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BSN STUDENTS' PERCEPTION OF SATISFACTION AND SELF-CONFIDENCE

AFTER A SIMULATED MOCK CODE EXPERIENCE: A DESCRIPTIVE STUDY

A thesis submitted in partial fulfillment

of the requirements for the degree of

Master of Science in Nursing

By

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Abstract

In the current healthcare environment, nurses are required to provide timely and competent responses to rapidly changing demands resulting from an increasingly expanding wealth of medical knowledge. High fidelity simulation offers unlimited opportunities to practice rare and critical events in a safe and controlled environment. Literature supports the use of simulation for the acquisition of nursing knowledge and skills. However, findings based on the students' perceptions of satisfaction and self-confidence after these simulated experiences is inconclusive. The purpose of this descriptive study is to describe BSN students' perceptions of satisfaction and self-confidence after a simulated mock code experience and to determine the relationship between the students' perceptions of satisfaction/self-confidence and the demographic characteristics. A convenience sample of 50 senior BSN students who were enrolled in a senior-level nursing *Leadership and Management* course was included in the study. The participants completed a paper-and-pencil five-point Likert scale *Student Satisfaction and Self-Confidence in Learning* (National League for Nursing, 2004) survey after the simulated mock code experiences. The results indicated that students were satisfied with the mock code simulation (mean=4.49, SD=0.53) and felt confident with code situations after the simulated experience (mean=4.42, SD=0.41). A significant correlation was found between the male students and satisfaction scores. Independent t-tests did not reveal significant differences between satisfaction/self-confidence and past experience as healthcare providers. However, previous experience working as an EMT was found to significantly contribute to a high level of self-confidence after simulated mock code experiences. The findings of this study provide insight into students' perceptions of self-confidence and

satisfaction toward simulation and may assist faculty to appropriately integrate simulation

into nursing curriculums.

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Chapter 1: Introduction

The world of healthcare is changing every day; the challenge for nurse educators has been discovering new ways to prepare nursing students to provide safe and effective nursing care in this environment. With increasing patient acuity and the complexity of patient care, the health care system demands a higher level of competency from new nursing graduates to improve overall patient care outcomes. Nurse educators strive to promote students' critical thinking skills, learning, confidence, and satisfaction through various teaching approaches because they cannot prepare nursing students for every situation that they may encounter in clinical practice. Recently, an educational strategy known as simulation has been adopted by nurse educators (Feingold, Calaluce, & Kallen, 2004).

The use of simulation in nursing education is growing in popularity for several reasons. The national nursing shortage exists at all levels of practice and will be getting worse in the foreseeable future (Upenieks, 2005); however, the enrollment in nursing programs is limited due to lack of faculty members and clinical sites. The American Association of Colleges of Nursing (AACN) recognizes that "the shortage of faculty in schools of nursing is a continuing and expanding problem." "Over the past several years, the deficit of faculty has reached critical proportions as the current faculty workforce rapidly advances toward retirement and the pool of younger replacement faculty decreases." (AACN, 2005, para.1). Simulation offers opportunities to practice rare and critical events in a safe and controlled environment, affording unlimited practice without

risk to patients. Simulation allows the opportunity for repetitive practice at learner's own pace and can potentially increase the speed of acquisition of clinical skills to a defined level of competence. With simulation faculty can ensure that the same experience is achieved for every student; this reduces training variability and increases standardization (Maran, & Glavin, 2003). Scenario themes can be used to emphasize team collaboration and communication, requiring students to collaborate among themselves as well as with RNs and other health professionals. Therefore, simulation helps students understand the importance of collaboration among interdisciplinary teams (Lasater, 2007).

Faculty shortages, decreasing numbers of available clinical sites, increasing patient acuity, decreased length of patient stays, and increasing technology in health care facilities are affecting the quantity and quality of clinical experiences available for nursing students. Clinical simulation is an innovative teaching and learning strategy that supports the efforts of educators to prepare students for practice in this complex environment. It also facilitates students' ability to apply and synthesize knowledge learned in an environment that imitates the clinical setting (Jeffries, 2005). In particular, simulation is used to help students improve their competence and confidence when facing stressful situations in critical care and emergency settings (White, 2003).

Nationwide, simulation has been a major trend in nursing education. The Essentials of Master's Education in Nursing (American Association of Colleges of Nursing, AACN, 2011) encourage the use of simulations as a learning strategy to mimic health care situations that are not readily accessible to the student, such as simulated mass casualty events, database problems, and interpersonal communication scenarios. It also can be used as an adjunct learning experience in tandem with direct human interface. The

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National League for Nursing (NLN) research priorities in nursing education from 2012 to 2015 are focusing on integrating technology into nursing education. They aim to develop and evaluate simulated learning experiences with program outcomes (NLN, 2011). Since 2006, the National Council of State Boards of Nursing (NCSBN) and respective State Boards of Nursing have established regulations that address the use of simulation in pre-licensure nursing education (Nehring, 2008). Currently, the NCSBN is conducting a national, multi-site, longitudinal study ranging from 2009 to 2015 to determine the impact and outcomes of simulation in pre-licensure clinical nursing education (NCSBN, nd.).

Evaluation of the effectiveness of simulation in nursing curriculums continues to represent a gap in the existing literature (Howard et al., 2009). Negative learning outcomes may occur if the student learns something incorrectly because of a lack of physical or equipment fidelity. For example, reflexes, edema, and capillary refill cannot be assessed using a simulator (Lasater, 2007).

The diversity of the nursing student population is likely to result in a learning environment where some students are comfortable with simulation technology, while others may be intimidated by it (Billings, Skiba, & Connors, 2005). Therefore, to most effectively achieve desired outcomes of clinical simulation, it must be implemented from a learner-centered teaching and learning strategy.

<div align="center">**Problem Statement**</div>

In general, the literature supports the use of simulation to benefit nursing students in the areas of knowledge, value, and realism, but the results of students' perceptions of satisfaction and self-confidence are inconsistent (Norman, 2012). The school of nursing

faculty at a Midwest faith-based institution has historically assessed student confidence of nursing knowledge and skills by observing student interactions with patients, families, and hospital personnel. However, such an intuitive/subjective approach fails to capture the students' self-perception of confidence in nursing knowledge and skills. Without knowing the students' perception of simulation, educators may not be able to improve simulation education or bolster the students' learning through simulation. Currently, there is insufficient research using standard measurement tools to assess the benefits of simulation in relation to undergraduate nursing students' self-confidence toward skills and satisfaction with simulation (Yuan, Williams, & Fang, 2012).

Purpose Statement

The purpose of this study is to explore baccalaureate nursing students' perceptions of self-confidence and satisfaction after a simulated mock code experience at a Midwest faith-based institution.

Research Questions

1. What is the perception of satisfaction among BSN nursing students after a simulated mock code experience?
2. What is the perception of self-confidence among BSN nursing students after a simulated mock code experience?
3. What is the relationship between student satisfaction/self-confidence and the demographic characteristics?

Chapter 2: Review of Literature

A review of the literature was completed using the Cumulative Index to Nursing and Allied Health Literature (CINAHL) with full text and MEDLINE databases. Studies that examined the impact of simulation in nursing education on students' satisfaction and self-confidence, as well as mock code simulation or training were included. The review of literature also addressed benefits that support the use of simulation in nursing education and as well as barriers that should be considered when using simulation in nursing education. Primary research articles published in English between the years 2002 and 2012 were included.

Student perceptions regarding the integration of simulation into the curriculum have been explored by many researchers. The general consensus is that simulation is a valuable tool for educating future nurses. (Bray, Schwartz, Weeks, & Kardong-Edgren, 2009; Jansen, Johnson, Larson, Berry & Brenner, 2009; McCallum, 2007). However, researchers agree that additional research is still needed for determining optimal methods for integration of simulation into the nursing curriculum. For instance, Kardong-Edgren, Starkweather, & Ward (2008) conducted a non-experimental pilot project to assess faculty and student perceptions concerning the use of simulation in a BSN program. One hundred nursing students participated in three simulation scenarios. The National League for Nursing (NLN) educational practice in simulation scale, the Student Satisfaction and Self-Confidence in Learning Scale, and the Simulation Design Scale were used to evaluate educational practices, simulation design, student satisfaction, and self-

confidence. Findings revealed that there were mixed feelings regarding the use of

simulation among faculty. However, student participants found simulation to be

satisfying and stated that it increased their self-confidence (Kardong-Edgren,

Starkweather, & Ward, 2008).

Prescott & Garside (2009) used a mixed method approach to evaluate simulation

strategies used to educate second-year diploma nursing students. Thirty-two of the

seventy-three students had never taken part in a simulation clinical before. Participants

completed a pre-test and post-test related to the students' knowledge level,

understanding, skills, and confidence. Researchers noted that prior to simulation,

participants felt that they had a strong knowledge base but lacked confidence. After

simulation, students noted that they felt more competent and confident in their skill level.

One participant wrote that simulation was more beneficial than lecture. Fifty-one students

agreed that they felt better prepared after simulation, and twenty-two students strongly

agreed that they felt better prepared (Prescott & Garside, 2009).

In a study conducted by Wolf (2008), a new program was designed to teach

appropriate assessment and intervention skills through a combination of classroom

sessions and clinical simulation using the Laerdal SimMan. The purpose of the study was

to explore the perception of confidence among both experienced and inexperienced triage

nurses after participating in the new educational program in an ER setting. The results

showed all of the nurses agreed or strongly agreed that the combination of simulation and

classroom teaching methods were extremely helpful and increased their confidence in the

triage role.

To increase cardiopulmonary arrest survival, the American Heart Association developed both basic and advanced cardiac life support (ACLS) courses. Hoadley (2009) studied the differences in outcomes between groups taught ACLS using high fidelity human patient simulation and lower fidelity manikin methods. This study involved fifty-three health care providers, including nurses and physicians, and found higher scores on knowledge and resuscitation skills in the group using high fidelity human patient simulation. The Simulation Design Scale, the Student Satisfaction with Learning Scale, and the Self-Confidence in Learning Using Simulation Scale from the National League for Nursing (NLN) were used in the study. The results showed students valued feedback regarding high fidelity human patient simulation. In addition, participants' self-confidence to care for a victim of cardiopulmonary arrest was increased after completing their simulation course (Hoadley, 2009). Additionally, Ackerman, Kenny, and Walker (2007) found increased knowledge retention of CPR skills in BSN students after receiving training with a high fidelity human patient simulation compared with traditional American Heart Association training.

von Arx and Pretzlaff (2010) conducted a pilot study in two community pediatric hospitals to assess the readiness of nurses using a mock code program. The pilot outcomes were from twenty-seven participants including physicians, pharmacists, and nurses. The results demonstrated effectiveness of the mock code in improving nurse readiness and comfort in pediatric resuscitation. Participants reported feeling more comfortable with the crash cart contents and confident with their roles and leadership skills in a code situation. However, the reliability and validity of the self-report questionnaires used for the study was not reported (von Arx, & Pretzlaff, 2010).

Many studies have showed high-fidelity simulation education provided more benefits than traditional ACLS training. A recent single-blinded, randomized controlled trial evaluated the retention of ACLS knowledge between high fidelity simulation and traditional training in medical students. The study showed that students had greater initial ACLS knowledge after high fidelity simulation versus traditional training. After six months, however, both groups performed the same. Satisfaction was higher with simulation compared to traditional training (Lo et al., 2011). Researchers in this study used a self-developed questionnaire; reliability and validity of the instrument had not been established.

Evaluating students' performance in simulation exercises can be challenging. An exploratory qualitative-quantitative study by Lasater (2007) attempted to find students' reaction to simulation exercises by piloting an evaluation rubric based on Tanner's Clinical Judgment Model. Twenty-four participants were recruited from junior baccalaureate nursing students in a med-surg clinical course. No significant differences were found in the improvement of their knowledge and skills. However, the students in the focus group were able to identify strengths of high-fidelity simulation in learning. The study included data collection at different times and the results were statistically analyzed. The development and refinement of the scoring rubric during the study reduced the reliability and validity of the measurements, which is a potential confounder (Lasater, 2007).

The hypothesis that simulation can benefit students' knowledge and confidence levels was tested in a quasi-experimental study by Scherer, Bruce, and Runkawatt (2007). This study compared the educational effectiveness of simulation and a case study

presentation. The participants were 23 nurse practitioner students who enrolled in an acute care clinical program. It was hypothesized that students would have higher scores in knowledge and confidence after participating in a cardiac event simulation exercise. Results showed that both the experimental and control groups had improved scores in both knowledge and confidence with little statistical difference. Strengths of the study include randomization of participants into groups and use of standardized instruments for data collection. Students' quotes added to the richness of the article. Limitations included a small sample size and lack of calibration of the instruments (Scherer, Bruce, & Runkawatt, 2007).

Overall, the literature highlights a lack of standardized measurement tools to evaluate the outcomes of simulation such as satisfaction and self-confidence. Most research does not focus on the validation of measurements. The validity and reliability of the instruments were rarely described in the studies. Furthermore, although evidence in the literatures suggests that simulation facilitates the acquisition of knowledge, skills, and learning behaviors, simulation related outcome measurements such as clinical judgment and satisfaction have not been elucidated. Standardized objective measurements should be used to measure student outcomes from simulation experiences. Therefore, the purpose of this study is to explore the BSN students' perceptions of self-confidence and satisfaction after a simulated mock code experience during an existing clinical course using a standardized instrument from the National League for Nursing (NLN) and to determine the relationship between students' satisfaction/self-confidence and their demographic characteristics.

Theoretical Framework

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The theoretical framework used to guide this study is the Simulation Model by Jeffries (2005).

According to Jeffries (2005), the Simulation Model is a useful guide for designing, implementing, and evaluating simulations in nursing education. This framework identifies five main conceptual components: teacher factors, student factors, educational practices, simulation design characteristics, and expected outcomes. The relationships among these factors are described in Figure 1.
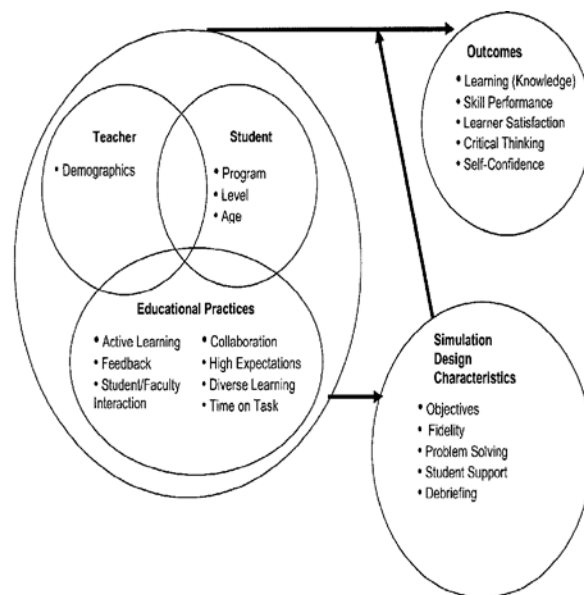
Figure 1: Simulation Model. Jeffries, (2005). *Note*. Data are from a framework for designing, implementing, and evaluating: simulations used as teaching strategies in nursing, p. 97. Retrieved October 26, 2012 from *Nursing Education Perspectives*, *26*(2).

Learner satisfaction and self-confidence were the focused variables in this study. Students' satisfaction and self-confidence in a specific simulation were measured. This researcher also analyzed whether there was a relationship between student demographic characteristics and their satisfaction/self-confidence.

Conceptual and Operational Definitions

Simulation

Conceptual Definition: "Simulations are activities that mimic the reality of a clinical environment and are designed to demonstrate procedures, decision-making, and critical

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thinking through techniques such as role playing and the use of devises such as interactive videos or computer-based mannequins." (Jeffries, 2005, p. 97).

Operational Definition: The use of a high fidelity patient simulator to mimic an unresponsive patient in an emergency, code situation in which students demonstrate assessment and implementation of immediate nursing intervention activities including advanced cardiovascular life support followed by teacher-guided reflective thinking.

Self-confidence

Conceptual Definition: Self-confidence is conceptually defined as trusting the soundness of one's own judgment and performance (Jeffries, 2005).

Operational Definition: The National League for Nursing's Student Satisfaction and Self-Confidence in Learning questionnaire will be used to measure students' perceptions of their capabilities for delivering nursing interventions after a simulation experience (NLN, 2004).

Satisfaction

Conceptual Definition: The perception of full explanations and contentment with teaching through simulation (DeYoung, 2003).

Operational Definition: The National League for Nursing's Student Satisfaction and Self-Confidence in Learning questionnaire will be used to measure student satisfaction are after completing simulation experiences (NLN, 2004).

<div align="center">

Instrumentation

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A researcher-designed demographic instrument (Appendix A) was used to collect participants' demographic information. The Student Satisfaction and Self-confidence in Learning Scale (NLN, 2004) was used to collect data on student satisfaction and self-

confidence in relation to simulation as a learning tool (Appendix C). This instrument includes two subscales: satisfaction and self-confidence. The student satisfaction subscale measures student satisfaction with five items related to simulation activities. The self-confidence subscale in comprised of eight items to measure students' confidence in the skills and knowledge presented in the simulation scenarios (Jeffries & Rogers, 2007). Content validity for this instrument was accomplished by a review of ten simulation development and testing experts. The tool is a self-report survey using the 5-point Likert scale (1=strongly disagree, 2=disagree, 3=undecided, 4=agree, 5=strongly agree). In the study, students were asked to rate their satisfaction and their confidence in resuscitating a simulated victim of cardiopulmonary arrest after a simulated mock code experience. The Cronbach alphas for the satisfaction subscale and self-confidence scale were reported 0.94 and 0.87.

Chapter 3: Methodology

Participants

A convenience sample of 50 senior nursing students was recruited from a faith-based, traditional 4-year BSN program located in Midwestern Ohio. The participants were senior nursing students in the BSN program who enrolled in a senior-level Leadership and Management (NSG 4020) class. None of the participants were under 18 years old and no vulnerable population was included. The inclusion criterion for participation in the study was enrollment in the NSG 4020 Leadership and Management course and participation in the high fidelity mock code simulation (as part of the course requirement). Power analysis revealed a power of 0.40 with a sample of 50 participants (effect size: 0.5, alpha: 0.05).

Protection of Human Subjects

Institutional Review Board (IRB) approval was obtained prior to data collection. Data was collected anonymously and was stored on a password protected computer. All completed forms were kept in a locked cabinet. Participation was voluntary and students were informed that their decision for participation in this study would not impact their NSG 4020 course grade. The researcher was not the instructor for the course. Students were informed that they had the freedom to withdraw from the study at any time.

Requesting consent was waived since this current study was exempt from IRB review. After the mock code experience, students who agreed to participate in the study

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were asked to complete the NLN Student Satisfaction and Self-confidence in Learning Scale (NLN, 2004) and a demographic information sheet.

Design

A descriptive design was used for this study and was conducted in spring semester of 2013. The purpose is to describe the BSN students' perceptions of satisfaction and self-confidence after a simulated mock code experience and to explore the relationship between students' perceptions of satisfaction/self-confidence and their demographic characteristics.

Data collection

The researcher presented the purpose of the study to the students enrolled in NSG 4020 on January 8, 2013. The students were informed that they had the freedom to withdraw from the study at any time and their decision to participate would not affect the NSG 4020 course grade. After the mock code experience, students who agreed to participate were asked to complete the Student Satisfaction and Self-confidence in Learning Scale (NLN, 2004) and a demographic information sheet.

The researcher observed students throughout the simulated mock code experience, which was designed as the Cardiopulmonary Resuscitation Module in the NSG 4020 syllabus. The simulation experience included orientation to the simulator and laboratory. Following the orientation the students were assigned into groups of five or six for a mock code simulation using high-fidelity simulators. The laboratory and simulator mimicked an ICU environment. The students were required to apply the ACLS algorithm from the American Heart Association to the simulated scenarios, and were encouraged to thoroughly assess the patient simulator and exercise clinical judgment skills.

Students who agree to participate filled out the NLN survey in a reserved room after completing the mock code experience. No potential risks were expected. No identifiable information was obtained. There was no connection between participants and the data collected.

Data Analysis

All data was entered into a database and statistical data analysis was conducted using the Statistical Package for Social Science (SPSS) software. A *p*-value of 0.05 was considered as statistically significant. Data obtained from the Likert scale was treated as an interval/ratio level of data. Descriptive statistics, including frequencies, percentages, means, and standard deviations were used to describe the data about students' perceptions of satisfaction and self-confidence. Pearson *r* (interval/ratio data), phi coefficient (nominal data), and independent sample t-test were used to determine the relationship between students' satisfaction/self-confidence and their demographic characteristics.

Chapter 4: Results

Findings

The aim of this study was to describe senior BSN students' perceptions of satisfaction and self-confidence after a simulated mock code experience and to explore the relationship between students' perceptions of satisfaction and self-confidence and their demographic characteristics. Prior to analyzing data, all data entries were reviewed for outliers and data entry errors. All errors were corrected prior to analyzing data using the Statistical Package for Social Science (SPSS) version 17.0 (SPSS Inc., Chicago, IL, USA). Data was analyzed using descriptive statistics such as frequencies, percentages, means and standard deviation. Independent t-tests were used to compare data and correlations were performed using Pearson's *r* and *phi* correlations.

Participants

All students enrolled in a senior level nursing leadership and management course in the spring semester of 2013 were recruited to participate in the study. Descriptive statistics were used to summarize the students' demographic characteristics (Table one). All of the students (n = 50) agreed to participate in the study. Most of the participants (94 percent, n=47) were female with an average age of 21.52 years (SD = 0.65). Approximately one third (35 percent, n = 19) had no experience working in a health care setting in addition to the required clinical experience of the nursing curriculum. The range of experience was zero to four years of experience and of those students who reported previous experience; it was in the capacity of being employed as certified

nursing assistants and patient care technicians. In addition, 45 students (90 percent) had

no experience working as an Emergency Medical Technician (EMT). All participants had

from one to eight previous experiences with simulation prior to the study.

Perception of Satisfaction

Descriptive statistics were used to summarize the scores of students' perceptions of

satisfaction after the simulated mock code experience (Table two). The overall mean for

the satisfaction subscale was 4.49 (SD = 0.53). No student strongly disagreed on any of

the five items on the satisfaction subscale. Students' responses to each satisfaction item-

ranged from 2 (disagree) to 5 (strongly agree). The mean satisfaction score of each item

ranged from 4.28 (SD = 0.78) to 4.65 (SD = 0.60). Satisfaction subscale item five had the

lowest mean score (4.28+/-0.78), which indicated degree of satisfaction with instructors'

teaching method. Three students reported a score of 2 (disagree) and one student reported

a score of 3 (undecided) for item five, which correlated to 8% of the 50 participants.

Satisfaction subscale item two had the highest mean score (4.65+/-0.60) which indicated

that the majority of the students agreed that the simulation provided them with a variety

of learning materials and activities to promote their learning the medical surgical

curriculum. For item two, 46 (93.88%) students reported a score of 4 (agree) or 5

(strongly agree). The overall mean score for satisfaction of 4.49 suggests that the

majority of the students were satisfied with the simulated mock code experience.

Perception of Self-confidence

Descriptive statistics were used to summarize the scores of the students' perceptions

of self-confidence after the simulated mock code experience (Table two). The overall

mean for the self-confidence subscale was 4.42 (SD = 0.41). Students' responses to the

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self-confidence subscale items ranged from 1 (strongly disagree) to 5 (strongly agree). The mean self-confidence score of each item ranged from 4.06 to 4.60. Self-confidence subscale item six had the lowest mean score (4.06+/-0.68), which reflected how confident students were in mastering the content of the simulation activity. One student reported a score of 1 (strongly disagree) and 4 students reported a score of 3 (undecided), which was 10% of the 50 participants. Self-confidence subscale items seven and ten had the highest mean score of 4.60 (SD = 0.49 and 0.61, respectively). For item seven, all students reported a score of either 4 (agree) or 5 (strongly agree), which indicated they were confident that the simulation covered critical content necessary for the mastery of the skill. Students' responses on item ten showed that 47 students (94%) agreed or strongly agreed that it was the students' responsibility to learn the content from the simulation activity, which was 94% of the 50 The overall mean score for self-confidence of 4.42 suggested that majority of the students were confident in their ability to manage code situations following the simulated mock code experience.

Relationship between Demographic Characteristics and Satisfaction/Self-confidence

Pearson *r* and *phi* coefficient correlations were conducted to explore the correlations between students' demographic characteristics and their perceptions of satisfaction and self-confidence (Table three). No significant correlations were found between the demographic characteristics and student satisfaction and self-confidence except that male students had a significantly higher satisfaction score (phi=0.701, p=0.004, n=3). In addition, independent t-tests did not reveal significant differences on the mean satisfaction (t = -0.82, p = 0.42) and self-confidence (t = -0.69, p = 0.49) scores between students with and without past working experience as healthcare providers. Students who

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had previous EMT experience (n=5) showed significantly higher self-confidence mean score, compared with students who did not have previous EMT experiences ($t = 2.23$, $p = 0.049$, $\alpha = 0.05$). However, there was no significant difference on the satisfaction mean score between students who had EMT and not had EMT experience ($t = 1.39$, $p = 0.17$).

Table 1

Demographic Characteristics

Variables	Frequency (N = 50)	Percentage (100%)
Age (years)		
20-21	26	52
22-23	24	48
Gender		
Female	47	94
Male	3	6
Ethnicity		
Asian	2	4
Caucasian	46	92
Other	2	4
GPA		
< 3.0	2	4.08
3.0-3.5	18	36.74
≥ 3.5	29	59.18
Other College Degree		
Yes	1	2.13
No	46	97.87
Previous Simulation Experience		
Yes	50	100
Number of Simulation in the Past		
≤ 3	44	88
> 3	6	12
Experience Working as an EMT		
Yes	5	10
No	45	90
Experience Working in Healthcare		
Yes	31	62
No	19	38
Years of Working in Healthcare		
< 2	38	76
≥ 2	12	24

Table 2

Satisfaction and Self-confidence Scores (N = 50)

Items	Mean (SD)	Min	Max	≤ 3 *		≥ 4 *	
Satisfaction with Current Learning				N	%	N	%
1. The teaching methods used in this simulation were helpful and effective.	4.62 (0.64)	2	5	2	4%	48	96%
2. The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum.	4.65 (0.60)	3	5	3	6.12%	46	93.88%
3. I enjoyed how my instructor taught the simulation.	4.38 (0.78)	2	5	5	10%	45	90%
4. The teaching materials used in this simulation were motivating and helped me to learn.	4.46 (0.65)	3	5	4	8%	46	92%
5. The way my instructor(s) taught the simulation was suitable to the way I learn.	4.28 (0.78)	2	5	4	8%	46	92%
Overall Satisfaction	**4.49 (0.53)**						
Self-confidence in Learning							
6. I am confident that I am mastering the content of the simulation activity that my instructors presented to me.	4.06 (0.68)	1	5	5	10%	45	90%
7. I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum.	4.60 (0.49)	4	5	0	0%	50	100%
8. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting.	4.44 (0.61)	3	5	3	6%	47	94%
9. My instructors used helpful resources to teach the simulation.	4.34 (0.75)	2	5	6	12%	44	88%
10. It is my responsibility as the student to learn what I need to know from this simulation activity.	4.60 (0.61)	3	5	3	6%	47	94%
11. I know how to get help when I do not understand the concepts covered in the simulation.	4.58 (0.64)	2	5	2	4%	48	96%
12. I know how to use simulation activities to learn critical aspects of these skills.	4.52 (0.54)	3	5	1	2%	49	98%
13. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time.	4.24 (0.69)	2	5	5	10%	45	90%
Overall Self-confidence	**4.42 (0.41)**						

* 1 = STRONGLY DISAGREE with the statement
  2 = DISAGREE with the statement
  3 = UNDECIDED – you neither agree or disagree with the statement
  4 = AGREE with the statement
  5 = STRONGLY agree with the statement

Table 3

Correlations: Demographic Characteristics, Satisfaction Score and Self-confidence Score

(N = 50)

Demographic Characteristics	Satisfaction	Self-confidence
Age	r = -0.05 p = 0.73 n = 49	r = 0.06 p = 0.68 n = 50
Gender	phi = 0.701 *p = 0.004 n = 49	phi = 0.525 p = 0.182 n = 50
Race/ethnicity	phi = 0.745 p = 0.076 n = 49	phi = 0.557 p = 0.748 n = 50
GPA	r = 0.20 p = 0.18 n = 48	r = 0.05 p = 0.73 n = 49
Other college degree	phi = 0.215 p = 0.988 n = 47	phi = 0.303 p = 0.932 n = 47
Previous experience with simulation	All students have had previous experience with simulation.	
Number of simulation in the past	r = 0.12 p = 0.40 n = 49	r = 0.11 p = 0.46 n = 50
Experience working as an EMT	phi = 0.299 p = 0.885 n = 49	phi = 0.527 p = 0.178 n = 50
Experience working in health care	phi = 0.356 p = 0.720 n = 49	phi = 0.597 p = 0.058 n = 50
Years working in health care	r = -0.23 p = 0.11 n = 49	r = -0.24 p = 0.10 n = 50

* $\alpha = 0.05$

Discussion

In this study students were satisfied with the high fidelity simulated mock code experience as a teaching method which was indicated by a mean score of 4.49 (SD = 0.53) on the Satisfaction subscale. Additionally, the students felt confident with code situations after the simulated mock code experience as indicated by a mean score of 4.42 (SD = 0.41) on the Self-Confidence subscale of the Student Satisfaction and Self-Confidence in Learning scale. No significant correlations were found among the demographic variables of age, GPA, previous degree, health care experience, and simulation experience and student satisfaction or self-confidence. However, male students had significantly higher satisfaction scores compared to female students. In addition, previous EMT experience was significantly correlated with a higher self-confidence score after the simulated mock code experience.

Through observing the whole mock code simulation process, the researcher of this study was able to see improvements in critical cue recognition and problem identification during a mock code experience. For instance, students were visibly more confident during the simulated emergency situation by the end of their experience. Students also were able to anticipate code related drugs, interpret changes in cardiac rhythms and appropriately intervene on behalf of their simulated patient. Overall, the mock code program using high fidelity patient simulators showed a clear benefit as evidenced not only by personal observations, but also by student reported improvements in self-confidence during the emergency situation.

Comparison with Literature

Students' perception of satisfaction and self-confidence after simulated experiences has been one of the focuses in nursing literature (Childs & Sepples, 2006; Jeffries, 2007; Lasater, 2007; Norman, 2012; Reilly & Spratt, 2007; Prescott & Garside, 2009; Scherer,

Bruce, & Runkawatt, 2007). The results of this study were consistent with findings from the previous reports. A systematic review based on current available literature on simulation and nursing education indicated that simulation is useful in creating a learning environment that contributes to knowledge, skill, safety, and confidence (Norman, 2012). Prescott and Garside (2009) explored the experiences of simulation among 45 second-year diploma nursing students. The findings showed widespread agreement that simulation is a productive learning strategy and builds confidence. After the simulation, 49% of students agreed and 49% strongly agreed that their confidence had increased. Although many students at initial interview commented that simulation was frightening, they reported that as they gained more experience in the simulation environment, they felt significantly more confident.

The finding of higher student confidence level after a simulation was also found in a quasi-experimental study conducted by Scherer, Bruce, and Runkawatt. Scherer et al., (2007) who compared confidence scores of advanced nurse practitioner students who participated in the simulation experience and those who were in the control group during a cardiac event. All 23 participants had previously viewed a power point presentation and did pre-test on the simulation exercise. The experimental group (n=13) participated in a simulation exercise while the control group (n=10) received case study presentation with differential diagnosis and plan of care exercise. Post-test confidence scores improved in both groups. Confidence scores were higher in the control group; however, this could be due to the fact that students in the control group did not have to demonstrate hands-on skills as did students in the simulation group (Scherer et al., 2007).

No study has been conducted to explore the relationship between nursing students with previous EMT experience and self-confidence in managing emergency situations after a simulated experience. This study found a significant correlation between previous EMT experience and higher self-confidence scores. EMT nursing students typically have had opportunities to respond to emergency situations while completing their nursing education; this may explain the significant correlation between previous EMT experience and self-confidence in this current study.

The NLN/ Nursing Education Simulation Framework (NESF) was used to guide this study. The NESF framework suggests that satisfaction and self-confidence toward simulation are the result of a combination of factors, including teacher factors, educational practices, simulation design characteristics, and student factors (Jeffries, 2005). The current study only focused on the relationships between student factor (demographic characteristics) and two NESF outcomes, namely satisfaction and self-confidence. The study results showed that previous EMT experience was significantly related to the outcome of self-confidence in the NESF. In addition, male gender was significantly correlated with higher satisfaction score. Therefore, these results indicate that student demographic characteristics do correlate with outcomes of learners' satisfaction and self-confidence as the NESF illustrates.

Implications

Nurse educators face the challenge of how to best equip nursing students to care for patients in an increasingly complex healthcare environment. This challenge is intensified by the shortage of nursing faculty, increasing acuity of patient illnesses, and rapid technological changes in the health care setting. Innovative teaching strategies and

modalities are essential in engaging students in active learning and bridging the gap between theory and practice (Feingold, Calaluce, & Kallen, 2004; Maas & Flood, 2011; Benner, Sutphen, Leonard, & Day, 2010).

The findings of this study may be used as a foundation to integrate simulation into a nursing curriculum. A well-designed simulation has been shown to be effective in providing students with a safe environment for learning patient care and has shown potential in improving student's learning outcomes such as clinical judgment, self-confidence, and satisfaction (Jeffries & Rogers, 2007; Maran & Glavin, 2003). Benner et al. (2010) emphasized the importance of experiential teaching and learning and situated cognition (thinking in action); high fidelity simulation has consistently linked this instructional strategy to a broad experiential learning perspective. Collaborative simulations such as role playing may improve communication and ultimately improve patient care (Tuoriniemi & Schott-Baer, 2008).   Overall, simulations facilitate the application of theory into practice.

The nursing program at this private institution has been using low, moderate and high fidelity simulators for various levels of nursing students in the past several years. In the current fiscal year, the school of nursing invested in high fidelity simulators. It has been an ongoing goal for the nursing faculty to determine the best use of the simulators to promote student learning outcomes. While this has been a goal for the school, there has not been any formal evaluation using standardized instruments/tools for the assessment of outcomes in simulation and student perceptions toward simulation. The findings of this study provide insights for the BSN program of this private institution to fully integrate high fidelity simulation into the nursing curriculum for all levels of nursing students.

Currently only the senior BSN students use simulation as part of the nursing curriculum to facilitate the attainment of nursing skills and the development of critical thinking and clinical judgment. The author recommends developing simulation experiences for beginning nursing students and encourages the implementation of simulation from beginning to end in the nursing curricula.

Limitations

The major limitation of this study was the small sample size (power=0.40); the convenience sample resulted in limited generalizability. This study used a homogenous sample of 50 senior nursing students enrolled in a senior-level nursing course from a faith-based literal art institution in mid-west Ohio. The majority of the participants were Caucasian (92 percent) and female (94 percent). While generalizability is limited due to the small sample size and low power, the study included all nursing students who were involved in the mock code simulation in the BSN program of the institution.

Recommendations for Future Research

Future studies are needed to investigate the impact of teacher factors, educational practice and design characteristics on other learning outcomes. Learning outcomes such as learning knowledge, skill performance, and critical thinking, as illustrated in the Jeffries (2005) framework, should be evaluated using a larger sample size, diverse simulated scenarios, and all levels of nursing students (freshmen to seniors). This study focused only on two outcomes, self-confidence and satisfaction, and only a small portion of the student factor.

Another recommended direction for future study is to explore the sustainability of the impact of simulation and to investigate if the impact translates to real-life clinical

situations. While high level of confidence after the simulated mock code experience was reported in this study, the longevity of this confidence after the simulation is not known. The students may perceive an increase in confidence because of being in a controlled, supervised setting where they can do no harm. Perhaps the increase of confidence is not realized until the student experiences a real-life situation like the one in the simulation. More research needs to be conducted to examine the transferability of the impact from the simulation experience into real clinical situations.

Chapter 5: Summary

Innovative teaching modalities are increasingly available to nurse educators. With decreased availability of clinical sites (Nehring, 2008), nurse educators need to evaluate these modalities to understand how they can best prepare future nurses for practice. This study showed that the majority of the participating students were satisfied with the simulated mock code experience and were confident in their ability to manage code situation following the simulated mock code experience. Further research will help facilitate the understanding of the effectiveness of simulation and identify best practices for its use in nursing education.

Appendix A

Demographic Information Sheet

Please complete the following:

Age: _____

Gender:
_____Female
_____Male

Race/Ethnicity:
_____American Indian or Alaska Native
_____Asian
_____Black or African American
_____Native Hawaiian or other Pacific Islander
_____White
_____Other

Current cumulative Grade Point Average:
_____

Other college degree:
_____Yes: Please specify degree held_____
_____No

Previous experience with clinical simulations:
_____Yes
  - Number of simulation you have participated in the past _____

_____No

Experience working as an EMT:
_____ Yes
_____ No

Experience working in healthcare:
_____Yes
  - Number of years working in healthcare ____
  - Role of work experience _____

_____No

Appendix B. Permission to Use Instrument

From: Nasreen Ferdous
Sent: Monday, October 15, 2012 3:09 PM
To:
Subject: Regarding: Request for NLN Survey Instruments

It is my pleasure to grant you permission to use the "Educational Practices Questionnaire," "Simulation Design Scale" and "Student Satisfaction and Self-Confidence in Learning" NLN/Laerdal Research Tools. In granting permission to use the instruments, it is understood that the following assumptions operate and "caveats" will be respected:

1. It is the sole responsibility of (you) the researcher to determine whether the NLN questionnaire is appropriate to her or his particular study.
2. Modifications to a survey may affect the reliability and/or validity of results. Any modifications made to a survey are the sole responsibility of the researcher.
3. When published or printed, any research findings produced using an NLN survey must be properly cited as specified in the Instrument Request Form. If the content of the NLN survey was modified in any way, this must also be clearly indicated in the text, footnotes and endnotes of all materials where findings are published or printed.

I am pleased that material developed by the National League for Nursing is seen as valuable as you evaluate ways to enhance learning, and I am pleased that we are able to grant permission for use of the "Educational Practices Questionnaire," "Simulation Design Scale" and "Student Satisfaction and Self-Confidence in Learning" instruments.

Nasreen Ferdous | Administrative Coordinator for Grants/R&PD | National League for Nursing | www.nln.org
Phone: 212-812-0315 | Fax: 212-812-0391 | 61 Broadway | New York, NY 10006

3 attachments — Download all attachments
Instrument 1_Educational Practices Questionnaire.pdf
20K   View   Download
Instrument 2_Satisfaction and Self Confidence in Learning .pdf
30K   View   Download
Instrument 3_Simulation Design Scale.pdf
21K   View   Download

Appendix C. Instrument

Student Satisfaction and Self-Confidence in Learning

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

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

Satisfaction with Current Learning	SD	D	UN	A	SA
1. The teaching methods used in this simulation were helpful and effective.	O 1	O 2	O 3	O 4	O 5
2. The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum.	O 1	O 2	O 3	O 4	O 5
3. I enjoyed how my instructor taught the simulation.	O 1	O 2	O 3	O 4	O 5
4. The teaching materials used in this simulation were motivating and helped me to learn.	O 1	O 2	O 3	O 4	O 5
5. The way my instructor(s) taught the simulation was suitable to the way I learn.	O 1	O 2	O 3	O 4	O 5
Self-confidence in Learning	**SD**	**D**	**UN**	**A**	**SA**
6. I am confident that I am mastering the content of the simulation activity that my instructors presented to me.	O 1	O 2	O 3	O 4	O 5
7. I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum.	O 1	O 2	O 3	O 4	O 5
8. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting.	O 1	O 2	O 3	O 4	O 5
9. My instructors used helpful resources to teach the simulation.	O 1	O 2	O 3	O 4	O 5
10. It is my responsibility as the student to learn what I need to know from this simulation activity.	O 1	O 2	O 3	O 4	O 5
11. I know how to get help when I do not understand the concepts covered in the simulation.	O 1	O 2	O 3	O 4	O 5
12. I know how to use simulation activities to learn critical aspects of these skills.	O 1	O 2	O 3	O 4	O 5
13. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time.	O 1	O 2	O 3	O 4	O 5

      Revised December 22, 2004

Appendix D. Institutional Review Board Approval

Jan 2

The attached study is approved to proceed as specified. I wish you great success in your research.

Jill Stringer
Assistant for the Institutional Review Board

5 attachments — Download all attachments

IRB-Application 120312.docx
81K   View   Download

Script 120312.doc
26K   View   Download

signiture page.pdf
24K   View   Download

Demographic sheet.doc
33K   View   Download

Instrument 2_Satisfaction and Self Confidence in Learning .pdf
30K   View   Download

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