BSN student perceptions of clinical learning in both traditional and simulated clinical experiences

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Healthcare Issue

Nurses are the largest population of healthcare professionals, comprising roughly 3.8 million positions in the United States (U.S) (Institute of Medicine (U.S.) & Robert Wood Johnson Foundation, 2011). The Bureau of Labor Statistics (2018) predicts 1 million additional nurses will be required by 2026. As of 2018, the national nursing program enrollment increased by 3.7%, but it has been predicted the enrollment must increase by 90% to replenish the nursing shortage (*Addressing New Challenges Facing Nursing Education: Solutions for a Transforming Healthcare Environment*, n.d.; Aiken, Cheung, & Olds, 2009).

Nurse educators are obligated to provide effective educational methods to assure undergraduate nursing programs graduate competent and safe nurses. Currently, nursing academia faces challenges to assuring high-quality clinical educational experiences. These challenges encompass limited clinical sites, lack of qualified clinical faculty and restrictions on student interactions with the healthcare team (Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014).

Nursing programs face competition for clinical placements in the existing climate of limited clinical sites. The national patient safety initiatives currently limits student access to electronic medical records (EMR) and regulates the number of students on each unit (Hayden et al., 2014). Given the current condition of the nursing shortage, along with a fragmented nursing academic infrastructure, the existing nursing educational system cannot replenish the nation's nursing deficit (Institute of Medicine (U.S.) & Robert Wood Johnson Foundation, 2011).

Simulation is a relatively new pedagogy in healthcare education. Simulation is not just a technology; it is a learning method. This form of clinical education fully immerses students in a mock real-world situation. This method of experiential learning provides a safe and controlled environment where students are active participants in a scenario that connects didactic education to actual practice (Strickland & March, 2015). As described in Kolb's learning theory of experiential learning, "learning is a continual process where experiences are constructed into existing memory scaffolding which modifies the way one thinks and behaves" (Lisko & O'dell, 2010). Properly designed simulation centers can enhance clinical judgement and provide a smoother transition for students from the education arena to the practice setting (Beroz, 2017). Therefore, simulation centers need to be properly designed to meet the objectives for the selected student population.

Countless nursing programs have financially invested in simulation equipment, resources, faculty and time in the development of high-tech simulation labs, but many programs lack the planning for positive outcomes and sustainability (Beroz, 2017). Adamson (2010) identified that only between 1% and 7% of the initial programs invest in maintenance and instructor training. The absence of long-range business plans, to include an ongoing evaluation process, can have a negative impact on student outcomes (Adamson, 2010).

The NCSBN landmark study evaluated the amount and types of simulation for positive student outcomes (Jennifer K. Hayden et al., 2014). This longitudinal study assessed three quantities of simulation applied to supplement clinical hours (Hayden, et al., 2014). The study compared 10% simulation, 25% simulation, and 50% simulation (Hayden, et al., 2014). Based on the results of this study, the NCSBN approved up to 50% high-quality simulation as acceptable to augment traditional clinical experiences (Hayden, et al., 2014). It is important to

note that the NCSBN study adhered to the International Nursing Association of Clinical and Simulated Learning (INASCL) Standards of Best Practice assuring high-quality simulations and debriefing methods are grounded in educational theory (Hayden, et al., 2014). This landmark study used skilled and dedicated simulation faculty in selected academic programs (Hayden, et al., 2014).

With nursing programs facing challenges associated with limited qualified faculty and clinical placements for students, simulation experiences currently supplement clinical placements and insufficient numbers of clinical instructors (Hayden, et al., 2014). With approval of the NCSBN, undergraduate nursing programs have widely incorporated simulation into nursing curricula, but gaps have been identified in the literature regarding the evaluation of simulation experiences compared to traditional clinical learning experiences (Cant & Cooper, 2014; Howard, Englert, Kameg, & Perozzi, 2011; Foronda, Liu, & Bauman, 2013; Hayden, et al., 2014). With the current clinical challenges and national approval for usage of simulation, nursing programs are investing in simulation equipment preceding the appropriate planning and development of a comprehensive execution and evaluation plan (Gore & Schuessler, 2013; Hosoda, 2006; Leighton, 2015a). Therefore is essential that nursing programs evaluate simulated experiences to assure students receive comparable learning in both traditional and simulated clinical environments. The goal of this project is to answer the question “Do BSN students view traditional and simulated environments as comparable modalities for clinical learning?” Also, “Are junior and senior level BSN student perceptions of clinical learning in traditional and simulated environments similar or different?” The mission of this project is to provide nursing educators and leadership with measurable information to align these clinically diverse modalities to assure the production of confident and competent healthcare professionals. To accomplish this

goal, this project measured undergraduate junior and senior level BSN nursing students' perceptions of clinical learning, comparing both high-fidelity simulation and traditional clinical experiences.

Population

Nurses comprise the largest healthcare profession in the United States (U.S.) with over 3 million nurses, yet the nation is currently suffering a massive nursing shortage. The American Association of Colleges of Nursing (AACN) predicts more than 1 million nurses will be needed by the year 2026 to care for the aging population and the national health care needs (2019). By 2030, over 1 million aging nurses will retire creating an even larger nursing deficit (AACN, 2019). In October 2010, the Institute of Medicine (IOM) released a report on "The Future of Nursing" documenting the need to increase the quantity of baccalaureate and graduate-prepared nurses in the workforce from 56% to 80% by 2020 (IOM, 2011).

In healthcare academics, nursing students comprise more than half of all the professional level healthcare students (AACN, n.d.). However, as of 2018, nursing academic enrollment had increased by only 3.7%, turning away over 75,000 prospective nursing students (AACN, 2019). The shortage of faculty and clinical sites is directly related to the capping of nursing student enrollment (AACN, 2019).

Genomics

The brain is equipped to process and retain information for later use. So how does the brain accomplish this task? It consists of three stages: encoding, storage, and retrieval (Moh, 2007). The body's five senses receive information that is encoded and stored in short-term memory. The brain can classify and rearrange information based on experience, training, and education (Moh, 2007). The repetitive incitement of synapses in a certain pattern over time

creates an easier path for the synapse (memory) to occur (Moh, 2007). Persistent exposure to similar experiences strengthens the stimulation between the neurons generating a long-term memory (Moh, 2007). Important aspect of forming long-term memory include:

- Reduce distractions, which can weaken the encoding process.
- Repetition, which reinforces long-term learning potential.
- The brain has an unlimited ability to store knowledge.

Research has identified genetic tendencies in areas of brain function (Paratore, et al., 2001; Plomin & Kosslyn, 2001). There is evidence of a genetic association with cognition (Plomin & Kosslyn, 2001). Providing different mechanisms for learning, such as classroom lectures, case studies, and simulations could stimulate student learning in different areas of brain function.

Initial Leaders

Nursing academic accrediting bodies require that nursing programs provide adequate resources and clinical sites to meet the goals and objectives of the program ("American Association of Colleges of Nursing (AACN) > Nursing Education Programs > Baccalaureate Education," n.d.). The nursing programs must provide clinical experiences based on the level of education ("American Association of Colleges of Nursing (AACN) > Nursing Education Programs > Baccalaureate Education," n.d.). In 2011, the Institute of Medicine (IOM) reported on the future of nursing. As part of this report, the committee challenged nursing academia to expand nursing faculty, increase the capacity of nursing programs, as well as redesign nursing education to assure the production of competent nurses to care for the complex needs of the aging population. The IOM report emphasized the need for nursing academia to improve processes and outcomes within the nursing educational systems (Institute of Medicine (U.S.) & Robert Wood Johnson Foundation, 2011).

In 2014, the NCSBN completed a landmark study which evaluated the quantity of simulation that can produce positive student outcomes (Hayden, et al., 2014). It is important to note that the NCSBN study adhered to standards of best practice assuring high-quality simulations and debriefing methods (Hayden, et al., 2014). This study was conducted using trained and dedicated simulation faculty, and the academic programs that participated in the study were not randomly selected (Hayden, et al., 2014). The study evaluated high-quality simulation experiences as an alternative to traditional clinical experiences, based on nursing programs providing exceptional simulation standards. The results of the NCSBN study cannot be used to infer that simulation can universally replace traditional clinical experiences in all nursing academic programs, unless those programs adhere to the national standards for best practice which include providing adequate resources and faculty.

Timeline of Initiatives and Outcomes

The first phase of this project (September 2017 and August 2018), the project's mission and goals, were discussed with the nursing academic leadership at the Brenau University Mary Inez Grindle School of Nursing. In order to meet the needs of the university and present quantifiable data for curriculum improvement, the project was designed to assess student perceptions of traditional and simulated clinical learning. At this time, clinical courses that met the project were selected. Eligible courses included both traditional clinical components, as well as a minimum of one simulated clinical experience. Four courses located on the Gainesville campus were selected to be participants in this project. Those courses included the junior level medical surgical course, senior level pediatric, obstetric, and high acuity nursing courses. These four courses consisted of a total of 95 students representing two part-time BSN and two full-time BSN cohorts.

The second phase of this project (September 2018 and December 2018) was the selection of the appropriate tool to compare the two clinical modalities of learning. The Clinical Learning Environment Comparison Survey (CLECS) tool was developed and evaluated by an expert panel of nursing faculty and research-based specialists (Leighton, 2015b). The CLECS tool was designed to focus on the evaluation of direct patient centered care (Leighton, 2015b). It was piloted on 422 undergraduate nursing students which provided a 95% confidence level for this study (Leighton, 2015b). This tool provides data on six subscales: self-efficacy, communication, nursing process, holism, critical thinking and teaching-learning dyad (Leighton, 2015b). The Cronbach Alpha post study analysis was perceived to be at 0.741 or greater for all six subscales for traditional, as well as simulated, clinical environments. This tool was deemed valid and reliable and the NCSBN used it for a portion of their longitudinal study (Jennifer K. Hayden et al., 2014). In October 2018, written approval was obtained to use this tool for this project from the tool developer, Kim Leighton.

During phase three (January 2019 to April 2019), written approval was obtained by the Brenau University Internal Review Board (IRB). A data manager converted the consent and CLECS tool from manual to an electronic format. In April 2019, the electronic format of the CLECS survey was distributed to the eligible BSN students using their secure Brenau University student emails. The data manager converted the collected electronic data into an unidentifiable aggregate of data in an excel spreadsheet. In mid-May 2019, the data was placed on a password protected flash drive and hand delivered to the statistician.

Phase IV (May 2019 to November 2019) was the data analysis process. The project data was analyzed by a statistician, using the IBM SPSS statistics 24. Once data analysis was

completed, the aggregate report was provided to the lead student investigator on July 17, 2019. The data was reviewed, and a manuscript was created.

Current Best Practices

In order to replicate the high-quality simulation standards as implemented and approved in the NCSBN study, nursing academic leadership must develop a simulation infrastructure to include facility development, appropriate simulation resources, competency of simulation faculty, as well as properly designed curriculum implementation (Alexander, 2014). Instituting simulation in the undergraduate curriculum without formal implementation and evaluation could jeopardize the program's outcomes ("An Approach to Simulation Program Development—ProQuest," n.d.; Palaganas, Maxworthy, Epps, & Mancini, 2015; Schlairet, 2011).

The literature supports an overall positive conclusion of simulation in attaining knowledge and skills (Meyer, Connors, Hou, & Gajewski, 2011; Ironside & Jeffries, 2010; Jeffries & Rizzolo, 2006). Although there were limited studies comparing high-fidelity simulation with traditional clinical, the majority of studies found high-fidelity simulation to be comparable, and sometimes better than traditional clinical learning (Gore, T., Johnson, T., & Wang, C.H., 2015; McGaghie, Issenberg, Cohen, Barsuk, & Wayne, 2011; Gore, 2017; Gore, Leighton, Sanderson, & Wang, 2014).

To prepare future nurses for the rapid changes in healthcare, educators must first determine what skills are needed to assure success. The Carnegie Study identified concepts for student success as effective communication, critical thinking, collaboration, problem solving, motivation, persistence, and learning to learn (National Council of Research, 2013). The product of deeper knowledge as it relates to content and skills are transferable (National Council of Research, 2013). Deeper learning is required when the goal is to prepare the student to be

successful in clinical judgment and adaptation to ever changing situations (National Council of Research, 2013). The National Council of State Boards of Nursing (NCSBN) National Simulation Study resulted in the approval of 50% simulation per clinical course (Hayden, et al., 2014).

The limited literature could be related to the fact that high-fidelity simulation is a relatively new clinical pedagogy for nursing programs. The literature did uncover adequate understanding and support for simulation. Like the skills listed in the Carnegie Study, clinical learning has many elements which are essential to competency (National Council of Research, 2013). Because simulation is a relatively new clinical pedagogy, nursing academia must conduct relevant student evaluations to compare simulation and traditional clinical experiences. As nursing programs are forced to increase the use of simulation, more clinical data is necessary to assure simulation experiences are comparable to traditional clinical learning.

Healthcare policy, ethics and laws

After the landmark NCSBN study in 2014, the International Nursing Association of Clinical and Simulated Learning (INASCL) along with the Society for Simulation in Healthcare (SSIH) developed simulation standards of best practices in 2014 ("INACSL Standards of Best Practice: Simulation—INACSL," n.d.). These best practices provide evidence-based pre-requisites for the development of high-quality simulation programs ("INACSL Standards of Best Practice: Simulation—INACSL," n.d.). Programs that adopt the INACSL standards demonstrate commitment to quality and the execution of rigorous evidence-based practice in simulation. Complying with the national standards of best practice demonstrates a nursing program's obligation to the improvement of patient care ("INACSL Standards of Best Practice: Simulation—INACSL," n.d.).

What are ethical and legal issues to consider when developing and designing a simulation-based learning environment? Nurse educators trained in simulation must look at the educational level of the learner, as well as the objectives required for that experience. Even if programs substitute 50 % simulated clinical experiences, the nursing student will eventually care for their first living patient. Simulation provides a method of learning that can be repeated, over and over, without causing physical or emotional harm to a live patient. Educators are responsible for producing safe and competent healthcare providers, and simulation is one method for training. Simulation training programs offer an opportunity for managing situations such as low-volume, high-risk patients (Lateef, 2010). To be effective, the simulated environment must be a safe, non-punitive environment to allow students to make mistakes and learn from those mistakes ("INACSL Standards of Best Practice," 2016; Pivec, n.d.). The simulation educators must provide a psychologically safe, respectful, and confidential learning environment ("INACSL Standards of Best Practice," 2016; Pivec, n.d.). Training nurses and healthcare providers includes much more than technical skills. If a nursing program has access to simulation experiences, the real question is whether it is ethical or not to use simulation in nursing education.

Leadership Utilization

Based on the challenges related to clinical education, Brenau University originally invested in the simulation pedagogy in 1992. In early 2019, Brenau University expanded simulation to the Norcross Campus in Atlanta, Georgia. Between 1992 and 2019, the organizational infrastructure for the simulation program shifted. In spring 2018, an organizational analysis was conducted to examine the simulation centers current mission, vision, and goals along with identified strengths, weaknesses, opportunities, and threats. This analysis

was based on the current infrastructure of the simulation center based on the campus located in Gainesville, Georgia.

Prior to the 2017-2018 academic year, the simulation center was primarily used in the pre-licensure BSN nursing program. With the expansion of Brenau University's health science programs, the purpose of the simulation center is evolving to include interprofessional educational experiences (IPE). The interprofessional education incorporates the healthcare professional programs to include all degree levels of nursing, psychology, occupational therapy, physical therapy, and physician assistant programs.

With the evolution of Brenau's healthcare professional degrees, the mission for the simulation center is to: "enhance learning in the healthcare professional programs with realistic hands-on experiences, promote problem solving, clinical reasoning, critical thinking, and safe clinical judgement"(Ivester College of Health Sciences Simulation Center Handbook, 2018). The simulation pedagogy is accomplished with a variety of simulation modalities which prepare learners to deliver care in diverse and complex healthcare environments" (Ivester College of Health Sciences Simulation Center Handbook, 2018). This mission describes the market for professional healthcare academic programs as a service to provide hands-on clinical educational experiences.

The vision of an organization provides a description of expectations and unique characteristics (Ginter et al., 2018). The Brenau simulation center's vision is simply to commit to interdisciplinary collaboration. This mission and vision set the goal to produce "compassionate, confident, and competent healthcare professionals" (Ivester College of Health Science Simulation Center Handbook, 2018).

The structure of the Brenau University Simulation Center is currently assimilated under the school of nursing leadership. This is based on the history of simulation usage predominantly within pre-licensure BSN programs. With the recent push to promote interprofessional educational experiences, simulation centers provide an excellent alternative clinical experience for all levels of interprofessional education. It is considered a safe, punitive free, controlled setting for effective learning ("INACSL Standards of Best Practice: Simulation—INACSL," n.d.)

The current simulation program at Brenau University lacks the infrastructure that supports the INACSL best practice guidelines and standards. In the past, this center had a full-time simulation manager with a part-time BSN level clinical instructor. The manager guided and directed simulations across the BSN curriculum, based on the needs reflected in the course objectives. The part-time clinical instructor assisted the manager in the set-up and break-down of scenarios, ordering of supplies, and scheduling of preventative maintenance. Currently, the simulation center leadership falls directly under the management of the school of nursing director with lead instructors trained in simulation usage performing scenarios in silos based on their specific area of nursing expertise. The lack of expert leadership in the simulation pedagogy limits the potential usage and quality of the educational experience. Without dedicated simulation leadership and staff, conflicts can arise such as differences in educational methods. These methods could include type of simulation modality, best scenario design to meet objectives, faculty support, as well as standardized debriefing processes ("INACSL Standards of Best Practice: Simulation—INACSL," n.d.). With the advancement and addition of the new simulation center in Norcross, these inconsistencies could cause additional problems between faculty and campuses. What leadership aspects did you use to complete this project – this is just

a general discussion of school leadership issues. I want to know what you did in terms of leadership to complete this project – that is what is asked

Leadership Behaviors

As the project manager who is certified as a healthcare simulation educator, and who currently is an active faculty member in the BSN program at Brenau University, positive influences were required to complete this project based on the allotted time frame. First, a thorough review of the literature to support the need for this project was accomplished. The NCSBN's approval for simulation usage, INACSL best practice guidelines, and the challenges facing clinical education in the nursing academic programs supported the need to evaluate and compare the current simulation clinical experiences to the traditional clinical experiences at Brenau University.

A review of the current simulation organizational infrastructure and education was evaluated with the assistance of the nursing program director. The BSN program on the Gainesville campus currently reports approximately 80% traditional simulation experiences and 20% simulation usage. The simulation designs during this project are controlled in silos by lead instructors based on the specific clinical course. Each lead instructor demonstrates basic knowledge of simulation best-practices. During the time spent in the simulation center, with all lead faculty actively performing simulations, it was noted that there were limited resources to assure all faculty are conducting simulations consistently to include theory-based debriefing methods.

The simulation program at the university lacks an overarching process of program evaluation. This was identified as a weakness on the SWOT analysis. Approval was obtained through the Brenau University IRB, Nursing program leadership and DNP committee to move

forward with this project of assessing BSN students' perceptions of clinical learning between traditional and simulated clinical learning.

The lead professors for the courses eligible for this project provided the lead student investigator approximately 20 minutes to speak with each class and discuss the purpose of the project. During these information sessions, the mission of the project was verbalized with the eligible students. The acknowledgement of the consent process including psychological safety during participation was discussed. Students could ask questions of the lead student investigator and were assured that no points would be awarded or deducted from their grades based on participation. Faculty advisors would be available for students who occurred any stress related to their participation. The university counselor's information was also provided. The project data was analyzed and supplied as an aggregate. Nope you missed it! What "leadership behaviors" did you exhibit which facilitated completion of this project - I suspect such as team building, building trust, supportive mentoring, professional collaboration etc

AACN Competencies

Scientific Underpinnings for Practice

Nurses use evidence-based theory and research in their day-to-day practice("INACSL Standards of Best Practice: Simulation—INACSL," n.d.). The DNP applies this form of scholarship to influence practice within their area of expertise in order to improve patient care (Zaccagnini & White, 2017). As described by Rolfe (1993), nursing theory should be generated from practice and not abstract ideas. When selecting an alternative method to providing quality clinical learning, Kolb's learning theory (1984) provided guidance for this project. Kolbdescribes the process of how knowledge is achieved through a series of transformational experiences. Learning is "a continual process where experiences are constructed into existing memory

scaffolds which modify the way one thinks and behaves" (Lisko & O'dell, 2010). This framework supports the structure of experiential deep learning as it relates to transferring knowledge and skills (National Council of Research, 2013). For this deep learning to occur, experiences need to be actively tested and internally reflected (Lisko & O'dell, 2010). When preparing nursing students to solve problems and adapt to complex changing situations, transformational experiences provide students with a method to achieve this deeper learning (National Council of Research, 2013).

To facilitate the progress of grasping an experience and transforming that experience into a different system of thinking and behaving, Kolb's theory (1984) describes four different modes of student learning: accommodating, diverging, converging, and assimilating. Those who learn by actively doing or "hands-on" are accommodating (kinesthetic) learners (Lisko & O'dell, 2010). Diverging learners are learners who must reflect on the experience (Lisko & O'dell, 2010). Converging learners learn by comprehension of abstract information (Lisko & O'dell, 2010). Those who learn by assimilation learn via absorption and internalizing the information (Lisko & O'dell, 2010). Although learners will prefer one specific learning style, learning involves four cycles of learning: concrete experience, reflection, abstract conceptualization, and active experimentation (Lisko & O'dell, 2010). All four of these cycles must be experienced for effective, deep learning. Like Bloom's taxonomy, Kolb's learning theory advocates the progression of learning from the application of the experience to test concepts where the student is able to evaluate and make sound clinical judgement (Savill, 2014). Kolb's theory of experiential learning best describes the process of simulation and "deliberate practice" (Clapper & Kardong-Edgren, 2012). The educator's role is to help students identify areas of practice that needs to be improved and provide a safe and nurturing environment where the student can learn

(Clapper & Kardong-Edgren, 2012). Simulation created this type of safe environment for learning where the students can repeat, practice and never harm a live person.

This project was designed after gaps were noted in the literature related to student perceptions of clinical learning comparing traditional and simulation clinical learning environments. The students who participated in this project did not find the two clinical modalities comparable at the university. This data provides quantifiable information for nursing leadership and educators to develop curricular improvement plans.

Organizational and Systems Leadership for Quality Improvement and Systems Thinking

Transformational leadership seeks to solve problems using the process of systems thinking (Zaccagnini & White, 2017). System thinkers, such as the DNP, approach complex situations with the vision and desire to enhance processes (Zaccagnini & White, 2017). Simulation is a relatively new pedagogy for nursing academia. The evidence provides support that simulation can supplement traditional clinical experiences, yet the data was limited comparing traditional and simulated clinical learning, especially regarding student perceptions of simulation when compared to traditional clinical learning.

As noted in the IOM report, *the future of nursing,* leaders must identify the gaps in research and focus on areas where improvements can occur. As a nurse educator and leader, emphasizing the BSN student perceptions of their clinical learning provides a more objective evaluation of areas where curricular improvement could focus.

It was considered that juniors would be more comfortable in a simulated clinical experience when compared to a traditional hospital clinical experience at Brenau University. The junior level medical surgical course provides the first exposure to a traditional hospital setting.

In the previous semester, the junior students were exposed to mini-simulation experiences in the foundation course. From an educator's standpoint, it was assumed that having previous simulation experiences would increase their confidence in the simulated environment. The data revealed the junior level BSN students identified significantly more confidence in the traditional clinical setting. This data also revealed that the junior and senior level BSN students favored traditional clinical for all elements of the CLECS tool subcategories (communication, self-efficacy, holism, nursing process and critical thinking) except teaching-learning dyad. All students felt teaching-learning dyad (knowledge) was comparable between the two clinical modalities.

The mission of this project was to provide quantifiable data to compare traditional and simulated clinical learning. Reviewing each question related to each of the six-subcategory found on the CLECS tool will provide specific areas to focus on for clinical curricular improvements. This data should be used by the university's leadership and nurse educators to develop quality improvement initiatives for clinical education. As part of this process, the university must evaluate the clinical resources for both simulation and traditional clinical. Next, clinical leaders should review each question related to the six subcategories of the CLECS tool to narrow the focus on specific areas identified by the students for improvement. The university needs to develop a strategic plan to guide improvements in the simulation center, which are focused around the INACSL standards of best practice. This will include operations, design, objectives, and developing interprofessional simulation (IPE) ("INACSL Standards of Best Practice: Simulation—INACSL," n.d.).

Clinical Scholarship and Analytical Methods for Evidence-Based Practice

Clinical scholarship is the process of challenging current practice (Zaginini & White, 2017). Although nurses are trained in evidence-based practice as an essential component of patient care, the DNP applies the results from evidence and scholarship to improve practice outcomes (Zaginini & White, 2017). Evaluating the student perceptions of these two clinical modalities identified that junior and senior level students did not agree on the value of clinical learning using simulation in comparison to traditional clinical learning. This was not consistent with the overall findings in the literature. Further data is needed to identify potential trends or limitations associated with these outcomes.

The literature on the use of simulation supports simulation as a successful tool for learning. The NCSBN landmark study provides guidance for nursing programs to increase the usage of simulation in these challenging times in clinical education. Further data needs to be obtained on student perceptions comparing these two clinical modalities. This data obtained from this project could be biased because 67 percent of the students who participated completed simulation as the last clinical experience for the semester prior to the collection of CLECS data. Also, students at this university spend approximately 80 percent of clinical experience in a traditional setting and 20% or less in a simulated clinical environment.

Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care

The Joint Commission (2008) report on adverse events arising from healthcare information technology propose that organizations adopt procedures where frontline staff are included on assessing and improving processes. Simulation is a form of teaching pedagogy and

not just a technology, yet other technologies are implemented in this form of education to provide for a more realistic clinical environment. For example, an electronic medical record (EMR) should mimic those used in the traditional healthcare settings. The EMR in a simulated setting should ensure the same processes for documentation and safe medication administration as required by national standards of best practice that are adopted and properly used in the simulated environment.

The front-line users of simulation technology in an academic setting are the students. Therefore, to make positive changes for clinical learning, students must be a part of the evaluation and solution. As recommended by the Joint Commission (2008), to avoid unintentional or adverse outcomes leaders should involve the end-user in the examination of care (educational) processes.

Health Care Policy for Advocacy in Health Care

With the ever-increasing nursing shortage, nursing programs must find methods to increase enrollment. Based on the information in the IOM (2011) report on the *future of nursing*, the current structure of nursing academia must change to improve the educational outcomes for nurses. With the current challenges of faculty shortages and limited clinical sites, simulation has been studied and approved by the NCSBN to augment traditional clinical experiences (Hayden, et al., 2014). In 2016, INACSL and SSIH implemented best practice standards for simulation centers. Many nursing programs invested in these programs prior to best practices and the NCSBN study. Current simulation programs must assess their current programs to develop and implement an infrastructure to assure students are receiving high-quality, comparable clinical modalities.

Although the NCSBN approved simulation to replace up to 50% of traditional clinical experiences, only 20% of the state boards have provided guidelines for clinical to include the percentage of simulation usage ("American Association of Colleges of Nursing (AACN) > Nursing Education Programs > Baccalaureate Education," n.d.). Out of those 20% of state boards, only 48% of those have approved between 25 to 50% simulation usage. As of 2018, the Georgia Board of Nursing has not provided any guidelines or recommendations for BSN clinical to include the use of simulation. The accrediting bodies such as Commission on Collegiate Nursing Education (CCNE) states that nursing programs are "responsible for ensuring adequate physical resources and clinical sites. Clinical sites are sufficient, appropriate, and available to achieve the programs mission, goals and expected outcomes" (CCNE, 2013). The CCNE further states "clinical practice experiences involve activities that are designed to ensure students are competent to enter nursing practice at the level indicated by the degree/certificate program" (CCNE, 2013). Therefore, it is the responsibility of the nursing program to evaluate, design and implement appropriate clinical experiences to meet the needs of the students within their program.

Interprofessional Collaboration for Improving Patient and Population Health Outcomes

The IOM report, *Crossing the Quality Chasm: A New Health System for the 21st Century*, identified that healthcare must focus on interprofessional collaboration to assure a safe and improved healthcare system. Interprofessional collaboration is one of the most critical aspects to reducing errors associated with patient care (O'Brien, 2013). As a DNP in in the academic setting and certified as a healthcare simulation educator (CHSE), a realistic simulation environment must be achieved for students to receive positive experiential based learning. The

university currently uses simulations in most of the health science programs but currently those simulations are again operating in silos based on specific degree and discipline.

When evaluating the outcomes of this study, one area of the CLECS tool evaluated the students' perceptions of communication within an interdisciplinary team. This area of communication favored traditional clinical experiences over simulated experiences. Using the INACSL best practice guidelines to incorporate high-quality interprofessional simulation experiences could improve clinical learning within interprofessional designed simulated experiences. Again, this would require the university to revise and adapt a new infrastructure that includes interprofessional simulated experiences.

Clinical Prevention and Population Health for Improving the Nation's Health

The U.S. Population over the age of 65 consists of approximately 46 million people. It is expected this number will double to more than 89 million by 2060 (Mather, Jacobsen, & Ard, 2015). With the aging population comes an increase in the number of chronic illnesses and long-term health needs (Mather et al., 2015). This is very concerning with the national nurse deficit. This further increases the need for nurse educators and programs to improve the enrollment and quality of nursing education.

Nursing education is challenged with producing competent and safe healthcare providers. In 2013, over 440,000 deaths occur from medical errors with 7,000 to 9,000 errors related to medical administration (James, 2013). With the nursing shortage and the lack of interprofessional educational opportunities, this arena for healthcare errors will continue (James, 2013). With the rise in the number of aging patients with chronic illness, nursing academics must find alternative methods to provide realistic clinical educational arenas to expose students to the low-volume, high risk patients and processes that can create medical related errors. Simulation

creates this safe environment where the errors can occur without injury to a real person. It also provides a mechanism for the student to identify the error as well as find mechanisms to assure safety within the traditional clinical setting.

Simulation provides that arena for repetitive practice. After students complete the respective simulation exercise, they all receive a debriefing. Debriefing is the reflective portion of a simulation experience that is essential for valuable simulated learning (LaFond & Van Hulle Vincent, 2013). Reflection causes the learner to reveal the meaning and consequence association with an action ("INACSL Standards of Best Practice: Simulation—INACSL," n.d.). As described in Kolb's experiential learning theory, reflection develops the integration of new knowledge, skills, and behaviors as interpreted by the learner (Anders Ericsson, 2008; Clapper & Kardong-Edgren, 2012).

Advance Nursing Practice

The DNP prepares advanced practice nurses to function as experts in a desired specialty. As a nurse educator with a certification in healthcare simulation education (CHSE), this project allowed the project manager to explore how the BSN students at Brenau University perceived the outcomes of their clinical learning in both traditional and simulated clinical environments. As recommended by the Joint Commission (2008) and the IOM (2013), this baseline data can be used to develop a curriculum improvement plan for this university's simulation center. Although the sample size was lower than projected, it provided a confidence level of 70% based on a 5% margin of error. This low confidence level cannot provide generalization of these outcomes for all BSN level students, but this data can be used as baseline data for Brenau University. Analysis and interpretation of this data, along with the current NCSBN approval of simulation and the INACSL best practice guidelines, will assist the DNP to facilitate and lead the university health

science and nursing leadership in the development of a strategic plan for clinical curricular improvements.

Lessons Learned

Based on the small sample size of participants, incorporating the new ABSN students in this population could benefit the university with the new addition of a simulation lab in Norcross, Georgia. Exploring if all students in all the BSN programs at Brenau University perceive traditional clinical experience as more beneficial to clinical learning than simulation would enhance the findings. This data would then potentially provide more insight for strategic planning for the university simulation program.

The timing of the survey could have affected the student perceptions of their clinical learning. The CLECS survey is recommended as a one-time survey to be completed prior to or at the end of the clinical course. This project implemented the CLECS survey within the second week of April of 2019. Therefore, the survey was administered within 3 weeks of the last day of the semester. Allowing more time for students to reflect on their clinical experiences possibly have provided for different outcomes.

Future Plans

The mission of this project was to provide quantifiable data to assist the nursing program with aligning traditional and simulated clinical education to aid in the production of confident and competent healthcare professionals. Although the data was limited with a small sample size, the information obtained should begin the conversation with leadership to explore an infrastructure that will adopt the national INACSL standards of best practice to deliver positive clinical outcomes for the students. Adopting these INACSL standards will assist in the development and design of interprofessional educational (IPE) simulations. For example, adding

nurse practitioners or physician assistants in simulation events would provide a means for the BSN students to communicate with a real provider regarding patient findings and recommended orders. This could increase student perceptions for communication within an interprofessional team within the simulated environment. Including physical therapists and occupational therapists in scenarios with BSN student where patients' conditions change requiring the disciplines to work together as they would in the traditional clinical environment. Awkward sentence The INACSL best practice guidelines along with other simulation-based experts would provide resources for the university to develop a strong interprofessional simulation based-education program.

Based on the literature, properly designed simulation centers can enhance clinical judgement and make for a smoother transition for students from education to practice (Beroz, 2017). Therefore, simulation centers must be skillfully designed for the appropriate student population (Beroz, 2017). Adamson (2010) identified that between 1% and 7% of initial simulation programs invested in long range maintenance, upgrades and training. Therefore, nursing programs who have invested or plan to invest in simulation programs should use the INACSL best practice guidelines to assist in the development or redesign of their simulation infrastructure to assure a successful program. This absence of long-range business plans, to include a process for ongoing evaluation, can have a negative impact on student outcomes (Adamson, 2010). Program must also provide a means for student's to be included in the evaluation process. As mentioned by the Joint Commission (2008), the end user must be included in the evaluation and solution process to develop positive outcomes. For nursing academic programs, it is imperative that students be evaluated on their perceptions of their own clinical learning.

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