL Standards of Best Practice: Simulation that are not being met in simulation laboratories in the United States. This indicates that, overall, the INACSL Standards of Best Practice: Simulation are being effectively utilized in nursing simulation laboratories in the United States. However, there are several areas that are identified as barriers to implementation of best practice in simulation. Those areas include funding for simulation, faculty development in simulation, the use of a theoretical/conceptual framework to ground simulation activities, more time dedicated to simulation activities, formalized assessment, intentional planning and goal setting, and an interprofessional aspect to simulation.

Limitations of the Study

The length of time from the beginning of Round 1 to the beginning of Round 3 is a limitation of the study. The Delphi instrument was opened to the expert panelists on August 2, 2020 and closed on September 11, 2020. Between each round of the study, IRB approval of the new instrument was required. The study lasted a total of 41 days. The stretch of time between rounds is considered a limitation and can be linked to attrition from Round 1 to Round 3.

Timing of the data collection to the academic school year is another limitation to the study. The weeks leading up to the start of a new semester, as well as the first weeks of the semester, are demanding for educators. The demands of a new semester along with a commitment to three rounds of a Delphi study during the midst of the COVID-19 pandemic is seen as a limitation.

Recommendations

Recommendations for further research on the use of the INACSL *Standards of Best Practice: Simulation* in undergraduate nursing education should include a larger sample size. Twenty-nine experts in the field of nursing education consented to participate in the study. Eight participants completed all three rounds of the study. Recruiting more participants would account for attrition and would give a broader understanding of the use simulation in undergraduate nursing education.

It is also recommended to decrease the amount of time from the start of the study to the end of Round 3. Between each round, the new instrument was submitted to IRB for review and approval of new statements. Each round should have been completed in one week. IRB approval added 5 days between Rounds 1 and 2 and another 5 days between Rounds 2 and 3. Participants lost interest in the study during the long periods of inactivity between rounds. Another recommendation is to consider the timing of introducing the experts to the instrument. The instrument was opened just prior to students returning to campus for fall semester and the Labor Day holiday. Data collection extended through the third week of the semester. Prior to and several weeks into a new semester is a busy time for any educator. Postponing data collection by a week or two may have yielded

additional expert panelists. To acknowledge the Labor Day holiday weekend, expert panelists were given two extra days to complete and submit the Delphi instrument.

Delphi statements that expert panelists met consensus by disagreeing to the statement implores further investigation. Statements in this category identify the specific elements of the INACSL Standards of Best Practice: Simulation that require further discussion. Understanding why schools of nursing implement some of the standards and not others is the first step to implementing all the standards of INACSL Standards of Best Practice: Simulation in undergraduate nursing education.

Implications

There are several considerations for positive social change on the individual, organizational, and societal level. On an individual level, it is important that schools of nursing supplement a decrease in traditional clinical hours with simulated hours. Carefully planning and facilitating simulated experiences following the INACSL Standards of Best Practice: Simulation promotes the development of critical thinking and clinical reasoning skills in student nurses. Student nurses who are competent and confident in their skills and ability to think clinically are better prepared to deliver high-quality patient care. The results of this study bring attention to the INACSL Standards of Best Practice: Simulation and highlight the particular standards that expert panelists identified as being paramount in developing the skills necessary to be a professional nurse.

On an organization level, this study has the potential to promote positive social change by identifying the link between success of an organization’s simulation laboratory

and faculty development. Expert panelists agreed that faculty development in simulation was lacking. Learning to design, facilitate, and evaluate a simulated experience takes training and practice to become proficient. When schools of nursing do not provide adequate faculty development in simulation, faculty become overwhelmed and disheartened. Supporting faculty development in simulation demonstrates an organizational investment in faculty and the simulation laboratory. Faculty who are supported by development programs bring the knowledge and skill to the simulation environment. This increase in faculty knowledge and skill is what propels simulation programs forward.

The potential impact for social change at the societal level is related to patient safety. A main focus of every patient experience is centered around patient safety. As traditional clinical sites become more difficult to secure, schools of nursing are utilizing simulation to fulfill the required number of clinical hours. The question of patient safety is forefront when clinical hours are being replaced simulated hours. How do faculty teach patient safety in a simulated environment? One way to guarantee that simulated experiences teach the skills necessary to keep patients safe is to fully incorporate the INACSL Standards of Best Practice: Simulation in simulation programs. When schools of nursing use the INACSL Standards of Best Practice: Simulation to ground and guide simulations, nursing students will gain the knowledge and skills necessary to keep their patients safe (Rutherford-Hemming et al., 2015).

Donabedian's structure-process-outcomes model defines a process for quality and safety in healthcare. Specifically, if the structure and process elements of simulation are

met, student (and ultimately, patient) outcomes will be positive. If there is a disconnect between structure and process, out comes will most likely be negative. This study uncovered elements of the *INACSL* Standards of Best Practice: Simulation that, according to the expert panelists, are not being met. The statements that met consensus by *disagreeing* or *highly disagreeing* to the statement are viewed as areas that need reflection. For example:

- The INACSL Standards of Best Practice: Simulation are widely utilized in nursing education (mean = 2.56).
- Simulation facilitators routinely conduct a needs assessment as a way to provide evidence of the need for simulation (mean = 2.19).
- Simulation facilitators use a conceptual framework to guide simulated experiences (mean = 2.55).

Sharing this information with schools of nursing across the United Sates has the potential to impact social change by encouraging institutions to trust the research behind the *INACSL* Standards of Best Practice: Simulation. As simulation science and research continues to grow and more institutions incorporate the *INACSL* Standards of Best Practice: Simulation, patient safety will continue at the forefront in healthcare regardless of whether clinical experiences are clinically based or simulation based.

Recommendations for Practice

Simulation has proven to be an effective substitute for traditional clinical hours in undergraduate nursing education. As research in simulation continues to advance, it is important that schools of nursing stay up-to-date on the advances in simulation science. It

is equally important that schools adopt the *INACSL* Standards of Best Practice: Simulation as the foundation of their simulation labs.

The first recommendation for practice is for nurse educators to accept simulation as a viable option to traditional clinical experiences. Many nurse educators are not comfortable in the simulation lab. Fear of technology (Al-Ghareeb & Cooper, 2016; Hollema, 2015; Hosny et al., 2017; Ryan et al., 2017) and lack of faculty development (Aldridge, 2016; Jeffries, 2012; Nordquist & Sundberg, 2015; Simes et al., 2018; White, 2017) prevent nurse educators from realizing the value of simulation in nursing education. This recommendation may not be easy to implement as many nurse educators do not want or have time to attend faculty development in simulation. Some nursing faculty do not see the value of simulation and lack the desire to role play a scripted experience to create an environment that supports suspension of disbelief.

Suspension of disbelief is the cognitive ability to accept a simulated experience as real (Muckler, 2017). This aspect of simulation is just as important for faculty as it is for students. The degree of reality of the simulation provides the learner with the tools necessary to suspend disbelief and accept the simulated experience as authentic (Muckler, 2017). However, this important aspect of simulation is difficult for many nurse educators. Faculty development in simulation will give nurse educators the confidence to create a simulated experience that replicates a real-life patient scenario that inspires learners to suspend disbelief and participate fully in the simulation.

Simultaneously managing a mannequin's technological demands is another element of the simulation that is demanding for inexperienced simulation facilitators. To

deliver a high-quality simulation that fosters the development of critical thinking and psychomotor skills, the facilitator must be able to adjust vital signs and verbal communication to correlate to the patient/mannequin's changing condition. Voice modulators and computer settings on high fidelity mannequins must be orchestrated seamlessly to portray a realistic rendition of an actual patient scenario. Learning to operate simulation technology requires instruction and practice to be able to facilitate simulated experiences.

Organizational commitment to faculty development is vital to the success of the simulation laboratory. Many times, faculty development in simulation is provided by the company that developed the mannequins being used in the simulation lab (Jeffries et al., 2015). When faculty development is not included with the purchase of simulation equipment, the cost to train faculty can restrict the number of faculty being trained at any one time. It may take several years to train and certify enough faculty to fully staff a simulation laboratory. Simulation conferences with breakout training workshops are recognized as viable options for faculty development in simulation (Sole et al., 2013). Administrators at schools of nursing may opt to develop their own faculty development programs. Peterson et al., (2017) suggested that taking faculty from novice to proficient in simulation requires starting small with basic simulation skills and adding to those skills in a "tiered" fashion (p. 255). Working in this manner builds confidence while achieving the goal of a trained simulation facilitator.

To discover why faculty hesitate to support simulation, open conversations between nursing faculty and deans/directors of schools of nursing is recommended.

Allowing faculty to verbalize their thoughts, fears, and ideas in a professionally safe environment is an important step in guiding faculty into accepting simulation as an innovative teaching strategy. Technology and lack of faculty development are two common fears associated with simulation (Al-Ghareeb & Cooper, 2016; Chinnugounder et al., 2015; Hosny et al., 2017; Sole et al., 2013). Supporting faculty's vision for simulation empowers creative thoughts and innovative ideas. Open discussions will identifying faculty who have a high interest in simulation. Enlisting faculty with a high interest in simulation instead of mandating that all faculty participate in simulation will elevate commitment and quality in the simulation laboratory.

It is recommended that top administration in schools of nursing convince stakeholders to support simulation labs. In the state of Colorado, most schools of nursing cannot provide enough traditional clinical experiences to meet the required number of clinical hours as specified by the State Board of Nursing. Simulation is currently filling the gap between required clinical hours and actual clinical hours. Since this situation is not likely to change in the near future, stakeholders must understand the significance of the problem and be willing to financially support simulation. Budgeting for items such as mannequins (high or low fidelity), audio and video capabilities, technology, space, and personnel is essential. If funding for mannequins is not available using students as standardized patients is a viable option. Standardized patients are given a scenario that is scripted and are guided in performing the scenario. Using senior nursing students or graduate nursing students as standardized patients provides a rich leaning environment

for entry level nursing students as well as for senior nursing students and graduate students role playing the scenarios.

The next recommendation for practice is the necessity of faculty development. Faculty development in simulation is crucial to the success of a simulation laboratory. Even though a nurse educator may have many years of teaching experience, making the transition to simulation requires additional faculty development. Faculty should not be expected to know how to create, facilitate, debrief, and evaluate a simulated experience. Simulation support staff and technicians should receive simulation training customized to job duties and scope of practice within the position. Administrative support of simulation staff and technicians should rival the support given to nursing faculty. All members of the simulation lab team need to feel valued for the talents they bring to the simulation before, during, and after the simulated experience.

Consideration must also be given to faculty teaching loads in connection with simulation assignments. Creating and developing simulation-based experiences is time consuming. Faculty need release time or a lessened teaching load in order to fully commit to simulation design, development, and evaluation.

Supporting an interprofessional atmosphere in the simulation lab is also recommended. When other members of the health care team, such as pharmacists and respiratory therapists, work together in an interprofessional approach it brings reality to simulated experiences. Interprofessional collaboration provides nursing students an opportunity to problem solve with other health care professionals in a unified manner to deliver patient care. Being able to communicate with others across the healthcare

environment is vital for patient safety. Engaging other departments on campus in a collaborative effort will strengthen a student nurse's confidence and ability to work in a team. For example, paramedic students and/or physician assistant students could role play scripted assignments.

Monitoring nursing students who were affected by the closure of hospitals and long-term care facilities because of the COVID 19 pandemic is another recommendation for practice. Restrictions on traditional clinical experiences due to COVID-19 in spring 2020 and fall of 2020 impacted schools of nursing across the United States. Nursing students were denied access to hospitals and other clinical sites to complete required clinical hours. Schools of nursing turned to simulation (including virtual simulation) to supplement clinical hours. One concern for schools of nursing and their graduates regarding the increased use of simulation is NCLEX pass rates. Specifically, how will the increased use of simulation during the pandemic impact NCLEX pass rates?

Administrators of nursing programs who are considering developing a simulation program should become familiar with the *INACSL* Standards of Best Practice: Simulation. A manageable goal would be to start by selecting two or three standards to implement. Trying to incorporate all of the *INACSL* Standards of Best Practice: Simulation at the same time would be overwhelming. The first standard, Simulation Design, would be a starting point. Simulation Design provides a foundation for newly created simulation laboratories. Simulation Design provides the needed structure to the simulation-based experience. Elements of Simulation Design include a needs assessment, objectives, prebriefing criteria, and scenario development. Standard III, Facilitation,

would be a logical next step. It is important to note that faculty development, an element of Facilitation, is an often overlooked but highly important component of simulation. The effectiveness of the simulated experience is dependent on faculty who have the knowledge and skill to deliver the simulation-based experience. Debriefing, Standard IV, is an important element of a simulation-based experience. Debriefing supports learning and promotes the development of critical and clinical reasoning skills. After an institution is knowledgeable and comfortable utilizing the initial standards that were selected and implemented, selecting other standards to implement would be a natural progression.

Nursing programs administrators who want to implement the *INACSL* Standards of Best Practice: Simulation into established simulation programs should begin by reviewing their programs and aligning the standards to specific elements of their programs. It is quite possible that established programs are already implementing several of the standards. One could start with a mutually agreed upon standard and create a plan to incorporate the standard into the simulation program. It may take several years to fully integrate all the *INACSL* Standards of Best Practice: Simulation into a simulation program. However, the benefits of incorporating the *INACSL* Standards of Best Practice: Simulation to patient safety, student learning, and faculty satisfaction in simulation will transform the future of simulation.

Conclusion

The purpose of this Delphi study was to examine the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education by seeking the opinions of experts in the field of simulation in nursing education. Expert panelists rated

statements on the Delphi instrument related to the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education. The goal of the study was to determine if schools of nursing in the United States are implementing the standards in their undergraduate nursing simulation laboratories.

The research question for this study was: What is expert consensus regarding the use of the INACSL Standards of Best Practice: Simulation in undergraduate nursing education? Expert panelists agreed that the INACSL Standards of Best Practice: Simulation are inconsistently used in undergraduate nursing education. The results of this study highlight the importance of incorporating each standard of the INACSL Standards of Best Practice: Simulation in simulation programs. If schools of nursing select one standard over another, overall simulation results may not support best practice in simulation.

In response to a reduction in available clinical sites, the use of simulation in nursing education has increased steadily over the past decade (Blodgett et al., 2018; Curl et al., 2016; Nehring et al., 2013; Shearer, 2016; White, 2017). The landmark study by the NCSBN supports substituting 50% traditional clinical hours for simulated hours. (Hayden et al., 2014). The INACSL released the INACSL Standards of Best Practice: Simulation to promote the development of high-quality simulated experiences (Alexander et al., 2015; Beroz, 2017). The INACSL Standards of Best Practice: Simulation is a detailed document that serves as a guide for the development of simulation programs in undergraduate nursing education.

Simulation helps develop critical thinking, clinical reasoning, and decision-making skills (Mok, et al., 2016; Shin et al., 2015; Shinnick & Woo, 2013; Von Colln-Appling & Giuliano, 2017). Organization, time management, communication, and teamwork skills are positively affected by simulation (Sebold et al., 2017). Simulation increases patient safety and leads to better patient outcomes (Naik & Brien, 2013). Knowing that the NCSBN supports supplementing traditional clinical experiences with up to 50% simulation-based experiences (Hayden et al., 2014), it is paramount that schools of nursing ground their simulation programs in the tenets of the INACSL Standards of Best Practice: Simulation.

The expert panelists suggested that attention be given to: (a) simulation lab funding, (b) stakeholder involvement, (c) faculty development, (d) prebriefing and debriefing, (e) theoretical and/or conceptual frameworks to design simulation scenarios, (f) interprofessional cooperation in simulation scenarios, (g) summative assessment, and (h) simulation lab policies and procedures.

Simulation as an innovative teaching strategy is rising in popularity across the United States and that popularity is not expected to decrease any time soon. Leaders in simulation need to continue to add to the body of simulation knowledge through research, conferences, and collaborative projects. Monitoring student outcomes and the ability to transfer knowledge gained during simulation directly to the clinical setting is the next step in moving simulation science forward.

This study provides an understanding of the importance of clinical experiences in a nursing student's educational journey. The clinical experiences that a nursing student

completes in nursing school influences their future professional role. The findings of this study provide a path to the future of simulation in undergraduate nursing education programs. Grounding simulated experiences in the INACSL Standards of Best Practice: Simulation assures that substituting 50% of clinical experiences with simulated experiences is an acceptable way to fill the gap between the required number of clinical experiences and actual number of clinical experiences. The findings of this study support simulation as an innovative teaching strategy and provide an approach to simulation laboratory development.

References

Ab Latif, R., Dahlan, A., Ab Mulud, Z., & Mat Nor, Z. (2017). The Delphi technique as a method to obtain consensus in health education research. *Education in Medicine Journal 9*(3), 89-102. https://pdfs.semanticscholar.org/2502/e9b3d3e01f8535bc4ea5f5c954657e79a95c.pdf

Adib-Hajbaghery, M., & Sharifi, N. (2017). Effect of simulation training on the development of nurses and nursing students' critical thinking: A systematic review of literature. *Nurse Education Today*, *50*, 17-24. https://www.sciencedirect.com/science/article/pii/S0260691716303070

Adler, M., & Ziglio, E. (1996). *Gazing into the oracle: The Delphi method and its application to social policy and public health.* Jessica Kingsley Publishers.

Aebersold, M. (2016). The history of simulation and its impact on the future. *AACN Advanced Critical Care, 27*(1), 56-61. https://pubmed.ncbi.nlm.nih.gov/26909454/

Aebersold, M., Mariani, B., & Cherara, L. (2018). Do experts and novice agree? A qualitative review of the 2016 INACSL standards of best practice simulation^{SM} reviewer feedback. *Clinical Simulation in Nursing, 25*, 1-5. https://www.sciencedirect.com/science/article/pii/S1876139918300355?via%3Dihub

Ah-Nam, L., & Osman, K. (2017). Developing 21st century skills through a constructivist-constructionist learning environment. *K-12 STEM Education, 3*(2),

205-216. https://www.learntechlib.org/p/209542/

Akram, A., Mohamad, A., & Akram, S. (2018). The role of clinical instructor in bridging the gap between theory and practice in nursing education. *International Journal of Caring Sciences, 11*(2), 876-882. http://www.internationaljournalofcaringsciences.org/docs/29_akram_original_10_2.pdf

Aldridge, M. (2016). How can nurse educators perform patient simulation efficiently? *Teaching and Learning in Nursing, 11*, 8-14. https://doi.org/10.1016/j.teln.2015.09.001

Alexander, M., Durham, C., Hooper, J., Jeffries, P., Goldman, N., Kardong-Edgren, K., Kesten, K., Spector, N., Tagliareni, E., Radtke, B., & Tillman, C. (2015). NCSBN simulation guidelines for prelicensure nursing programs. *The Journal of Nursing Regulations, 6*(3), 39-42. https://www.ncsbn.org/simulationguidelines_alexander_2015.pdf

Al-Ghareeb, A., & Cooper, S. (2016). Barriers and enablers to the use of high-fidelity patient simulation manikins in nurse education: An integrative review. *Nurse Education Today, 36*, 281-286. https://pubmed.ncbi.nlm.nih.gov/26323885/

AlHaqwi, A., & Taha, W. (2015). Promoting excellence in teaching and learning in clinical education. *Journal of Taibah University Medical Sciences, 10*(1), 97-101. https://www.sciencedirect.com/science/article/pii/S165836121500027X

Al-Weher, M. (2004). The effect of a training course based on the constructivism on student teachers' perceptions of the teaching/learning process. *Asia-Pacific*

Journal of Teacher Education, 32(2), 169-184. https://doi.org/10.1080/1359866042000248480

American Association of Colleges of Nursing. (2008). *The Essentials of Baccalaureate Education for Professional Nursing Practice.* https://www.aacnnursing.org/Portals/42/Publications/BaccEssentials08.pdf

American Association of Colleges of Nursing. (2019a). *Fact sheet: Nursing shortage.* https://www.aacnnursing.org/Portals/42/News/Factsheets/Faculty-Shortage-Factsheet.pdf

American Association of Colleges of Nursing. (2019b). *Nursing fact sheet.* https://www.aacnnursing.org/News-Information/Fact-Sheets/Nursing-Fact-Sheet

American Association of Colleges of Nursing. (2020). *Creating a more highly qualified nursing workforce.* https://www.aacnnursing.org/News-Information/Fact-Sheets/Nursing-Workforce

Amineh, R., & Asl, H. (2015). Review of constructivism and social constructivism. *Journal of Social Sciences, Literature, and Languages 1*(1). 9-16. http://blue-ap.org/j/List/4/iss/volume%201%20(2015)/issue%2001/2.pdf

Anderson, B., Knestrick, J., & Barroso, R. (2015). *DNP capstone projects: Exemplars of excellence in practice*. Springer Publishing Company.

Anderson, J., & Abrahamson, K. (2017). Your health care may kill you: Medical Errors. *Studies in Health Technology and Informatics,* 234, 13-17. https://pubmed.ncbi.nlm.nih.gov/28186008/

Annear, M., Toye, C., McInerney, F., Eccleston, C., Tranter, B., Elliott, K., & Robinson,

A. (2015). What should we know about dementia in the 21st century? A Delphi consensus study. *BMC Geriatrics, 15*(1), 1-13. https://doi.org/10.1186/s12877-015-0008-1

Anney, V. (2014). Ensuring the quality of the findings of qualitative research: Looking at trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy Studies, 5*(2), 272-281. http://196.44.162.10:8080/xmlui/bitstream/handle/123456789/256/Ensuring%20the%20Quality%20of%20the%20Findings%20of%20Qualitative%20Research%20NEW.pdf?sequence=1&isAllowed=y

Arkan, B., Ordin, Y., & Yilmaz, D. (2018). Undergraduate nursing student's experience related to their clinical learning environment and factors affecting to their clinical learning process. *Nurse Educator in Practice, 29*, 127-132. https://www.sciencedirect.com/science/article/abs/pii/S1471595317308831

Arroll, B., & Kendrick, T. (2018). Anxiety. In Gask, L., Kendrick, T., Peveler, R., & Chew-Graham, C. A. (Eds.). *Primary care mental health* (pp. 125-137). Cambridge University Press.

Atkins, R., Tolson, H., & Cole, B. (2005). Stability of response of characteristics of a Delphi panel: Application of bootstrap data expansion. *BMC Medical Research Methodology, 5* (37) 1-16. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1318466/

Auerbach, D., Buerhaus, P., & Staiger, D. (2017). How fast will the registered nurse workforce grow through 2030? Projections in nine regions of the country. *Nursing*

Outlook, 65, 116-122. https://pubmed.ncbi.nlm.nih.gov/27502764/

Austin, M., & Derk, J. (2019). Lives lost, lives saved: An updated comparative analysis of avoidable deaths at hospitals graded by the leapfrog group. Armstrong Institute for Patient Safety and Quality. https://www.hospitalsafetygrade.org/media/file/Lives-Saved-White-Paper-FINAL.pdf

Avella, J. (2016). Delphi panels: Research design, procedures, advantages, and challenges. Journal of Doctoral Studies, 11, 305-321. http://www.informingscience.org/Publications/3561

Ayanian, J., & Markel, H. (2016). Donabedian's lasting framework for healthcare quality. *New England Journal of Medicine*. https://pubmed.ncbi.nlm.nih.gov/27468057/

Baker, S., & Edwards, R. (2012). How many qualitative interviews are enough? *National Center for Research Methods Review Paper*. http://eprints.ncrm.ac.uk/2273/4/how_many_interviews.pdf

Barber, J., Eberhardt, A., Kennedy, B., & Kardong-Edgren, S. (2016). Logistical planning and making the move to a new simulation space. *Clinical Simulation in Nursing*, *12*(12), 565-569. https://www.sciencedirect.com/science/article/pii/S1876139916301001

Bashaw, M. (2016). Integrating simulation into perioperative education for undergraduate nursing students. *AORN Journal*, 103(20, 212.e1-212.e5. https://www.sciencedirect.com/science/article/pii/S0001209215011643

Becker, D., Callazo, M., Garrison, C., & Sandahl, S. (2020). Finding your way with

inacsl standards of best practice: Simulation: Development of an interactive web-based guide and roadmap. Clinical Simulation in Nursing, 48. 75-79. https://doi.org/10.1016/j.ecns.2020.08.005

Beitz, J. (2018). Attitude isn't the only thing, it's everything: Humanistic care of the bariatric patient using donabedian's perspective on quality of care. *Ostomy Wound Care, 64*(1), 12-17. https://europepmc.org/article/med/29406298

Beroz, S. (2017). A statewide survey of simulation practices using NCSBN simulation guidelines. *Clinical Simulation in Nursing, 13*(6), 270-277. https://www.sciencedirect.com/science/article/pii/S1876139916300858

Berragan, L. (2014). Learning nursing through simulation: A case study approach towards an expansive model of learning. *Nurse Education Today, 34*(8), 1143-1148. https://www.sciencedirect.com/science/article/pii/S0260691714000781

Berwick, D., & Fox, D. (2016). Evaluating the quality of care: Donabedian's classic article 50 years later. *The Milbank Quarterly, 94*(2), 237-241. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4911723/

Best, M., & Neuhauser, D. (2004). Avedis donabedian: Father of quality assurance and poet. *Quality and Safety in Health Care, 13*(6), 472-473. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1743903/pdf/v013p00472.pdf

Bland, A., & Tobbell, J. (2015). Developing a multi-method approach to data collection and analysis for explaining the learning during simulation in undergraduate nurse education. *Nurse Education in Practice 15*(6), 517-523. https://www.sciencedirect.com/science/article/pii/S1471595315001201

Bleich, M., Jackson, C., Werner, S., Hines, D., Stuart, N., & Nelson, A. (2018). Beyond high-fidelity simulation: Emerging technologies in leadership development. *The Journal of Continuing Education in Nursing*, *49*(3), 105-108. https://www-proquest-com.ezp.waldenulibrary.org/docview/2009540633?accountid=14872

Blodgett, N., Blodgett, T., & Kardong-Edgren, S. (2018). A proposed model for simulation faculty workload determination. *Clinical Simulation in Nursing*, 18, 20-27. https://www.sciencedirect.com/science/article/pii/S1876139917302153

Bortolato-Major, C., Arhur, J., da Silva, A., de Fatima-Mantovani, M., Felix, J., & Boostel, R. (2018). Contributions of the simulation for undergraduate nursing students. *Journal of Nursing UFPE online*, *12*(6), 1751-1762. https://doi.org/10.5205/1981-8963-v12i6a230633p1751-1762-2018

Boswell, C., & Cannon, S. (2017). *Introduction to nursing research: Incorporating evidence-based practice.* Jones and Bartlett Learning.

Braden, S. (1998). *Evaluating nursing interventions: A theory driven approach*. Sage Publications.

Breymier, T., Rutherford-Hemming, T., Horsley, T., Atz, T., Smith, L., Badowski, D., & Connor, K. (2015). Substitution of clinical experience with simulation in prelicensure nursing programs: A national survey in the United States. *Clinical Simulation in Nursing*, *11*(11), 472-478. https://doi.org/10.1016/j.ecns.2015.09.004

Brody, R., Byham-Gray, L., Touger-Decker, R., Passannante, M., Puglia, P., & Maillet, J. (2014). What clinical activities do advanced-practice registered dietitian

nutritionists perform? Results of a delphi study. *Journal of the Academy of Nutrition and Dietetics, 114*(5), 718-733. https://pubmed.ncbi.nlm.nih.gov/24630681/

Bruning, R., Schraw, G., & Norby, M. (2011). *Cognitive psychology and instruction*. Pearson Education.

Buerhaus, P., Skinner, L., Auerbach, D., & Staiger, D. (2017). State of the registered nurse workforce as a new era of health reform emerges. *Nursing Economics*, 35(5), 229-237. http://healthworkforcestudies.com/news/state_of_the_nursing_workforce_paper.pdf

Bureau of Labor Statistics. (2018). Occupational outlook handbook: Registered nurses. https://www.bls.gov/ooh/healthcare/registered-nurses.htm#tab-6

Butts, J., & Rich, K. (2011). *Philosophies and theories for advanced nursing practice*. Jones and Bartlett Learning.

Cant, R., & Cooper, S. (2017). Use of simulation-based learning in undergraduate nurse education: An umbrella systematic review. *Nurse Education Today*, *49*, 63-71. https://www.sciencedirect.com/science/article/pii/S0260691716302751

Cantrell, M., Meyer, S., & Mosack, V. (2017). Effects of simulation on nursing student stress: An integrative review. *Journal of Nursing Education, 56*(3), 139-144. https://pubmed.ncbi.nlm.nih.gov/28263351/

Cheng, A., Grant, V., Robinson, T., Catena, H., Lachapelle, K., Kim, J., Adler, M., & Eppich, W. (2016). The promoting excellence and reflective learning in

simulation (pearls) approach to health care debriefing: A faculty development approach. *Clinical Simulation in Nursing, 12*, 419-428. https://doi.org/10.1016/j.ecns.2016.05.002

Chinnugounder, S., Hippe, D., Maximin, S., O'Malley, R., & Wang, C. (2015). Perceived barriers to the use of high-fidelity hands-on simulation training for contrast reaction management: Why programs are not using it. *Current Problems in Diagnostic Radiology, 44*, 474-478. https://pubmed.ncbi.nlm.nih.gov/25939562/

Clara, M. (2017). How instruction influences conceptual development: Vygotsky's theory revisited. *Educational Psychologist, 52*(1), 50-62. https://www.researchgate.net/publication/308274506

Colorado State Board of Nursing. (2020). Nursing. https://www.sos.state.co.us/CCR/GenerateRulePdf.do?ruleVersionId=5739&fileName=3%20CCR%20716-1

Crowe, S., Ewart, L., & Derman, S. (2018). The impact of simulation based education on nursing confidence, knowledge and patient outcomes on general medicine units. *Nurse Education in Practice*, 29, 70-75. https://www.sciencedirect.com/science/article/pii/S1471595317300203

Curl, E., Smith, S., Chisholm, L., McGee, L., & Das, K. (2016). Effectiveness of integrated simulation and clinical experiences compared to traditional clinical experiences for nursing students. *Nursing Education Perspectives, 37*(2), 72-77. https://journals.lww.com/neponline/fulltext/2016/03000/Effectiveness_of_Integrated_Simulation_and.4.aspx

Dalkey, N. C. (1969). The Delphi method: An experimental study of group opinion. *Rand.* https://www.rand.org/content/dam/rand/pubs/research_memoranda/2005/RM5888.pdf

Dalkey, N. C., & Rourke, D. L. (1971). Experimental assessment of Delphi procedures with group value judgments. *Rand*. http://www.rand.org/content/dam/rand/pubs/reports/2007/R612.pdf

Daniel, M. (2016). Study suggests medical errors now third leading cause of death in the U.S. *Johns Hopkins Medicine*. https://www.hopkinsmedicine.org/news/media/releases/study_suggests_medical_errors_now_third_leading_cause_of_death_in_the_us

Day, J., & Bobeva, M. (2005). A generic toolkit for the successful management of delphi studies. *The Electronic Journal of Business Research Methodology, 3*(2), 103-116. http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=F242D95963629B5592043EF967D712A4?doi=10.1.1.126.426&rep=rep1&type=pdf

Decker, S., Sportsman, S., Puetz, L., & Billings, L. (2008). The evolution of simulation and its contribution to competency. *The Journal of Continuing Education in Nursing*, *39*(2), 74-80. https://eds-a-ebscohost-com.ezp.waldenulibrary.org/eds/pdfviewer/pdfviewer?vid=1&sid=9c2a8617-63cf-48a1-8b40-609cd468916c%40sessionmgr4007

Department of Regulatory Agencies. (2020). Division of professions and occupations-

Board of nursing. https://www.sos.state.co.us/CCR/GenerateRulePdf.do?ruleVersionId=8403&fileName=3%20CCR%20716-1

de Villiers, M., de Villiers, P., & Kent, A. (2005). The Delphi technique in health sciences education research. *Medical Teacher, 27*(7), 639-643. https://www.researchgate.net/publication/7436195_The_Delphi_technique_in_health_science_education

DeVon, H., Block, M., Moyle-Wright, P., Ernst, D., Hayden, S., Lazzara, D., Savoy, S., & Kostas-Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship,* 39(2) 155-163. https://sigmapubs.onlinelibrary.wiley.com/doi/10.1111/j.1547-5069.2007.00161.x

Dewey, J. (1938). *Experience and Education*. Simon & Shuster.

Dieckmann, p., Manser, T., Wehner, T., & Rall, M. (2007). Reality and fiction cues in medical simulation: An interview study with anesthesiologists. *Journal of Cognitive Engineering and Decision Making, 1*(2), 148-168. https://journals.sagepub.com/doi/pdf/10.1518/155534307X232820

Donabedian, A. (1988). The quality of care: How can it be assessed? *Journal of the American Medical Association, 260*(12), 1743-1746. The edoi: 10.1001/jama.260.12.1743.

Donabedian, A. (2005). Evaluating the quality of medical care. *The Milbank Quarterly*, 83(400, 691-729. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2690293/

Doolen, J., Mariani, B., Atz, T., Horsley, T., O'Rourke, J., McAfee, K., & Cross, C.

(2016). High-fidelity simulation in undergraduate nursing education: A review of simulation reviews. *Clinical Simulation in Nursing, 12*(7), 290-302. https://doi.org/10.1016/j.ecns.2016.01.009

Driscoll, M. (2005). *Psychology for learning*. Pearson Education.

D'Souza, M., Venkatesaperumal, R., Radhakrishnan, J., & Balachandran, S. (2013). Engagement in clinical learning environment among nursing students: Role of nurse educators. *Open Journal of Nursing, 3*, 25-32. https://www.researchgate.net/publication/272879556_Engagement_in_clinical_learning_environment_among_nursing_students_Role_of_nurse_educators

Erlam, G., Smythe, L., & Wright-St Clair, V. (2017). Simulation is not a pedagogy. *Open Journal of Nursing, 7*, 779-787. https://core.ac.uk/download/pdf/85256272.pdf

Eyikara, E., & Baykara, G. (2017). The importance of simulation in nursing education. World Journal on Educational Technology: Current Issues, 9(1), 2-7. https://files.eric.ed.gov/fulltext/EJ1141174.pdf

Fritz, P., Gray, T., & Flanagan, B. (2007). Review of mannequin-based high-fidelity simulation in emergency medicine. *Emergency Medicine Australasia, 20*(1), 1-9. https://onlinelibrary.wiley.com/doi/full/10.1111/j.1742-6723.2007.01022.x

Gardner, G., Gardner, A., & O'Connell, J. (2014). Using the donabedian framework to examine the quality and safety of nursing service innovation. *Journal of Clinical Nursing, 23*, 145-155. https://onlinelibrary.wiley.com/doi/full/10.1111/jocn.12146

Gentry, S., Powers, E., Azim, N., & Maidrag, M. (2018). Effectiveness of a voluntary family befriending service: A mixed methods evaluation using the donabedian

model. *Public Health, 160,* 87-93. https://www.sciencedirect.com/science/article/pii/S0033350618301318

Godfrey, A., & Kenett, R. (2007). Joseph m. juran: A perspective on past contributions and future impact. *Quality and Reliability Engineering International, 23,* 653-663. https://onlinelibrary.wiley.com/doi/abs/10.1002/qre.861

Greenstein, L. (2012). *Assessing 21st century skills: A guide to evaluating mastery and authentic learning.* Sage Publications.

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods, 18*(1), 59-82. https://journals.sagepub.com/doi/pdf/10.1177/1525822X05279903

Habibi, A., Sarafrazi, A., & Izadyar, S. (2014). Delphi technique theoretical framework in qualitative research. *International Journal of Engineering and Science, 3*(4), 8-13. https://parsmodir.com/wp-content/uploads/2018/11/Delphi2014-En.pdf

Hadi, M., & Closs, S. (2016). Ensuring rigor and trustworthiness of qualitative research in clinical pharmacy. *International Journal of Clinical Pharmacy, 38*(3), 641-646). https://pubmed.ncbi.nlm.nih.gov/26666909/

Hall, H., & Roussell, L. (2014). *Evidenced-based practice: An integrative approach to research, administration, and practice.* Jones and Bartlett Learning.

Hallenbeck, V. (2012). Use of high-fidelity simulation for a staff education/development: A systematic review of literature. *Journal for Nurses in Staff Development, 28*(6), 260-269. https://journals.lww.com/jnsdonline/FullText/2012/11000/Use_of_High_Fidelity_

Simulation_for_Staff.15.aspx

Hallin, K., Backstrom, B., Haggstrom, M., & Kirstiansen, L. (2016). High-fidelity simulation: Assessment of student nurses' team achievements of clinical judgment. *Nurse Education in Practice,* 19, 12-18. http://dx.doi.org/10.1016/j.nepr.2016.03.010

Hansen, J., & Bratt, M. (2017). Effect of sequence of simulated and clinical practicum learning experiences on clinical competency of nursing students. *Nurse Educator, 42*(5), 231-235. https://epublications.marquette.edu/cgi/viewcontent.cgi?article=1465&context=nursing_fac

Harder, B. N., Ross, C., & Paul, P. (2013). Instructor comfort level in high-fidelity simulation. *Nurse Education Today*, 33(10), 1242-1245. https://doi.org/10.1016/j.nedt.2012.09.003

Hasson, F., & Keeney, S. (2011). Enhancing rigour in the delphi technique research. *Technology Forecasting & Social Change*, 78(9), 1695-1704. https://doi.org/10.1016/j.techfore.2011.04.005

Hasson, F., Keeney, S., & McKenna, H. (2000). Research guidelines for the delphi survey technique. *Journal of Advanced Nursing, 32*(40), 1008-115. https://doi.org/10.1046/j.1365-2648.2000.t01-1-01567.x

Havnes, A., Christiansen, B., Bjork, I., & Hessevaagbakke, E. (2016). Peer learning in higher education: Patterns of talk and interaction in skills center simulation. *Learning, Culture and Social Interaction*, 8, 75-87.

https://doi.org/10.1016/j.lcsi.2015.12.004

Hayden, J., Smiley, R., Alexander, M., Kardong-Edgren, S., & Jeffries, P. (2014). The NCSBN national state board of nursing study: A longitudinal, randomized, controlled study replacing clinical hours with simulation in prelicensure nursing education. *Journal of Nursing Regulation, 5*(2), S1-S64. https://doi.org/10.1016/S2155-8256(15)30062-4

Hetzel-Campbell, S., & Daley, K. (2018). *Simulation scenarios for nursing educators: Making it real.* (3rd ed). Springer Publishing Company.

Holle, C., Sundean, L., Dellefield, M., Wong, J., & Lopez, R. (2019). Examining the beliefs of skilled nursing facility directors of nursing regarding BSN completion and the impact of nurse leader education and patient outcomes. *The Journal of Nursing Administration,* 49(2), 57-60. https://oce-ovid-com.ezp.waldenulibrary.org/article/00005110-201902000-00002/HTML

Hollema, C. (2015). Faculty development in high-fidelity clinical simulation. *International Journal of Nursing Didactics, 5*(9), 1-5. http://dx.doi.org/10.15520/ijnd.2015.vol5.iss9.110.01-05

Hollenbach, P. (2016). Simulation and its effect on anxiety in Baccalaureate nursing students. *Nursing Education Perspectives, 37*(1), 45-47. https://journals.lww.com/neponline/Fulltext/2016/01000/Simulation_and_Its_Effect_on_Anxiety_in.11.aspx

Hosny, S., Johnston, M., Pucher, P., Erridge, S., & Darzi, A. (2017). Barriers to the implementation and uptake of simulation-based training programs in general

surgery: A multinational qualitative study. *Journal of Surgical Research*, 220, 419-426. https://doi.org/10.1016/j.jss.2017.07.020

Hovancsek, M., Jeffries, P., Escudero, E., Foulds, B., Husebo, S., Iwamoto, Y., Kelly, M., Petrini, M., & Wang, A. (2009). Creating simulation communities of practice: An international perspective. *Nursing Education Perspectives, 30*(2), 121-125. https://www.google.com/search?client=firefox-b-1-d&q=Creating+simulation+communities+of+practice%3A+An+international+perspective.+

Hsu, C., & Sandford, B. (2007). The Delphi technique: Making sense of consensus. *Practical Assessment, Research and Evaluation, 12*(10), 1-8. https://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1177&context=pare

Huffman, J., McNeil, G., Bismilla, Z., & Lai, A. (2016). Essentials of scenario building for simulation-based education. In V. Grant & A. Cheng (eds.), *Comprehensive healthcare simulation: Pediatrics* (pp. 19-29). Springer International Publishing.

Ibrahim, C., Costello, S., & Wilkinson, S. (2013). Development of a conceptual team integration performance index for alliance projects. *Construction Management and Economics, 31*(11), 1128-1143. http://dx.doi.org/10.1080/01446193.2013.854399

INACSL. (2018). About: President's welcome. https://member.inacsl.org/i4a/pages/index.cfm?pageid=3277.

INACSL Standards Committee. (2016a). INACSL standards of best practice: Simulation^{SM}: Simulation design. *Clinical Simulation in Nursing, 12*(S), S5-S12.

https://doi.org/10.1016/j.ecns.2016.09.005

INACSL Standards Committee. (2016b). INACSL standards of best practice: Simulation[SM]: Outcomes and objectives. *Clinical Simulation in Nursing, 12*(S), S13-S15. https://doi.org/10.1016/j.ecns.2016.09.006

INACSL Standards Committee. (2016c). INACSL standards of best practice: Simulation[SM]: Facilitation. *Clinical Simulation in Nursing, 12*(S), S16-S20. https://doi.org/10.1016/j.ecns.2016.09.007

INACSL Standards Committee. (2016d). INACSL standards of best practice: Simulation[SM]: Debriefing. *Clinical Simulation in Nursing, 12*(S), S21-25. http://dx.doi.org/10.1016/j.ecns.2016.09.008

INACSL Standards Committee. (2016e). INACSL standards of best practice: Simulation[SM]: Participant evaluation. *Clinical Simulation in Nursing, 12*(S), S26-29. https://www.nursingsimulation.org/article/S1876-1399(16)30130-X/pdf

INACSL Standards Committee. (2016f). INACSL standards of best practice: Simulation[SM]: Professional integrity. *Clinical Simulation in Nursing, 12*(S), S30-S33. https://www.nursingsimulation.org/article/S1876-1399(16)30131-1/pdf

INACSL Standards Committee. (2016g). INACSL standards of best practice: Simulation[SM]: Simulation-enhanced interprofessional education (Sim-IPE). *Clinical Simulation in Nursing, 12*(S), S34-S38. https://www.nursingsimulation.org/article/S1876-1399(16)30132-3/pdf

INACSL Standards Committee. (2016h). INACSL standards of best practice: Simulation[SM]: Operations. *Clinical Simulation in Nursing, 13*(S), 681-687.

https://www.nursingsimulation.org/action/showPdf?pii=S1876-1399%2817%2930294-3

INACSL Standards Committee. (2018a). History of the INACSL standards of best practice: Simulation[SM]. https://www.inacsl.org/inacsl-standards-of-best-practice-simulation/history-of-the-inacsl-standards-of-best-practice-simulation/

INACSL Standards Committee. (2018b). INACSL standards of best practice: Simulation[SM]. https://www.inacsl.org/inacsl-standards-of-best-practice-simulation/

Institute of Medicine. (1999). To err is human: Building a safer healthcare system. http://www.nationalacademies.org/hmd/~/media/Files/Report%20Files/1999/To-Err-is-Human/To%20Err%20is%20Human%201999%20%20report%20brief.pdf

International Nursing Association for Clinical Simulation and Learning (INACSL) Standards Committee. (2016). Standards of Best Practice Simulation. https://member.inacsl.org/i4a/pages/index.cfm?pageID=3407

Ironside, P., McNelis, A., & Ebright, P. (2014). Clinical education in nursing: Rethinking learning in practice settings. *Nursing Outlook*, *62*, 185-191. https://doi.org/10.1016/j.outlook.2013.12.004

Jacob, E., Duffield, C., & Jacob, D. (2017). A protocol for the development of a critical thinking assessment too for nurses using a delphi technique. *Journal of Advanced Nursing*, 73, 1982-1988. https://doi.org/10.1111/jan.13306

James, J. (2013). A new evidenced-based estimate of patient harms associated with hospital care. *Journal of Patient Safety*, *9*(3), 122-128.

https://journals.lww.com/journalpatientsafety/Fulltext/2013/09000/A_New,_Evidence_based_Estimate_of_Patient_Harms.2.aspx

Jarvill, M., Jenkins, S., Akman, O., Astroth, K., Pohl, C., & Jocobs, P. (2018). Effect of simulation on nursing students' medication administration competence. *Clinical Simulation in Nursing, 14*, 3-7, 3-7. https://www.nursingsimulation.org/article/S1876-1399(17)30100-7/fulltext

Jeffries, P. (2012). *Simulation in nursing education: From conceptualization to evaluation* (2nd ed). National League for Nursing.

Jeffries, P., Dreifuerst, K., Kardong-Edgren, S., & Hayden, J. (2015). Faculty development when initiating simulation programs: Lessons learned from the national survey. *Journal of Nursing Regulations, 5*(4), 17-23. https://www.ncsbn.org/11489.htm

Jones, B., & Potter, C. (2017). Applying best practice in simulation: Critical care response team training. *Clinical Simulation in Nursing, 13*(9), 442-445. https://doi.org/10.1016/j.ecns.2017.05.009

Jong-wook, L. (2004). World alliance for patient safety. *World Health Organization*. http://www.who.int/dg/lee/speeches/2004/alliancepatientsafety/en/

Kameg, K., Szpak, J., Cline, T., & Mcdermott, D. (2014). Utilization of standardized patients to decrease nursing student anxiety. *Clinical Simulation in Nursing, 10*(11), 567-573. https://doi.org/10.1016/j.ecns.2014.09.006

Keeney, S., Hasson, F., & McKenna, H. (2011). The *delphi technique in nursing and health research*. John Wiley and Sons.

Khalaila, R. (2014). Simulation in nursing education: An evaluation of students' outcomes at their first clinical practice combined with simulation. *Nurse Education Today, 34*(2), 252-258. https://doi.org/10.1016/j.nedt.2013.08.015

Kiernan, L. (2018). Evaluating competence and confidence using simulation technology. *Nursing*, *48*(10), 45-52. https://journals.lww.com/nursing/Fulltext/2018/10000/Evaluating_competence_and_confidence_using.12.aspx

Kim, S., & Kim, S. (2016). National culture and social desirability bias in measuring public service motivation. *Administration & Society, 48*(4), 444-476. https://doi.org/10.1177/0095399713498749

Kim, S., Park, C., & O'Rourke, J. (2017). Effectiveness of online simulation training: Measuring faculty knowledge, perceptions, and intention to adopt. *Nurse Education Today, 51*, 102-107. https://doi.org/10.1016/j.nedt.2016.12.022

King, M. (2018). Developing a high-fidelity simulation program in a nursing educational setting. *The Health Care Manager*, *37*(3), 235-249. https://europepmc.org/article/med/29985190

Kobayashi, H., Takemura, Y., & Kanda, K. (2011). Patient perception of nursing service quality: An applied model of donabedian's structure-process-outcome approach theory. *Scandinavian Journal of Caring Science, 25*, 419-425. https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1471-6712.2010.00836.x

Kolbe, M., Grande, B., & Spahn, D. (2015). Briefing and debriefing during simulation-based training and beyond: Content, structure, attitude, and setting. *Best Practice*

Research and Clinical Anaesthesiology, 29, 87-96. https://doi.org/10.1016/j.bpa.2015.01.002

Konieczny, L. (2016). Using high-fidelity simulation to increase nursing student knowledge in medication administration. *Teaching and Learning in Nursing, 11*(4), 199-203. https://doi.org/10.1016/j.teln.2016.08.003

Lai, L., Flower, A., Moore, M., & Lewith, G. (2015). Developing clinical practice guidelines for Chinese herbal treatment of polycystic ovary syndrome: A mixed methods modified delphi study. *Complementary Therapies in Medicine, 23*(3), 430-438. https://doi.org/10.1016/j.ctim.2015.03.003

Lapkin, S., Levett-Jones, T., Bellchambers, H., & Fernandez, R. (2010). Effectiveness of patient simulation manikins in teaching clinical reasoning skills to undergraduate nursing students: A systematic review. *Clinical Simulation in Nursing, 6*(6), e207-e222. https://doi.org/10.1016/j.ecns.2010.05.005

Lawson, E., & Yazdany, J. (2012). Healthcare quality in systemic lupus erythematosus: Using donabedian's conceptual framework to understand what we know. *International Journal of Clinical Rheumatology, 7*(1), 95-107. https://www.openaccessjournals.com/articles/healthcare-quality-in-systemic-lupus-erythematosus-using-donabedians-conceptual-framework-to-understand-what-we-know.pdf

Lee, A., Kelley, C., Alfes, C., Bennington, L., & Dolansky, M. (2017). High-fidelity patient simulation to evaluate student nurse patient safety competency. *International Nursing Association for Clinical Simulation and Learning, 13*, 628-

633. https://doi.org/10.1016/j.ecns.2017.08.006

Lee, J., & Oh, P. (2015). Effects of the use of high-fidelity human simulation on nursing education: A meta-analysis. *Journal of Nursing Education, 54*(9), 501-113.

Lubbers, J., & Rossman, C. (2017). Satisfaction and self-confidence with nursing clinical simulation: Novice learners, medium fidelity, and community settings. *Nurse Education Today, 48*, 140-144. https://doi.org/10.1016/j.nedt.2016.10.010

Macauley, K., Brudvig, T., Kadakia, M., & Bonneville, M. (2017). Systematic review of assessments that evaluate clinical decision making, clinical reasoning, and critical thinking changes after simulation. *Journal of Physical Therapy Education, 31*(4), 64-75. https://www.google.com/search?client=firefox-b-1-d&q=Systematic+review+of+assessments+that+evaluate+clinical+decision+making%2C+clinical+reasoning%2C+and+critical+thinking+changes+after+simulation.+

Macedonia, C., Gherman, R., & Satin, A. (2003). Simulation laboratories for training in obstetrics and gynecology. *The American College of Obstetricians and Gynecologists, 102*(2), 388-392. https://doi.org/10.1016/S0029-7844(03)00483-6

Makary, M., & Daniel, M. (2016). Medical error – the third leading cause of death in the US. *British Medical Journal* (Online), 353. http://www.tirf-labs.com/med%20error%20bmj.i2139.full.pdf

Mariani, B., & Doolen, J. (2016). Nursing simulation research: What are the perceived gaps? *Clinical Simulation in Nursing, 12*(1), 30-36. https://doi.org/10.1016/j.ecns.2015.11.004

Mariani, L. (1997). Teacher support and teacher challenge in promoting learner autonomy. *Perspectives: Journal of TESOL, Italy*, 23(2). http://www.learningpaths.org/papers/papersupport.htm

Marjoua, Y., & Bozic, K. (2012). Brief history of quality movement in US healthcare. *Current Reviews in Musculoskeletal Medicine, 5*(4), 265-273. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3702754/

McDermott, D., Sarasnick, J., & Timcheck, P. (2017). Using the INACSL simulation design standard for novice learners. *Clinical Simulation in Nursing, 13*(6), 249-253. https://doi.org/10.1016/j.ecns.2017.03.003

McGaghie, W., Issenberg, B., Cohen, J., & Wayne, D. (2011). Does simulation-based medical education with deliberate practice yield better results than traditional clinical education? A meta-analytic comparative review of the evidence. *Academic Medicine, 86*(6), 706-711. https://journals.lww.com/academicmedicine/fulltext/2011/06000/does_simulation_based_medical_education_with.18.aspx

Megel, M., Black, J., Clark, L., Carstens, P., Jenkins, L., Promes, J., Snelling, M., Zander, K., Brener, A., & Goodman, T. (2012). Effect of high-fidelity simulation on pediatric nursing students' anxiety. *Clinical Simulation in Nursing, 8*(9), e419-428. https://doi.org/10.1016/j.ecns.2011.03.006

Merlin, J., Young, S., Azari, S., Becker, W., Liebschutz, J., Pomeranz, J., Roy, p., Saini, S., Starrels, J., & Edelman, E. (2016). Management of problematic behaviors among individuals on long-term opioid therapy; Protocol for a delphi study. *BMJ*

Open. http://bmjopen.bmj.com/content/bmjopen/6/5/e011619.full.pdf

Mills, J., West, C., Langtree, T., Usher, K., Henry, R., Chamberlin-Salaun, J., & Mason, M. (2014). Putting it together: Unfolding case studies and high-fidelity simulation in the first-year of an undergraduate nursing curriculum. *Nurse Education in Practice, 14*, 12-17. https://doi.org/10.1016/j.nepr.2013.06.003

Mok, H., So, C., & Chung, J. (2016). Effectiveness of high-fidelity patient simulation in teaching clinical reasoning skills. *Clinical Simulation in Nursing, 12*, (10), 453-467. https://doi.org/10.1016/j.ecns.2016.06.003

Molloy, J. (2017). Reinforcing medication administration through student-directed simulation. *Teaching and Learning in Nursing, 12*(4), 307-308. https://doi.org/10.1016/j.teln.2017.04.001

Moran, V., Wunderlich, R., & Rubbelke, C. (2018). *Simulation: Best practice in nursing education.* Springer Publishing Company.

Morgan, P., Lam-McCulloch, J., Herold-McIlroy, J., & Tarshis, J. (2007). Simulation performance checklist generation using the Delphi technique. *Canadian Journal of Anesthesiology*, *54*(12), 992-997. https://pubmed.ncbi.nlm.nih.gov/18056208/

Moulton, M. C., Lucas, L., Monaghan, G., & Swoboda, S. M. (2017). A CLEAR approach for the novice simulation facilitator. *Teaching and Learning in Nursing, 12*, 136-141. https://doi.org/10.1016/j.teln.2016.11.003

Muckler, V. (2017). Exploring suspension of disbelief during simulation-based learning. *Clinical Simulation in Nursing*, *13*, (3-9). https://doi.org/10.1016/j.ecns.2016.09.004

Munck, A., Mayell, S., Winters, V., Shawcross, A., Derichs, N., Parad, R., Barben, J., & Southern, K. (2015). Cystic fibrosis screen positive, inconclusive diagnosis (CFSPID): A new designation and management recommendations for infants with an inconclusive diagnosis following newborn screening. *Journal of Cystic Fibrosis, 14*(6), 706-713. https://doi.org/10.1016/j.jcf.2015.01.001

Naik, V., & Brien, S. (2013). Review article: Simulation: A means to address and improve patient safety. *Canadian Journal of Anesthesia, 60*, 192-200. https://www.simulationinformation.com/about/background/

National Council of State Boards of Nursing (NCSBN). (2019). About NCSBN. https://www.ncsbn.org/about.htm

National League for Nursing. (2003). Position statement: Innovation in nursing education: A call to reform. http://www.nln.org/docs/default-source/about/archived-position-statements/innovation-in-nursing-education-a-call-to-reform-pdf.pdf?sfvrsn=4

National League for Nursing. (2018). Biennial survey of schools of nursing. http://www.nln.org/newsroom/nursing-education-statistics/biennial-survey-of-schools-of-nursing-academic-year-2017-2018

NCSBN. (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. https://doi.org/10.1016/S2155-8256(15)30062-4

NCSBN. (2020). National nursing workforce study.

https://www.ncsbn.org/workforce.htm

Nehring, W., Wexler, T., Huges, F., & Greenwell, A. (2013). Faculty development for the use of high-fidelity patient simulation: A systematic review. *International Journal of Health Sciences Education, 1*(1), 1-34. https://dc.etsu.edu/cgi/viewcontent.cgi?article=1004&context=ijhse

Neuhauser, M. (2004). Avedis donabedian: Father of quality assurance and poet. *Quality and Safety in Health Care, 13*(6), 472-473. http://dx.doi.org/10.1136/qshc.2004.012591

Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidenced Based Nursing, 18*(2), 34-35. https://ebn.bmj.com/content/ebnurs/18/2/34.full.pdf

Noone, T., & Seery, A. (2018). Critical thinking dispositions in undergraduate nursing students: A case study approach. *Nurse Education Today, 68*, 203-207. https://doi.org/10.1016/j.nedt.2018.06.014

Nordlof, J. (2014). Vygotsky, scaffolding, and role of theory in writing center work. The *Writing Center Journal (34)*1, 45-64. https://www.jstor.org/stable/43444147

Nordquist, J., & Sundberg, K. (2015). Institutional needs and faculty development for simulation. *Best Practice & Research Clinical Anaesthesiology, 29*, 13-20. https://www.sciencedirect.com/science/article/pii/S1521689615000075

O'Brien, D., Knowlton, M., & Whichello, R. (2018). Attention healthcare leaders: Literature review deems baccalaureate nurses improve patient outcomes. *Nurse Education Perspectives*, 39(4), E2-E4.

https://pubmed.ncbi.nlm.nih.gov/29596105/

Oermann, M. (2015). *Teaching in nursing and role of the educator: The complete guide to best practice in teaching, evaluation, and curriculum development.* Springer Publishing Company.

Oermann, M., & Gaberson, K. (2014). *Evaluating and testing in nursing education.* Springer Publishing Company.

O'Leary, J., Nash, R., & Lewis, P. (2015). High fidelity simulation as an educational tool in paediatiatric intensive care unit: A systematic review. *Nurse Education Today,* 35(10), e8-e12. https://pubmed.ncbi.nlm.nih.gov/26260524/

Patton, M. (2002). *Qualitative research & evaluation methods. (3rd ed.).* Sage Publications.

Patton, M. (2015). *Qualitative Research & Evaluation Methods*. Sage Publications.

Peterson, D., Watts, P., Epps, C., & White, M. (2017). Simulation Faculty Development: A tiered approach. Society for Simulation in Healthcare, 12(4), https://journals.lww.com/simulationinhealthcare/fulltext/2017/08000/Simulation_Faculty_Development__A_Tiered_Approach.7.aspx

Phillips, K., Mathew, L., Aktan, N., & Catano, B. (2017). Clinical education and student satisfaction: An integrative review. *International Journal of Nursing Sciences, 4*(2), 205-213. https://doi.org/10.1016/j.ijnss.2017.03.004

Plemmons, C., Clark, M., & Feng, C. (2018). Comparing student clinical self-efficacy and team process outcomes for a DEU, blended, and traditional clinical setting: A quasi experimental research study. *Nurse Education Today, 62*, 107-111.

https://doi.org/10.1016/j.nedt.2017.12.029

Pollock, C., & Biles, J. (2016). Discovering the lived experience of students learning in immersive simulation. *Clinical Simulation in Nursing, 12*(8), 313-319. https://doi.org/10.1016/j.ecns.2016.03.002

Poore, J., Cullen, D., & Schaar, G. (2014). Simulation-based interprofessional education guided by kolb's experiential learning theory. *Clinical Simulation in Nursing,* 10(5), e241-e247. https://doi.org/10.1016/j.ecns.2014.01.004

Potter, P., Perry, A., Stockert, P., & Hall, A. (2017). *Fundamentals of nursing (9th ed.).* Elsevier.

Quality and Safety Education for Nurses. (2018a). Project overview: The evolution of the quality and safety education for nurses (QSEN) initiative. http://qsen.org/about-qsen/project-overview/

Quality and Safety Education for Nurses. (2018b). QSEN competencies. http://qsen.org/competencies/pre-licensure-ksas/

Qualtrics. (2018). Qualtrics. https://www.qualtrics.com/

Ranji, S. (2017). Measuring and responding to deaths from medical error. Agency for Healthcare Research and Quality. https://psnet.ahrq.gov/perspective/measuring-and-responding-deaths-medical-errors

Reeves, P., Borgman, M., Caldwell, N., Patel, L., Aden, J., Duggan, J., Serio-Melvin, M., & Mann-Salinas, E. (2018). Bridging burn care education with modern technology, an integration with high-fidelity human patient simulation. *Burns,* 44(5), 1106-1129. https://doi.org/10.1016/j.burns.2018.02.007

Reimer-Kirkham, S., Hoe-Harwood, C., Terblanche, L., Van Hofwegen, L., & Sawatzky, R. (2007). The use of clinical placements in nursing education: A national survey. Unpublished manuscript, Department of Nursing, Trinity Western University, Langley, BC. https://www.twu.ca/sites/default/files/icp-report.pdf

Richardson, K. (2018). The impact of retiring baby boomers on the nursing shortage. *The Journal of Global Health Care Systems, 1*(1), 1-16. https://www.semanticscholar.org/paper/The-Impact-of-Retiring-Baby-Boomers-on-Nursing-Richardson/cda7360ab49ab5850585454c5dcf22eff5b906bc

Rosen, K. (2008). The history of medical simulation. *Journal of Critical Care, 23,* 157-166. https://doi.org/10.1016/j.jcrc.2007.12.004

Ross, J. (2012). Simulation and psychomotor skill acquisition: A review of literature. *Clinical Simulation in Nursing, 8*(9), e429-e435. https://www.nursingsimulation.org/article/S1876-1399(11)00052-1/fulltext

Ross, J., & Carney, H. (2017). The effect of formative capstone simulation scenarios on novice nursing students' anxiety and self-confidence related to initial clinical practicum. *Clinical Simulation in Nursing*, *13*(3), 116-120. https://doi.org/10.1016/j.ecns.2016.11.001

Rutherford-Hemming, T., Lioce, L., & Durham, C. F. (2015). Implementing the standards of best practice for simulation. *Nurse Educator, 40*(2), 96-100. https://doi.10.1097/nne.0000000000000115

Ryall, T., Judd, B., & Gordon, C. (2016). Simulation-based assessments in health professional education: A systematic review. *Journal of Multidisciplinary*

Healthcare, *9*, 69-82. https://doi.10.2147/JMDH.S92695

Ryan, C., Roy, S., O'Neill, B., Simes, T., Lapkin, S., & Riva, E. (2017). Designing simulation learning experiences to reduce technological burden on nursing academics: A discussion paper. *Australian Journal of Advanced Nursing*, *35*(2), 6-11. https://ro.uow.edu.au/smhpapers/5157/

Sampaio, F., Sequeira, C., & Canut, T. (2017). Content validity of a psychotherapeutic intervention model in nursing: A modified e-delphi study. *Archives of Psychiatric Nursing*, *31*, 147-156. https://doi.org/10.1016/j.apnu.2016.09.007

Sanders, D., & Welk, D. (2005). Strategies to scaffold student learning: Applying vygotsky's zone of proximal development. *Nurse Educator*, *30*(5), 203-207. https://journals.lww.com/nurseeducatoronline/Abstract/2005/09000/Strategies_to_Scaffold_Student_Learning__Applying.7.aspx

Sanford, P. (2010). Simulation in nursing education: A review of the research. *The Qualitative Report*, *15*(4), 1006-1011. https://www.google.com/search?client=firefox-b-1-d&q=Simulation+in+nursing+education%3A+A+review+of+the+research.+The+Qualitative+Report%2C+

Sebold, L. F., Boell, J. E., Girondi, J. B., & dos Santos, J. (2017). Clinical simulation: development of relational competence and practice skill in nursing. *Journal of Nursing On Line*, *11*(10), 4184-4190. https://doi.org/10.5205/reuol.10712-95194-3-SM.1110sup201723

Sekayi, D., & Kennedy, A. (2017). Qualitative delphi method: A four round process with

a worked example. *The Qualitative Report, 22*(10), 2755-2763. https://nsuworks.nova.edu/tqr/vol22/iss10/15

Sevdalis, N., Nestel, D., Kardong-Edgren, S., & Gaba, D. M. (2016). A joint leap into a future of high-quality simulation research: Standardizing the reporting of simulation science. *Advances in Simulation*, 1(24). https://advancesinsimulation.biomedcentral.com/articles/10.1186/s41077-016-0026-x

Shariff, N. (2015). Utilizing the delphi survey approach: A review. *Journal of Nursing Care, 4*(3) 1-6. https://ecommons.aku.edu/cgi/viewcontent.cgi?article=1037&context=eastafrica_fhs_sonam

Shearer, J. (2016). Anxiety, nursing students, and simulation: State of the science. *Journal of Nursing Education, 55*(10), 551-554. https://doi.org/10.3928/01484834-20160914-02

Shepherd, I., & Burton, T. (2019). A conceptual framework for simulation in healthcare education: The need. *Nurse Education Today*, *76*, 21-25. https://doi.org/10.1016/j.nedt.2019.01.033

Shin, H., Ma, H., Park, J., Sun Ji, e., & Hee Kim, D. (2015). The effect of simulation courseware on critical thinking in undergraduate nursing students: Multi-site pre-post study. *Nurse Education Today*, *35*(4), 537-542. https://doi.org/10.1016/j.nedt.2014.12.004

Shinnick, M., & Woo, M. (2013). The effect of human patient simulation on critical

thinking and its predictors in prelicensure nursing students. *Nurse Education Today*, *33*(9), 1062-1067. https://doi.org/10.1016/j.nedt.2012.04.004

Sidani, S., Doran, D., & Mitchell, P. (2004). A theory-driven approach to evaluating quality of nursing care. *Journal of Nursing Scholarship, 36*(1), 60-64. https://doi.org/10.1111/j.1547-5069.2004.04014.x

Simes, T., Roy, S., O'Neill, B., Ryan, C., Lapkin, S., & Curtis, E. (2018). Moving nurse educators towards transcendence in simulation comfort. *Nurse Education Practice*, 28, 218-223. https://doi.org/10.1016/j.nepr.2017.10.024

Sittner, B., Aebersold, M., Paige, J., Graham, L., Schram, A., Decker, S., & Lioce, L. (2015). INACSL standards of best practice for simulation: Past, present, and future. *Nursing Education Perspectives, 36*(5), 294-298. https://www.google.com/search?q=INACSL+standards+of+best+practice+for+simulation%3A+Past%2C+present%2C+and+future.+Nursing+Education+Perspectives%2C+36(5)%2C+294-298.&rlz=1C1GCEA_enUS821US821&oq=INACSL+standards+of+best+practice+for+simulation%3A+Past%2C+present%2C+and+future.+Nursing+Education+Perspectives%2C+36(5)%2C+294-298.+&aqs=chrome..69i57.1388j0j15&sourceid=chrome&ie=UTF-8

Skulmoski, G., Hartman, F., & Krahn, J. (2007). The delphi method for graduate research. *Journal of Technology Education*, *6*, 1-21. https://www.learntechlib.org/p/111405/

Smith, R., Gray, J., Raymond, J., Catling-Paull, C., & Homer, C. (2012). Simulated

learning activities: Improving midwifery students' understanding of reflective practice. *Clinical Simulation in Nursing, 8*(9), e451-457. https://www.nursingsimulation.org/article/S1876-1399(11)00055-7/fulltext

Snavely, T. (2016). A brief economic analysis of the looming nursing shortage in the United States. *Nursing Economic$, 34*(2), 98-101. https://pubmed.ncbi.nlm.nih.gov/27265953/

Sole, M., Guimond, M., & Amidei, C. (2013). An analysis of simulation resources, needs, and plans in florida. *Clinical Simulation in Nursing, 9*(7), e265-e271. https://doi.org/10.1016/j.ecns.2012.03.003

Sommers, C. (2018). Measurement of critical thinking skills, clinical reasoning, and clinical judgement in culturally diverse nursing students – A literature review. *Nurse Education in Practice, 30*, 91-100. https://doi.org/10.1016/j.nepr.2018.04.002

Stewart, J. (2001). Is the delphi a qualitative method? *Medical Education, 35*(10), 922-923. https://onlinelibrary.wiley.com/doi/10.1111/j.1365-2923.2001.01045.x

Sujatta, S., & Oberarztin, L. (2015). First of all: Do no harm! Use of simulation for the training of regional anesthesia techniques: Which skills can be trained without the patient as a substitute for a mannequin. *Best Practice in Research and Anaesthesiology, 29*(1), 69-80. https://doi.org/10.1016/j.bpa.2015.02.006

Suling, L., & Kenwood, K. (2006). A national survey on elements of nursing education. National Council of State Boards of Nursing. https://www.ncsbn.org/Vol_24_web.pdf

Sund, T., Iwarsson, S., & Brandt, A. (2015). The relationship between the key elements of donabedian's conceptual model within the field of assistive technology. *Assistive Technology, 217,* 485-490. http://doi:10.3233/978-1-61499-566-1-485

Sundler, A., Pettersson, A., & Berglund, M. (2015). Undergraduate nursing students' experiences when examining nursing skills in clinical simulation laboratories with high-fidelity patient simulators: A phenomenological research study. *Nurse Education Today, 35*(12), 1257-1261. https://doi.org/10.1016/j.nedt.2015.04.008

Switzer, J. (2004). Teaching computer-mediated visual communication to a large section: A constructivist approach. *Innovative Higher Education, 29*(2), 89-101. https://link.springer.com/article/10.1023/B:IHIE.0000048792.40295.08

Taylor, C., Angel, L., Nyanga, L., & Dickson, C. (2016). The process and challenges of obtaining and sustaining clinical placements for nursing and allied health. *Journal of Clinical Nursing, 26,* 3099-3110. https://onlinelibrary-wiley-com.ezp.waldenulibrary.org/doi/full/10.1111/jocn.13658

Thangaratinam, S., & Redman, C. (2005). The delphi technique. *Obstetrician and Gynecologist, 7,* 120-125. https://obgyn.onlinelibrary.wiley.com/doi/pdf/10.1576/toag.7.2.120.27071

Tiffen, J., Corbridge, S., & Slimmer, L. (2014). Enhancing clinical decision making: Development of a contiguous definition and conceptual framework. *Journal of Professional Nursing*, 30(5), 399-405. https://www.sciencedirect.com/science/article/pii/S8755722314000349

Tutticci, N., Coyer, F., Lewis, P., & Ryan, m. (2016). High-fidelity simulation:

Descriptive analysis of student learning styles. *Clinical Simulation in Nursing*, 12(11), 511-521. https://doi.org/10.1016/j.ecns.2016.07.008

Upenieks, V., & Abelew, S. (2006). The magnet designation process: A qualitative approach using donabedian's conceptual framework. (2006). *The Health Care Manager*, *25*(3), 243-253. https://doi.org/10.1097/00126450-200607000-00009

U. S. Department of Health and Human Services. (2018). About ahrq. https://www.ahrq.gov/cpi/about/index.html

Utley, R. (2011). *Theory and research for academic nurse educators: Application to practice.* Jones and Bartlett Publishers.

van-Vuuren, V., Seekoe, E., & Goon, D. (2018). The perceptions of nurse educators regarding the use of high-fidelity simulation in nursing education. *Africa Journal of Nursing and Midwifery*, *20*(1), 1-20. https://doi.org/10.25159/2520-5293/1685

Von Colln-Appling, C., & Giuliano, D. (2017). A concept analysis of critical thinking: A guide for nurse educators. *Nurse Education Today, 49*, 106-109. https://doi.org/10.1016/j.nedt.2016.11.007

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Walden University Catalog. (2019). Institutional review board (IRB): Research ethics. In 2019-2020 Walden University Catalog. https://academicguides.waldenu.edu/research-center/research-ethics/review-process

Walden University Catalog. (2021). Social change: Walden mission and vision. In 2020-

2021 Walden University catalog. https://www.waldenu.edu/why-walden/social-change#mission

Wa-Mbaleka, S. (2019). The researcher as an instrument. In: A. Costa, L. Reis, & A. Moreira (Eds.). *Computer supported qualitative research.* (pp. 33-41). Springer.

Ward-Smith, P. (2008). The effect of simulation learning as a quality initiative. *Urologic Nursing*, *28*(6), 471-473. https://www.suna.org/download/members/unjarticles/2008/08dec/471.pdf

Wester, K., & Borders, L. (2014). Research competencies in counseling: A delphi study. *Journal of Counseling & Development*, *9*(4), 447-458. https://onlinelibrary.wiley.com/doi/full/10.1002/j.1556-6676.2014.00171.x

White, M. (2017). Keep calm and simulate on: Faculty experiences and insights into implementing best practice in simulation. *Teaching and Learning in Nursing*, *12*(1), 43-49. https://doi.org/10.1016/j.teln.2016.10.003

Wild, C., & Torgersen, H. (2000). The Delphi method: A useful tool for the allied health researcher. *British Journal of Therapy and Rehabilitation*, *3*(12), 677-680. https://www.researchgate.net/publication/235780590_The_Delphi_method_A_useful_tool_for_the_allied_health_researcher

Wilson, K., & Devereux, L. (2014). Scaffolding theory: High challenge, high support in academic language and learning (all) contexts. *Journal of Academic Language & Learning*, *8*(3), A91-A100. https://www.creatingrounds.com/uploads/9/6/2/4/96240662/scaffolding_theory.pdf

Woda, A., Hansen, J., Paquette, M., & Topp, R. (2017). The impact of simulation sequencing on perceived clinical decision making. *Nurse Education in Practice, 26*, 33-38. https://doi.org/10.1016/j.nepr.2017.06.008

Wright, V. (2018). Vygotsky and a global perspective on scaffolding in learning mathematics. In J. Zajda (Eds.), *Globalisation and education reforms: Globalosation, comparative education and policy research* (pp. 123-135). Springer.

Yousuf, M. (2007). Using expert opinions through delphi technique. *Practical Assessment, Research, & Evaluation, 12*(4), 1-8. https://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1171&context=pare

Zimmerman, D., & House, P. (2016). Medication safety: Simulation education for new RNs promises an excellent return on investment. *Nursing Economic$, 34*(1), 49-51. https://scholar.google.com/scholar?q=Medication+safety:+Simulation+education+for+new+RNs+promises+an+excellent+return+on+investment.+Nursing+Economic%24,&hl=en&as_sdt=0&as_vis=1&oi=scholart

Appendix A: Delphi Instrument Statements

		1	2	3	4
	Simulation in Nursing Education				
1.	Simulation is gaining popularity as an innovative teaching strategy in nursing education (Aldridge, 2016; Leigh et al., 2016).				
	Additional Statement:				
2.	The National Council of State Boards of Nursing supports the use of simulation in nursing education (Hayden et al., 2014; Rutherford-Hemming et al., 2016).				
	Additional Statement:				
3.	Simulated experiences are a viable option to traditional clinical experiences (Curl et al., 2016).				
	Additional Statement:				
4.	It is acceptable to substitute up to 50% of traditional clinical experiences with simulated experiences (Hayden et al., 2014; Rutherford-Hemming et al., 2016).				
	Additional Statement:				
5.	The availability of traditional clinical sites for nursing students is a motivating factor in the implementation of simulation into nursing education (Blodgett et al., 2018; Curl et al., 2016; Shearer, 2017).				
	Additional Statement:				
6.	Advances in technology have enhanced the simulation experience for student nurses (Hetzel-Campbell, 2018; Jeffries, 2012; Moran et al., 2018; Ryall et al., 2016).				
	Additional Statement:				
7.	Pre-simulation assignments are important to the overall experience in simulation (Curl et al., 2016).				
	Additional Statement:				
8.	Participation in simulation prior to clinical rotations increases patient safety (Kiernan, 2018).				
	Additional Statement:				

9.	Participating in simulation increases standardized test scores (Cant & Cooper, 2017).				
	Additional Statement				
10.	Time constraint is a barrier in simulation lab (Simes et al., 2018).				
	Additional Statement				
11.	A barrier to the implementation of simulation is a lack of funding (Hosney et al.,2017; Sole et al., 2013).				
	Additional Statement				
	Traditional Clinical Experiences				
12.	There is a lack of traditional clinical sites for nursing students (Blodgett et al., 2018; Curl et al., 2016; Shearer, 2017).				
	Additional Statement:				
13.	Traditional clinical sites are challenged by increases in nursing school enrollment (American Association of Colleges of Nursing, 2018; Jeffries et al., 2015; National League for Nursing, 2014; Taylor et al., 2016; Reimer-Kirkham et al., 2007).				
	Additional Statement:				
14.	There is a decline in opportunities for student nurses to administer medications in the traditional clinical setting (Molloy, 2017).				
	Additional Statement:				
15.	Shortened hospital stays impact traditional clinical experiences for student nurses (AlHaqwi & Taha, 2015; Ironside et al., 2014; Molloy, 2017).				
	Additional Statement:				
16.	The controlled environment of simulation provides an opportunity for evaluating a nursing student's skill acquisition (Leigh, 2016).				
	Additional Statement:				

	Registered Nurses				
17.	There is a shortage of registered nurses in the United States (American Association of Colleges of Nursing, 2008; Buerhaus et al., 2017).				
	Additional Statement:				
18.	A shortage of registered nurses in the United States has a negative influence on nursing school enrollment (Auerbach et al., 2017; Jeffries et al., 2015; Taylor et al., 2016; Reimer-Kirkham et al., 2007).				
	Additional Statement:				
19.	By the year 2024, there will be 1.05 million open positions for registered nurses (Snavely, 2016).				
	Additional Statement				
20.	The projected shortage of RNs will impact patient quality of care (American Association of Colleges of Nursing, 2008; Buerhaus et al., 2017)				
	Additional Statement				
21.	The projected shortage of RNs will impact patient safety (American Association of Colleges of Nursing, 2008; Buerhaus et al., 2017)				
	Additional Statement				
22.	The projected shortage of RNs will hamper access to the services RNs provide (American Association of Colleges of Nursing, 2008; Buerhaus et al., 2017).				
	Additional Statement				
23.	The increased need for RNs in the United States directly impacts schools of nursing (Auerbach, Buerhaus, & Staiger, 2017)				
	Additional Statement				
24.	To fulfill current and projected needs for RNs in the United States, schools of nursing have increased enrollment in schools of nursing (Auerbach, Buerhaus, & Staiger, 2017).				
	Additional Statement				

	Nursing Faculty				
25	There is a shortage of qualified nursing faculty in the United States (Cantrell et al., 2017; Phillips et al., 2017).				
	Additional Statement:				
26.	A ratio of ten nursing students to one faculty is commonplace in a traditional clinical setting (Suling & Kenwood, 2006).				
	Additional Statement:				
27.	One nursing faculty to ten nursing students in the clinical setting is sufficient to guide student learning (Colorado State Board of Nursing, 2019).				
	Additional Statement:				
28.	A ratio of ten nursing students to one faculty in the clinical setting negatively affects student learning (Arkan et al., 2018).				
	Additional Statement:				
29.	It is customary for nursing faculty to design simulated experiences (Hetzel-Campbell & Daley, 2018).				
	Additional Statement:				
30.	Nursing faculty's comfort with simulation is an important factor in the facilitation of simulated experiences (Simes et al., 2018).				
	Additional Statement:				
31.	A barrier to the implementation of simulation is a lack of trained simulation faculty (Harder et al., 2013; Jeffries et al., 2015; Nordquist & Sunberg, 2015; Simes et al., 2016).				
	Additional Statement:				
32.	Faculty training in simulation leads to improved student learning outcomes (Harder et al., 2013).				
	Additional Statement:				
33.	It is customary for nursing faculty to facilitate simulated experiences (Hetzel-Campbell & Daley, 2018).				
	Additional Statement:				
34.	It is customary for nursing faculty to evaluate simulated experiences (Hetzel-Campbell & Daley, 2018).				

	Additional Statement:				
35.	Nursing faculty's comfort with technology is an important factor in the facilitation of simulated experiences (Al-Ghareeb & Cooper, 2016).				
	Additional Statement:				
36.	Faculty development in simulation is vital to the success of simulated experiences (Hetzel-Campbell & Daley, 2018).				
	Additional Statement:				
	Nursing Students				
37.	Simulated experiences provide greater opportunities for student nurses to practice critical thinking skills than traditional clinical experiences (Ironside et al., 2014).				
	Additional Statement:				
38.	The simulation laboratory is a safe environment for nursing students to practice nursing skills (Lee et al., 2017).				
	Additional Statement:				
39.	Psychomotor skills learned during simulated experiences can be transferred directly to the clinical setting (Hallin et al., 2016; Kiernan, 2018; Oermann & Gaberson, 2014; Sujatta & Oberarztin, 2015).				
	Additional Statement:				
40.	Nursing students can develop effective communication skills in the simulation lab (Berragan, 2014).				
	Additional Statement:				
41.	Simulated experiences prior to clinical experiences increases a student nurse's confidence (Khalaila, 2014; Lubbers & Rossman, 2017).				
	Additional Statement:				
42.	Participating in simulation increases a student nurse's ability to think critically (Adib-Hajbaghery & Sharifi, 2017; Shin et al., 2015; Sommers (2018).				
	Additional Statement:				

	The Standards of Best Practice: Simulation				
43.	*The* INACSL Standards of Best Practice: Simulation are widely recognized in nursing education.				
	Additional Statement:				
44.	*The* INACSL Standards of Best Practice: Simulation are widely utilized in nursing education.				
	Additional Statement:				
45.	*The* INACSL Standards of Best Practice: Simulation define quality in simulation science (Aebersold et al., 2018; Alexander, 2015; Beroz, 2017; INACSL Standards Committee, 2016).				
	Additional Statement:				
46.	Simulated experiences must be designed with a specific purpose in mind (INACSL Standards Committee, 2016a).				
	Additional Statement:				
47.	The INACSL Standards of Best Practice: Simulation provide guidelines for the creation of simulated experiences (INACSL, 2018a).				
	Additional Statement:				
48.	The INACSL Standards of Best Practice: Simulation provide guidelines for the development of objectives for a simulated experience (INACSL, 2018b).				
	Additional Statement:				
49.	The INACSL Standards of Best Practice: Simulation provide guidelines for faculty development in simulation (INACSL, 2016c).				
	Additional Statement:				
50.	The INACSL Standards of Best Practice: Simulation provide guidelines for debriefing after simulated experiences (INACSL, 2016d).				
	Additional Statement:				

51.	The INACSL Standards of Best Practice: Simulation provide guidelines for the evaluation of simulated experiences (INACSL, 2016e).				
	Additional Statement:				
52.	The INACSL Standards of Best Practice: Simulation address professional standards in simulation (INACSL, 2016f).				
	Additional Statement:				
53.	The INACSL Standards of Best Practice: Simulation address ethical standards in simulation (INACSL, 2016f).				
	Additional Statement:				
54.	The INACSL Standards of Best Practice: Simulation provide guidelines for developing an interprofessional approach to simulated experiences (INACSL, 2016g).				
	Additional Statement:				
55.	The INACSL Standards of Best Practice: Simulation provide guidelines for developing a technology infrastructure to support simulation operations (INACSL, 2016h).				
	Additional Statement:				
56.	The INACSL Standards of Best Practice: Simulation *provide a strategic plan that outlines the resources needed to maintain a simulation lab (*(INACSL, 2016h).				
	Additional Statement:				
	Standard 1: Simulation Design				
57.	Simulation facilitators routinely conduct a needs assessment to provide evidence of the need for simulation (INACSL Standards Committee, 2016a).				
	Additional Statement:				
58.	Simulation facilitators should use a theory to guide simulated experience (INACSL Standards Committee, 2016a).				
	Additional Statement:				
59.	Simulations facilitators use a conceptual framework to guide simulated experiences (INACSL Standards Committee, 2016a).				
	Additional Statement:				

60.	Simulation facilitators combine various methods of fidelity to create a presence of realism in the simulated experience (INACSL Standards Committee, 2016a).				
	Additional Statement:				
61.	Physical fidelity is realized when the physical environment of the simulation lab resembles the environment that the actual scenario would occur (INACSL Standards Committee, 2016a).				
	Additional Statement:				
62.	Conceptual fidelity is realized when all elements of the scenario are related and align in a way that make sense to the student (INACSL Standards Committee, 2016a).				
	Additional Statement:				
63.	Psychological fidelity is realized by adding emotional language to the scenario (INACSL Standards Committee, 2016a).				
	Additional Statement:				
64.	To increase repeatability, simulation facilitators use a detailed script to standardize the simulated experience (INACSL Standards Committee, 2016a).				
	Additional Statement:				
65.	To increase reliability, simulation facilitators use a detailed script to standardize the simulated experience (INACSL Standards Committee, 2016a).				
	Additional Statement:				
66.	Simulation facilitators consistently provide prebriefing immediately before simulated experiences (INACSL Standards Committee, 2016a).				
	Additional Statement:				
	Standard 2: Outcomes and Objectives				
67.	Simulation facilitators determine the expected outcome of the simulated experience before developing specific objectives (INACSL, 2018b).				
	Additional Statement:				

68.	Simulation facilitators consistently incorporate measurable goals in each simulated experience (INACSL, 2018b).				
	Additional Statement:				
69.	Simulation facilitators are careful to incorporate the cognitive domain of learning into simulated experiences (INACSL, 2018b).				
	Additional Statement:				
70.	Simulation faculty are careful to incorporate the affective domain of learning into simulated experiences (INACSL, 2018b).				
	Additional Statement:				
71.	Simulation faculty are careful to incorporate the psychomotor domain of learning into simulated experiences (INACSL, 2018b).				
	Additional Statement:				
	Standard 3: Facilitation				
72.	Simulation labs employ nursing faculty who are specifically trained in simulation pedagogy (INACSL, 2018c).				
	Additional Statement:				
73.	Facilitators are responsible for assigning pre-sim activities for participants (INACSL, 2018c).				
	Additional Statement:				
74.	A positive facilitation method is the delivery of cues during the simulation experience (INACSL, 2018c).				
	Additional Statement:				
75.	Facilitators give clues to direct participants toward information critical to the context of the scenario (INACSL, 2018c).				
	Additional Statement:				
76.	Faculty facilitating simulated experiences use predetermined cues to engage student nurses in critical thinking (INACSL, 2018c).				
	Additional Statement:				

77.	Predetermined cues are integrated into the simulation script based on predicted actions by participants ((INACSL, 2018c).				
	Additional Statement:				
78.	Facilitators routinely use unplanned cues to aid students in meeting the expected outcomes of the simulation (INACSL, 2018c).				
	Additional Statement:				
79.	Facilitators use unplanned clues to redirect participants (INACSL, 2018c).				
	Additional Statement:				
80.	Participants often need redirection because of unanticipated actions (INACSL, 2018c).				
	Additional Statement:				
81.	In order to preserve the integrity of the simulated experience, facilitators use caution when delivering cues (INACSL, 2018c).				
	Additional Statement:				
82.	In order to preserve the fidelity of the simulated experience, facilitators use caution when delivering cues (INACSL, 2018c).				
	Additional Statement:				
83.	To standardize simulation experiences, facilitators deliver cues in a consistent manner to cohorts of participants (INACSL, 2018c).				
	Additional Statement:				
	Standard 4: Debriefing				
84.	Debriefing is an important element in a simulated experience (INACSL Standards Committee, 2016d).				
	Additional Statement:				
85.	Nursing faculty facilitating simulated experiences are competent in the debriefing process (INACSL Standards Committee, 2016d).				
	Additional Statement:				

86.	Nursing faculty routinely use a debriefing framework to guide debriefing in a focused way (INACSL Standards Committee, 2016d).				
	Additional Statement:				
87.	The GAS (Gather, Analyze, and Summarize) framework is a commonly used debriefing framework (INACSL Standards Committee, 2016d).				
	Additional Statement:				
88.	The Debriefing with Good Judgement framework is a commonly used debriefing framework (INACSL Standards Committee, 2016d).				
	Additional Statement:				
89.	The PEARLS (Promoting Excellence and Reflective Learning in Simulation) framework is a commonly used debriefing framework (INACSL Standards Committee, 2016d).				
	Additional Statement:				
90.	The DML (Debriefing for Meaningful Learning) framework is a commonly used debriefing framework (INACSL Standards Committee, 2016d).				
	Additional Statement:				
91.	The 3D Model of Debriefing (Defuse, Discover, and Deepening) framework is a commonly used debriefing framework (INACSL Standards Committee, 2016d).				
	Additional Statement:				
92.	The OPT Model of Clinical Reasoning framework is a commonly used debriefing framework (INACSL Standards Committee, 2016d).				
	Additional Statement:				
93.	Self-reflection is a necessary element of debriefing process (INACSL Standards Committee, 2016d).				
	Additional Statement:				
94.	Nursing faculty rely on the objectives to determine the debriefing criteria (INACSL Standards Committee, 2016d).				
	Additional Statement:				

95.	Nursing faculty rely on the expected learning outcomes to determine the debriefing criteria (INACSL Standards Committee, 2016d).				
	Additional Statement:				
	Standard 5: Participant Evaluation				
96.	Faculty facilitating simulated experiences determine assessment criteria before the simulated experience (INACSL Standards Committee, 2016e).				
	Additional Statement:				
97.	Nursing faculty routinely use formative assessment to monitor a student nurses' progress in the simulated environment (INACSL Standards Committee, 2016e).				
	Additional Statement:				
98.	Nursing faculty routinely use summative assessment to assess the student nurses' ability to achieve the expected outcomes of the simulation experience (INACSL Standards Committee, 2016e).				
	Additional Statement:				
99.	Nursing faculty use simulated experiences to identify gaps in knowledge (INACSL Standards Committee, 2016e).				
	Additional Statement:				
100.	Nursing faculty use simulated experiences to identify safety issues (INACSL Standards Committee, 2016e).				
	Additional Statement:				
101.	More than one nursing faculty is routinely used to assess student performance in the simulation lab (INACSL Standards Committee, 2016e).				
	Additional Statement:				
	Standard 6: Personal Integrity				
102.	Facilitators visualize the simulation lab as a safe learning environment (INACSL Standards Committee, 2016f).				
	Additional Statement:				

103.	Nursing students visualize the simulation lab as a safe learning environment (INACSL Standards Committee, 2016f).				
	Additional Statement:				
104.	Facilitators recognize that confidentiality during the simulated experience is vital to the integrity of the experience (INACSL Standards Committee, 2016f).				
	Additional Statement:				
105.	Facilitators recognize that confidentiality after the simulated experience is vital to the integrity of the experience (INACSL Standards Committee, 2016f).				
	Additional Statement:				
106.	Many times, student nurses are not aware of unethical behavior until the behavior is documented during assessment (INACSL Standards Committee, 2016f).				
	Additional Statement:				
107.	Many times, student nurses are not aware of unprofessional behavior until the behavior is documented during assessment (INACSL Standards Committee, 2016f).				
	Additional Statement:				
	Standard 7: Simulation-Enhanced Interprofessional Education				
108.	The complexity of the healthcare system requires healthcare professionals to work in collaboration (INACSL Standards Committee, 2016g).				
	Additional Statement:				
109.	Safe patient care requires communication between healthcare professionals in all areas of healthcare (INACSL Standards Committee, 2016g).				
	Additional Statement:				
110.	Nursing faculty utilize an interprofessional approach in the simulation lab (INACSL Standards Committee, 2016g).				
	Additional Statement:				

111.	Nursing faculty utilize a theoretical approach to simulation-enhanced interprofessional education (INACSL Standards Committee, 2016g).				
	Additional Statement:				
112.	Nursing faculty utilize a conceptual framework to guide simulation-enhanced interprofessional education (INACSL Standards Committee, 2016g).				
	Additional Statement:				
113.	Mutual goals between professions should be developed prior to delivering a simulation-enhanced interprofessional education scenario (INACSL Standards Committee, 2016g).				
	Additional Statement:				
114.	Mutual goals support student-learning outcomes (INACSL Standards Committee, 2016g).				
	Additional Statement:				
115.	Mutual goals are developed in congruence with the student nurse's knowledge base (INACSL Standards Committee, 2016g).				
116.	Mutual goals are developed in congruence with the student nurse's skill set (INACSL Standards Committee, 2016g).				
	Additional Statement:				
	Standard 8: Operations				
117.	Schools of nursing implement a strategic plan for the development of a simulation lab (INACSL Standards Committee, 2016h).				
	Additional Statement:				
118.	Schools of nursing set immediate strategic goals (less than a year) (INACSL Standards Committee, 2016h).				
	Additional Statement:				
119.	Schools of nursing set short-term goals (1-2 years) (INACSL Standards Committee, 2016h).				
	Additional Statement:				

120.	Schools of nursing set long-range goals (3-5 years) (INACSL Standards Committee, 2016h).				
	Additional Statement:				
121.	Stakeholders are routinely involved in the strategic planning process (Standards Committee, 2016h).				
	Additional Statement:				
122.	Schools of nursing use simulation literature reviews as a way to inform best practice in simulation (Standards Committee, 2016h).				
	Additional Statement:				
123.	In order to sustain a simulation program, schools of nursing must ensure that simulation personnel are formally trained in the science of simulation (INACSL Standards Committee, 2016h).				
	Additional Statement:				
124.	Simulation labs differ on the depth of formal training necessary for simulation employees (INACSL Standards Committee, 2016h).				
	Additional Statement:				
125.	Schools of nursing articulate the scope of practice for each employee in the simulation lab (INACSL Standards Committee, 2016h).				
	Additional Statement:				
126.	Ongoing employment in the simulation lab is dependent on keeping up-to-to-date with latest technology in simulation (INACSL Standards Committee, 2016h).				
	Additional Statement:				
127.	Schools of nursing provide resources needed to maintain a simulation program (INACSL Standards Committee, 2016h).				
	Additional Statement:				
128.	Schools of nursing provide resources to sustain a simulation program (INACSL Standards Committee, 2016h).				
	Additional Statement:				

129.	Schools of nursing employ individuals with the expertise to support simulation activities (INACSL Standards Committee, 2016h).				
	Additional Statement:				
130.	Schools of nursing employ individuals with the expertise to sustain simulation activities (INACSL Standards Committee, 2016h).				
	Additional Statement:				
131.	A duty of the simulation manager is policy creation (INACSL Standards Committee, 2016h).				
	Additional Statement:				
132.	Schools of nursing are successful in creating policies to support success in the simulation lab (INACSL Standards Committee, 2016h).				
	Additional Statement:				
133.	Schools of nursing have policies in place that monitor the maintenance records of manikins (INACSL Standards Committee, 2016h).				
	Additional Statement:				
134.	Schools of nursing have policies in place that monitor the maintenance records of cameras (INACSL Standards Committee, 2016h).				
	Additional Statement:				
135.	Schools of nursing have policies in place that monitor the maintenance records of videotaping equipment (INACSL Standards Committee, 2016h).				
	Additional Statement:				
136.	Schools of nursing have policies in place that monitor the maintenance records of microphones (INACSL Standards Committee, 2016h).				
	Additional Statement:				
137.	Schools of nursing have policies in place that monitor the management of moulage supplies (INACSL Standards Committee, 2016h).				

	Additional Statement:				
138.	Schools of nursing have policies in place that monitor the management of simulation medication supplies (INACSL Standards Committee, 2016h).				
	Additional Statement:				
139.	Schools of nursing have policies in place that monitor the management of sharps supplies (INACSL Standards Committee, 2016h).				
	Additional Statement:				
140.	Schools of nursing have policies in place that monitor the management of sharp containers (INACSL Standards Committee, 2016h).				
	Additional Statement:				
141.	Schools of nursing have policies in place that monitor the management of defibrillators (INACSL Standards Committee, 2016h).				
	Additional Statement:				