Use of Simulation in Teaching Nursing Leadership and Management Course

An Integrative Review

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Abstract

Nursing education is strategically positioned to prepare nursing students in attaining management and leadership skills necessary for future professional nursing roles. This review appraised and synthesized outcomes of using simulation in pre-licensure nursing management and leadership courses within the last 10 years. This is an integrative review of original articles published within the last 10 years. Four (PsychINFO, CINAHL, PubMed, and SCOPUS) bibliographic databases were searched to identify relevant articles using the following terms: management, leadership, simulation, nurse education, and student. Ten (10) articles were included in the review. Four essential themes were identified from the content analysis: acquisition of or understanding of delegation, enhanced teamwork or collaboration capacities, improved decision-making and problem solving skills, and increased communication skills. Incorporation of simulation in nursing management and leadership courses has the potential to enhance nursing students’ delegation skills, problem solving capacities, skills in making decisions, and communication and teamwork skills.

Keywords: simulation; nursing; leadership; management; student; education.
Introduction

Nursing education is vital in the formation of student nurse’s management and leadership competencies for future leadership roles. Several organizations, including academic institutions, healthcare agencies, and accrediting entities, highlight the crucial need for student nurses to possess leadership and management skills upon graduation. For instance, the Institute of Medicine (IOM) \(^1\) and the American Association of Colleges of Nursing (AACN) \(^2\) suggests that all student nurses graduating from nursing school should possess management and leadership competencies necessary in working and collaborating with multidisciplinary healthcare teams. In particular, the American Organization of Nurse Executives (AONE) developed the Nurse Managers Competencies to guide nursing schools in the development of their undergraduate and graduate curricula to successfully educate nursing students with essential management and leadership skills required in the performance of nurse manager roles \(^3\). These competencies includes: resource management, management of patient care delivery, staff development, compliance with professional and regulatory standards, long term and strategic planning, inter-professional management and leadership, and collaboration with other units within the institution \(^3\).

In many nursing schools, students are provided chances to learn skills in leading and managing when they attend a leadership and management course in the terminal year of their undergraduate nursing program. However, facilitating and teaching leadership and management skills among nursing students’ remains to be a significant challenge to nursing faculty due to several factors such as increasing nursing student applications for admission, nursing faculty shortage, and limited clinical placements to facilitate and integrate leadership concepts in clinical practice \(^4\)-\(^6\). Unsurprisingly, many nurse managers and nurse executives perceive that newly graduated nurses are insufficiently ready to perform leadership roles and responsibilities and lack management skills when they start working as a professional nurse \(^7\).

Alternative teaching approaches using simulations are vital to adequately prepare students for future leadership role as a nursing professional. Simulation is identified as a viable,
supplementary teaching modality to facilitate translation theoretical concepts in nursing into practice \textsuperscript{8,9}. The use of simulation is acknowledged as an indispensable aspect of nurse education curriculum and has been widely used across all nursing courses.

These include: Fundamentals of Nursing\textsuperscript{10}, Maternal and Child Health\textsuperscript{11}, Adult Health\textsuperscript{12}, Mental and Psychiatric Health\textsuperscript{13}, Community Health\textsuperscript{14}, and Critical Care Courses\textsuperscript{15}. In particular, simulation studies have identified medium to high fidelity simulations as potent teaching modalities to foster students’ nursing competence\textsuperscript{16}, self-efficacy\textsuperscript{17}, critical thinking and reasoning\textsuperscript{18-19}, communication and interpersonal skills\textsuperscript{20}, and clinical judgment\textsuperscript{21}.

Numerous nursing education organizations have supported the utilization of simulation-based activities as a form of teaching pedagogy. The National Council of State Boards of Nursing (NCSBN) endorses the use of simulation-based activities as an alternative to usual clinical experiences to provide relevant and essential clinical experiences in nursing students\textsuperscript{22}. The National League of Nursing (NLN) supports the incorporation of simulation-based activities in nursing programs to adequately prepare students for future nursing practice amidst the growing challenges in healthcare arena.

Available evidence suggests that through simulation, nursing academe can help shape and develop management and leadership skills in nursing students for future leadership and management roles\textsuperscript{23-1}. Findings of Kilgore et al.\textsuperscript{24} and Sharpnack et al. professional health teams, and making critical decisions. While there is mounting evidence on the use of simulation in teaching management and leadership courses, a broad and wider viewpoint on this essential topic is not found. This integrative review were conducted to determine the outcomes of using simulation in pre-licensure nursing management and leadership courses.

**Methods**

An integrative review approach guided by the framework of Whittemore and Knafl\textsuperscript{26} informed this study. This approach was deemed suitable for the review as it allowed combination of the
findings of studies with either experimental or nonexperimental designs in order to provide broader perspective about the topic.

**Search Strategies**
To locate relevant articles published within the last 10 years, an electronic search of databases was conducted in January 2019. Five databases were used to locate and search for original articles such as the MEDLINE, Psych INFO, CINAHL, and SCOPUS using the following search and MeSH terms: management, leadership, simulation, nursing, education, and student. Furthermore, manual searching of relevant literature was performed using the list of references in the articles included (Figure 1).

**Inclusion/exclusion criteria**
The following inclusion criteria was considered in the search and retrieval of the articles: (1) original articles examining the use of simulation-based activities in teaching management and leadership skills in pre-licensure nursing programs, (2) published in refereed journals within the last 10 years, (3) and written in the English language.

**Search Outcomes**
One hundred ninety eight (198) articles were retrieved during the initial search of the databases. After removing duplicates, one hundred thirty six (136) articles were retained. Titles and abstracts were further screened and compared using the inclusion criteria with forty five (45) considered to complete a full text screening. Finally, ten (10) studies were considered appropriate for the review after a full text reading of the articles, and thirty five (35) articles were excluded because the simulation procedures were not clearly described or the processes were not purely simulation and contained studies where the subjects were combined with other healthcare profession students (Figure 1).

**Appraisal of Methodological Quality**
The quality, rigor, credibility, and trustworthiness of the research methods used in the articles included in the review were examined using the MMAT by two independent reviewers. This appraisal tool was designed to assess the quality of studies (e.g., quantitative, qualitative, and
mixed method studies). Based on the criteria set, a score was assigned which ranged from 25% to 100%. In this review, no articles were excluded based on the quality score due to a lack of studies that pertained to simulation as utilized in nursing leadership and management courses; rather, the tool was used to appraise the methodological quality of the articles reviewed.

**Data Extraction and Data Synthesis**

Using a common template, essential data were extracted from the articles by two independent researchers which included the authors, research design, subjects/simulation duration/debriefing duration, type of simulation/measures, and the key findings (Table 1). Data were synthesized following the content analysis guided by the constant comparison approach. Specifically, similar categories and subcategories were clustered by comparing each definition and the prevalence of certain themes was determined. Encompassing themes were discussed and further analysed by the researchers to arrive at common and most suitable theme names. This approach in data synthesis is compatible with an integrative review that includes studies with varied research methodologies to analyze and synthesize.

**Results**

**Study Characteristics**

Based on the inclusion criteria, ten articles published in the last ten years were included in this review. The vast majority of the articles (n=7, 70%) reviewed were originated and conducted in USA and the remaining articles were from other countries such as Ireland, Australia, and Canada. Six studies (60%) utilized a descriptive research design, two with a one group pre and posttest design, one with a mixed-method design, and one with a two posttest design. The sample sizes ranged from twenty four to one hundred fifty five.

In the quantitative studies, a few scales were utilized to measure outcomes of simulation such as the Student Satisfaction and Self-confidence in Learning Scale (SSLC) and the Clinical Learning Environments Comparison Survey. In four studies, a researcher-designed survey tool was used, while in one study, the Nursing Leadership Content Mastery Assessment, a standardized computer-based assessment tool developed by Assessment Technologies Institute was used. Duration of simulation ranged from 20 minutes to 1.5 hours,
while the debriefing duration ranged from 20 minutes to 1 hour. With regards to the quality score of the articles reviewed, the scores ranged from 80% to 90% out of a possible total score of 100%.

Simulation Modality and Scenario
In this review, patient/clinical case scenarios using high fidelity mannequins, medium fidelity simulators, low fidelity simulators, and standardized patients were used during simulation. Simulation scenarios involved handling and caring for patients with various medical and surgical conditions, obstetric and gynecologic patients, psychiatric patients, pediatric, and gerontology patients. In articles with a control group, low or medium fidelity simulations or traditional clinical placements or demonstrations were used.

Key Findings
Four themes were identified from the content analysis: acquisition of or understanding of delegation, enhanced teamwork or collaboration capacities, improved decision-making and problem solving skills, and increased communication skills (Figure 2).

Acquisition of or understanding of delegation
Five studies determined the impact of simulation-based learning on nursing students’ acquisition of delegation skills and/or understanding of delegation. Hourican et al. assessed the usefulness of simulation in promoting management skills in senior nursing students using high fidelity mannequins and standardized patients. Overall, nursing students reported higher levels of awareness and understanding in the following competencies: prioritizing and managing staff workloads, and effective delegation and maintaining patient safety. In Australia, students who were exposed to high fidelity simulation expressed that the simulation experiences improved their skills in prioritizing, delegation, and time management. Three studies in the USA yielded similar outcomes. Nursing students who experiences simulation scenarios using medium and standardized patients obtained higher scores on delegation subscales when compared to those nursing students in non-simulation groups. Similarly, an increased knowledge (68%, n = 66) and higher confidence levels (55%, n = 53) on delegating patient care and prioritizing were seen in senior nursing students after simulation exposure. In a descriptive qualitative study by Kilgore, et al., three essential themes emerged from the nursing student simulation evaluations.
which included nursing students felt the experience was convincing, fostered their ability to delegate, and reinforced leadership and management concepts.

**Enhanced teamwork or collaboration capacities**

Another prominent theme that emerged from the content analysis was “teamwork or collaboration” which was found in five studies \(^{24,25,30,33,35}\). For instance, in an Irish study, senior nursing students who were exposed to simulation scenarios using medium fidelity simulators obtained higher scores on the following areas: providing support to colleagues, teamwork, and interaction with the multidisciplinary team \(^{35}\). In one study that compared nursing students who attended simulation activities, a significantly lower score in the ‘collaborate’ subscale of the Nursing Leadership Content Mastery Assessment were observed in nursing students who had not attended simulation \(^{25}\). A similar finding was seen in an Australian study where improvements were seen in the following competencies: time management, teamwork, and prioritizing strategies \(^{33}\).

Results of nursing students’ simulation evaluation using a researcher-designed simulation-based learning exercise evaluation showed higher levels of confidence in working as a team with nursing students who attended a 20-minute simulation activity \(^{30}\). An important theme that emerged in a qualitative analysis by Kilgore et al. \(^{24}\) was an enhancement in nursing students’ ability to work within the healthcare team as well as reinforcement of leadership and management concepts learned in the classroom.

**Improved decision-making and problem solving skills**

Enhanced decision-making and problem solving skills were identified as an essential outcome of simulation \(^{29,32}\). Che’ Reed et al. \(^{29}\) implemented a leadership management simulation in the USA in a group of students participating in a nurse leadership and management course. After participation in a simulation scenario that involved a patient with severe incisional pain, nursing students obtained a higher awareness on the following areas of nursing management: responding to emergency situations, planning for potential complications, and making quick clinical decisions. Similar findings were observed in a descriptive study by Thomas et al. \(^{32}\). Out of one hundred thirty two senior-level nursing students who attended the simulation experiences, 95%
expressed a higher confidence in making ward/unit decisions, solving problem, and critical thinking.

**Increased communication skills**

The effects of simulation-based activities on students’ skills in communicating effectively with patients and the healthcare team were evaluated in three studies \(^7,32,35\). In a leadership simulation study by Hourican et al. \(^35\) using medium and HFS and standardized patients, nursing students, after simulation, reported an increase in competence in communicating with colleagues and the other members of the multidisciplinary healthcare team along with other competencies such as working with the team, recognizing professional and ethical issues, managing staff workloads, and dealing with unforeseen events in the ward/unit. In a descriptive study by Thomas et al. \(^32\), there were a higher proportion of nursing students who attended a charge nurse simulation scenario and expressed an increased knowledge of the charge nurse role in collaborating and effectively communicating with the staff nurse subordinates and other healthcare team members. In the USA, Gore et al. \(^7\) compared the efficacy of simulated and traditional clinical environments on leadership learning in nursing students. After 30 to 40 minutes of simulation using low-fidelity manikins, nursing students evaluated their simulation experience using the Clinical Learning Environments Comparison Survey (CLECS). Although the scores in the nursing leadership skills were equally high among the two groups, the communication subscales were significantly higher among nursing students who attended the traditional learning placement when compared to nursing students in the simulation group.

**Discussions**

This integrative review synthesized and appraised available literature examining the influence of simulation activities in fostering management and leadership skills among student nurses. Ten studies, primarily with quantitative research designs, informed the findings. While the researchers found some evidence that supported simulation as a modality in teaching management and leadership courses in nursing students, caution should be exercised when making inferences due to scarcity of high quality evidence.
Of note, simulation studies demonstrated a positive influence of simulation-based activities for nursing students understanding or knowledge of and awareness of delegation. Delegation is a key function of a professional nurse and is defined as the “the transfer of responsibility for the performance of an activity from one individual to another while retaining accountability for the outcome”\textsuperscript{39}. Ineffective delegation often leads to negative patients’ outcomes\textsuperscript{40}. While delegation is considered as an important nursing function, this skill often remains underdeveloped in newly graduated nurses and pre-licensure education is often blamed for not adequately preparing nursing students to perform this essential role\textsuperscript{41}. In one study in the United Kingdom (UK), new nurses reported limited clinical opportunities to translate the concept of delegation into practice and to develop competencies to effectively supervise, manage, and organize care during their pre-licensure nursing education\textsuperscript{40}. With that being said, nursing faculty can strengthen delegation skills and facilitate the formation of delegation skills among nursing students and simulation laboratory can be a good avenue to foster this skill.

Collaboration and communication emerged as important outcomes of simulation. The Interprofessional Education Collaborative (IPEC)\textsuperscript{42} recognized teamwork or collaboration and communication as an important component of a patient-centered care practice. Available studies have identified the relevance of collaborative health practice, which is characterized by constant interaction, communication, collaboration, and engagement among inter-professional healthcare workers along with patients and their families in attaining quality healthcare, positive patient outcomes, and ultimately, reduce costs of healthcare and improve organizational productivity\textsuperscript{43,44}. Despite higher emphasis on the importance of effective communication and collaboration during the undergraduate program, many new nurses expressed challenges in effectively communicating, collaborating, and working with other healthcare teams, with patients, and their relatives\textsuperscript{45,46}. This review finding is a support to international studies highlighting the essential role of simulation in enhancing collaboration, communication, and teamwork among healthcare workers from different professions\textsuperscript{25,47}.

Furthermore, simulation showed a positive impact on nursing students’ abilities to solve problems and make critical decisions regarding patients care and ward/unit management. Problem solving and decision making are considered key processes in nursing. In particular,
clinical decision making in nurses is critically important when selecting interventions and
treatments for patients and in addressing their needs. According to Standing, decision
making skills, a central aspect of quality nursing care, can be developed during the
undergraduate period to equip future nurses with the realities and challenges that they will
encounter when they assume the professional nursing role. However, many new nurses reported
lacking in these essential skills and complained that their undergraduate education had not placed
a high enough emphasis on this area of development.

Whereas all simulation studies showed a potential in enhancing a variety of leadership and
management competencies, caution should be exercised when making inferences due to the
presence of certain methodological issues. For instance, in most studies reviewed, the research
designs used were either a descriptive design or a one group pre and posttest design. While many
nursing and healthcare scholars have utilized pre-posttest designs for research, unlike
randomized control trials (RCTs), confounding variables that may affect the intervention
outcomes are not or are poorly controlled. Conversely, findings of RCTs can generate high levels
of evidence, therefore useful, and can guide policy implementers, healthcare managers, and nurse
leaders. Thus, future studies on simulation should be conducted utilizing a more robust research
design.

Another key observation was that there was a lack of scales specific to measuring leadership and
management skills in nursing students. Four studies utilized a researcher designed survey tool
and in the remaining few studies, outcomes of simulation were evaluated using the SSSCL, the
Nursing Leadership Content Mastery Assessment, and the Clinical Learning Environments
Comparison Survey (CLECS). Although these tools were validated, they are not specific to
measuring leadership and management competencies in nursing students. As opined by Foronda
et al., evaluation of simulation efficacy using established instruments is critical. This
highlights the need for a simulation tool specific to measuring leadership and management skills
in students. It is worth noting that leadership and management competencies and study subjects
were evaluated using participant self-report tools rather than a direct measures of their
competencies.
Baxter and Lederman\textsuperscript{51} opined that self-report may not be an accurate measure of actual ability or performance, thus, additional objective evaluation measures should be used to determine these essential competencies.

Power analysis or sample calculation is critically vital as sample size affects the transferability and generalizability of research findings. In this review, most of the studies included have inadequate sample sizes and none utilized a power analysis to identify the number of samples to be included to yield significant findings. Further, duration of the simulation-based activities varied significantly which ranged from 20 minutes to 1 ½ hours, while duration of debriefing ranged from 20 minutes to 1 hour. This certainly poses an inquiry as to how long a simulation activity should be delivered to nursing students to cause significant change in their knowledge and skills. Further, simulation trainings of the simulation facilitators were rarely described. These factors should be considered in future simulation research as it may affect the outcomes of simulation, and thus, the generalizability of the findings.

Of note, all studies reviewed originated mainly from USA, Ireland, Australia, and Canada. With the influx of foreign nurses from Asian countries (China, India, and the Philippines) to Western countries like the Canada, UK, and USA\textsuperscript{52}, this finding poses a question with regards to preparedness of these foreign nurses to assume nursing leadership roles. This finding emphasizes the importance of the integration of leadership simulation in the nursing curricula, especially in the above mentioned non-western countries, to ensure that the nursing graduates from these curricula are prepared for future leadership and management roles and possess managerial and leadership competencies.

Despite the promising outcomes of leadership and management simulations, it is apparent that more efforts are needed when designing simulation activities that incorporate essential leadership and management competencies as defined by the American Organization of Nurse Executive (AONE) and are vital in the overall productivity and effectiveness of any healthcare organizations.
Implications for Nursing Education

The review findings highlights the value of simulation as a powerful tool in teaching leadership and management courses and has the potential of enhancing certain leadership and management skills among nursing students. Amidst the increasing challenges being confronted by faculty in teaching leadership and management skills among nursing students, the incorporation of simulation into nursing management and leadership courses has the potential to enhance students’ delegation skills, skills in solving problem and decision making, communication abilities, and teamwork skills. Incorporation of simulation-based activities in nursing management, leadership courses and in other nursing courses may be useful in the translation of theoretical knowledge into nursing practice. In doing so, nursing schools should make sure that nursing faculty have leadership expertise and they are able to provide relevant leadership and management simulation courses or trainings to better support the learning needs of the pre-licensure nursing students. In addition, simulation resources should be provided to create a more realistic scenario necessary to deliver the intended learning outcomes.

Conclusion

This study provided up-to-date knowledge related to the current state of simulation-based activities in leadership and management courses in pre-licensure nursing programs. Findings of this review provide support to previous simulation studies underlining the significance of this teaching-learning method in enhancing a variety of nursing student outcomes.

Conflict of Interest

The authors declare no conflicts of interest.

Funding

No funding was received for this study.

References


<table>
<thead>
<tr>
<th>Author/Country</th>
<th>Research Design</th>
<th>Subjects/Simulation Duration/Debriefing Duration</th>
<th>Type of Simulation/Measures</th>
<th>Major Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Brown and Rode (2018) USA</td>
<td>Mixed-Method/One group pre and posttest</td>
<td>Subjects: 79 sophomores; 69 juniors; 62 seniors</td>
<td>Simulation Type: HFS</td>
<td>Students reported high levels of satisfaction with their HPS experiences. Sophomores and juniors felt more relaxed with a peer facilitator versus a faculty member. Seniors reported simulation provided them opportunity to develop leadership skills and empower others, and translate management and leadership concept to practice.</td>
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<tr>
<td></td>
<td></td>
<td>Duration: 30 minutes of simulation and 20 minutes of debriefing</td>
<td>Scale: Student Satisfaction and Self-confidence in Learning Scale (SSLC)</td>
<td></td>
</tr>
<tr>
<td>2. Che’ Reed et al. (2009) USA</td>
<td>Descriptive/Observational</td>
<td>Subjects: Students enrolled in the Nursing Leadership and Resource Management Course</td>
<td>Simulation Type: HFS and Standardized Patients</td>
<td>Decision making skills related to the patient and to the care team, interprofessional skills and collaborations were enhanced. Students demonstrated awareness of their surroundings and the ability to comprehend the situation, make decisions quickly, and plan for potential complications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Duration: 1 hour simulation and 1 hour debriefing</td>
<td>Scale: Researcher-designed evaluation criteria for the simulation experience</td>
<td></td>
</tr>
<tr>
<td>Research Design:</td>
<td>Subjects:</td>
<td>Simulation Type:</td>
<td>Scale:</td>
<td>Majority of students responded positively to simulation increasing their confidence in their own ability.</td>
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<tr>
<td>Mixed Method</td>
<td>68 students</td>
<td>Medium fidelity mannequins, standardized patient</td>
<td>Researcher-designed evaluation criteria for the simulation experience</td>
<td>Students stated they felt their ‘confidence increased’ when they achieved what they had to do.</td>
</tr>
<tr>
<td>Ireland</td>
<td>Duration: 4 hours of independent learning</td>
<td></td>
<td></td>
<td>The majority of students stated they would participate again in the simulation.</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>The majority of students indicated that the simulation exercise reflected the reality of the clinical environment.</td>
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<td></td>
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<td>Student’s ratings of their own level of</td>
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</tbody>
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3. Hourican et al. (2008)

- Duration: Within the 4 hours of independent learning
knowledge was increased after the exercise in the following areas: supporting colleagues and working as a team member, managing resources efficiently and effectively, maintaining patient safety, dealing with unusual or unexpected events (problem solving), prioritizing and managing an allocated workload, recognizing changes in physical, emotional, social or psychological, health status and taking appropriate action, recognizing professional and ethical dilemmas, maintaining patient confidentiality, adhering to local and national policies, procedures and guidelines, gathering and recording relevant information, and communicating with colleagues including members of the multidisciplinary team.

4. Gore et al. (2015) USA

<table>
<thead>
<tr>
<th>Design:</th>
<th>Subjects:</th>
<th>Simulation Type:</th>
<th>Scales:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive</td>
<td>155 students</td>
<td>Low-fidelity manikins and a medium-level environmental fidelity</td>
<td>Clinical Learning Environments</td>
</tr>
</tbody>
</table>

- Simulation duration: 30 to 40 minutes simulation and 20 to 25 minutes debriefing
- Students rated communication high in the traditional clinical environment.
- Teaching-learning needs were rated high in the simulated clinical environment.
- Nursing leadership was rated high in both groups.
### 5. Kaplan and Ura (2010)

**Design:** Descriptive  
**Subjects:** 97 senior nursing students  
**Simulation duration:** 20 minutes  
**Simulation Type:** Human patient simulators  
**Scales:** Researcher-designed Post-Simulation-Based Learning Exercise Evaluation  

Students reported increased understanding and confidence in prioritizing and delegating care.  
Students reported more confidence in ability to work as a team.  
Students reported rated simulation to be a good learning experience for the student to better prepare for real-life experiences in a health care setting.  
Students reported enhanced communication with others in the simulated health care setting.


**Design:** Descriptive  
**Subjects:** 24 students  
**Simulation duration:** 45 minutes  
**Type of simulation:** HFS using 3G Simman™ mannequins, one child mannequin, and one live  

Students had improved their ability to delegate, helped to identify their deficits, improved their ability to work in a team and reinforced leadership and management concepts.
<table>
<thead>
<tr>
<th>Pollard and Wild (2014)</th>
<th>Design: Descriptive</th>
<th>Subjects: Students in leadership in nursing course</th>
<th>Type of simulation: low-fidelity leadership and followership simulation exercises</th>
</tr>
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</table>

- Simulation duration: within the allotted 9 hour

- Student could identify how leadership and followership skills would be used within their next clinical and the importance of these attributes as being essential to their future career as a nurse.

- Students have also reported that participating in the activities was realistic and they felt like the decisional complexities experienced in the class were likely the ones they would also need to deal with in their future practice.

- As observed by faculty, students were able to come prepared, improved communication professional identity within their teams and develop collaborative team communication approaches within a social awareness of individual, team and organization that they are being better prepared for interprofessional health care teams.
<table>
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<tr>
<th>8. Sharpnack et al. (2013)</th>
<th>Design: two-group, posttest-only, randomized experimental design</th>
<th>USA</th>
<th>Samples: 66 senior levels students</th>
<th>Type of simulation: Standardized patients and mid-fidelity human patient simulators</th>
<th><strong>Simulation duration:</strong> 1 hour simulation and 30 minutes debriefing</th>
<th>Scales: Nursing Leadership</th>
<th><strong>Subscale scores of those students participating in the simulation showed higher scores on evidence of management of care efficiently, capacity to prevent safety errors, delegation, collaboration, and provision of continuity of care.</strong></th>
</tr>
</thead>
</table>

| 9. Thomas et al. (2011) | Design: Descriptive design | USA | Samples: 132 students | Type of simulation: HFS and SP | **Scale:** Researcher-designed scale to measure simulation and learning experiences | **Students perceived that they can apply decision-making skills for a number of situations not otherwise encountered. The majority of students reported enhanced ability to apply decision-making, problem-solving, and critical-thinking. Majority of the students reported preparedness to assume charge nurse position.** | **Majority reported higher levels of understanding on the following charge nurse role: communication, collaboration, cooperation, time management, decision making, critical thinking, problem solving, and delegation.** |
| 10. Warland (2011) | **Design:** | One group preposttest design | **Samples:** | 115 nursing students | **Type of simulation:** | HFS |
| | **Simulation duration:** | 30 to 45 minutes simulation and 30 to 40 minutes debriefing | **Scale:** | Researcher-designed scale to measure simulation and learning experiences | | |
| Australia | | | | | | |

- Most students felt the simulations increased their understanding of systems and organization of nursing care.
- Students reported gaining skills and understanding on the following: time management, teamwork, prioritizing strategies.
- Twenty students (43%) reported that simulation helped them with organizational skills on their clinical placement.
- 36% reported that simulation helped them with their proper skills.
Figure 1. Diagram of the process used to identify references for the review.
Figure 2. Themes generated in the review

- Leadership and Management Simulation
- Delegation
- Problem solving and decision making
- Communication
- Teamwork and collaboration