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Nursing Students' Perceptions of Satisfaction and Self-Confidence with Clinical Simulation Experience

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Abstract
Nursing and other health professionals are increasingly using simulation as a strategy and a tool for teaching and learning at all levels that need clinical training. Nursing education for decades used simulation as an integral part of nursing education. Recent studies indicated that simulation improves nursing knowledge, clinical practice, critical thinking, communication skills, improve self-confidence and satisfaction as well as clinical decision making.The aim of this study is to explore the perception of 117 nursing students on their satisfaction and self-confidence after clinical simulation experience using a survey method.This study was carried out at College of Nursing- Jeddah, King Saud bin Abdul Aziz University for Health Sciences. Where the nursing program consist of up to 30% clinical simulation.Data analyzed using descriptive method. Results indicated an overall satisfaction with simulation clinical experience. (Mean is 3.76 to 4.0) and indicated that their self-confidence is built after clinical simulation experience. (Mean is 3.11 to 4.14). The highest satisfaction items mean indicating participants agree that the teaching methods and strategies used in the simulation were effective, clinical instructors/ faculties did not embarrass them in front of others, and give them clear idea of what is expected from them. Participant strongly agreed that they are confident to recognize signs and symptoms of disease, obtaining the required knowledge from simulation to perform necessary tasks in clinical practice, developing the required skills from simulation to perform necessary task in clinical practice, and they can accurately assess an individual with any abnormalities.Participants indicated that they have high level of self-confidence in their abilities to conduct, appropriate health assessments, perform effective intervention, participate as an effective team member and recognize patient deterioration events.
Keywords: Clinical Simulation, Satisfaction, Self-Confidence

1. Introduction

Nursing and other health professionals are increasingly using simulation as a strategy and a tool for teaching and learning at all levels that need clinical training. Simulation is considered an effective solution to replace some real-life clinical exposure hour as nursing and other health professionals' programs are facing challenges of inadequate clinical learning opportunities (Miller, 2014; & Hayden et al., 2014).

Clinical simulation is defined as "an attempt to replicate some or nearly all of the essential aspects of a clinical situation so that the situation may be more readily understood and managed when it occurs for real in clinical practice" (Mortan, 1995, p.76). Simulation exposes learners to realistic clinical scenarios in a simulated learning environment rather than waiting for uncommon and rare situation to occur in real-life settings (Kait, 2007 & Norman, 2012). According to Jefferies (2007) simulations can be placed along a continuum - from low-fidelity to high fidelity – depending on the degree to which they address reality. On the low-fidelity end are experiences such as using case studies or role-play. In the middle of the continuum are partial task trainers or computer-based simulators. Finally, at the other end of the continuum are full-scale, high-fidelity patient simulators which are extremely realistic and sophisticated and provide a high level of interactivity and realism for the learner.

Simulation has for decades been considered as an integral part of clinical teaching and learning strategy in nursing. It is used to model real-life situations to enable learners to gain practice experience and develop required clinical nursing skills (Moule, 2008 & Commander 2009). There are several models of simulation used in nursing education (Liaw, 2014 & Weller, 2012) and the clinical environment can be simulated by applying several models of simulation including; full body mannequins, task trainers, standardized simulated patients, virtual or computer generated simulation, or Hyprid simulation, which is combination of several models of simulation techniques that can be used to facilitate learning (Weller, 2012, Liaw, 2014 & Moran, 2003).

Several factors drive the increase of using simulation in nursing and health professional education. Inadequate clinical placement opportunities (Ziv, 2003, Weller, 2012, Richardson, 2014, & Hunter, 2010). Patient safety issues, as simulation allow health care practitioners to acquire the skills and experience required to protect patient safety (Rakshasbhuvankar, 2014, Sehubert, 2012, and Kinsman, 2012). Educational mandates require the use of clinical simulation to ensure that learners have adequate degree of clinical background and ease the transition from student to professional practitioner (Weller, 2012, Weller, 2014 & Young, 2012).

Studies indicated that simulation has several advantages to the health care professionals. It improves nursing clinical practice (Kinsman, 2012 & McCaughey, 2010), nursing knowledge and critical thinking (Schubert, 2012 & Secomb, 2012), communication skills (Young, 2012), self-confidence and satisfaction

(Jeffries and Rizzolo, 2006, Sherril, 2009, & Raman, 2011), and clinical decision making (Powell-Laney, S., Keen, C., & Hall, K. (2012).

This research is based on the Nursing Education Simulation Frame-Work of (Jeffries 2005, 2007) which was reported in her book Simulation in Nursing Education. The framework is developed to help design, implement, and evaluate simulation in nursing education. The nursing education simulation framework has five major components: The Simulation Design Characteristic, educational Practices, teacher Characteristics, students Characteristics, and the Simulation Outcomes which includes learning knowledge, skill performance, critical thinking, learner satisfaction and self-confidence.

Evaluating the learning outcome of simulation and the effect on actual health care outcomes remain a challenge. More research is needed to evaluate the learning outcomes of simulation learning method.

2. Aim of the Study

This study was designed to measure the two components of the outcomes that implied by Jeffries, (2007) model, which are learner satisfaction and self-confidence. The remaining outcomes are measured by the summative and formative evaluation either theoretical of practical exams.

The study specifically sought to:

1. Examine the students' levels of satisfaction and self-confidence related to their simulation learning experiences.
2. Explore the interrelationships between satisfaction, self-confidence the demographic characteristics of students.

3. Subjects and Methods

3.1. Study Settings

This study was carried out at College of Nursing- Jeddah, King Saud bin Abdul Aziz University for Health Sciences, involving Bachelor of Science in Nursing (BSN) students. The college offers two undergraduate nursing programs; one is a four-year program for high school graduates (Stream 1) and the other an accelerated program for Bachelor of Science graduates (Stream 2). Up to 30% of clinical teaching and learning occur by using low fidelity to high fidelity simulation strategies.

3.2 Sample selection

The convenience sampling technique was applied to select a sample of BSN students enrolled in courses that have clinical simulation components, covering different levels and specialties.

3.3Study Design

3.3.1Data Collection and Data Management

A self-report method involving questionnaire completion was applied. The structured questionnaire consisted of three parts.

Part one elicited socio demographic data, including age, stream, and course. This part was developed by the researcher to enable her to examine the interrelationships between the demographic variables, satisfaction and self-confidence.

Part two included a 23 item satisfaction scale. This scale was adopted from two previously developed tools, namely the NLN (2006), that measures satisfaction and self-confidence of student after simulation experience. Its reliability was previously established using Cronbach's alpha and the reliability coefficient was 0.94. Items were also derived from a multidimensional instrument to measuring nursing students' academic satisfaction by Dennison and El-Masri (2012), only the Clinical Teaching Subscale was used in developing the satisfaction section of the questionnaire used in this study. The previously obtained reliability coefficient for the Clinical Teaching Subscale was 0.90.

Part three: self-confidence survey. This αpart included 13 items and was adopted from two previously developed tools, namely the NLN (2006) tool ($\alpha = 0.87$). Items were also adapted from Hicks (2006), which was published in the work by Hicks and Li (2009). Reliability was established using Cronbach's alpha for self-confidence = 0.96.

Part one and two of the survey was a five scale Likert Scale describing to what extend participants agree or disagree with the statements.

Content and Face Validity of the instrument was established through several activities: 29

1. Extensive literature review was done on satisfaction and self-confidence of student related to clinical learning especially with clinical simulation.
2. Face validity was established through independent expert opinion. The questionnaire was distributed to 12 clinical and educational experts in field of nursing. They judged the questionnaire using a checklist that contains items on clarity, relevance, simplicity, breadth, appropriateness, length, and completion time.
3. Content validity also established through distributing the questionnaire survey to 10 students. They also

judged it with reference to clarity, relevance, simplicity, breadth, appropriateness, length, and completion time.

Minor revisions were made to the questionnaire based on the comments received by the experts and students.

3.3.2Ethical Considerations

The investigator of this study complied with the ethical principles of respect for humans and the right to full disclosure, justice which includes the right to fair treatment and the right to privacy, and last principles of autonomy (Newman, Lim, & Pinda. 2013). Approval of this study was obtained from the Human Subject Board the College of Nursing- Jeddah, King Saud bin Abdul Aziz University for Health Sciences for the purpose of protection of participants in the study.

All participants received an invitation letter with each questionnaire ensuring that the participation is voluntary. This letter contained the purpose of the study, research procedure, and a guarantee to maintain anonymity and confidentiality of the information. No names were disclosed in any questionnaire.

3.3.3Data analysis plan

The collected data was analyzed using SPSS version 20. Different methods of data analysis were performed, including descriptive analysis (mean & standard deviation) and bivariate statistics (correlation).

4.Results

The total number of participants in this study were 117 female student nurses; 86 (73.5%) representing stream one and 31 (26.5%) representing stream two. Of the 150 questionnaires which were distributed to students, 117 (78%) returned appropriately completed questionnaires. The participants' age ranged from 19 to 28 ($\bar{x}$ = 22.42; ±2.06). The participants were registered for courses as indicated in Table 1.

Table 1: Distribution of participants by Courses

Course	Number of students	Percentage
Med surge	31	26.5 %
Pediatric	27	23.1 %
Maternity	27	23.1 %
Critical Care	32	27.4 %
Total	117	100 %

The satisfaction and self-confidence surveys were tested for reliability for this study. Both were found to have high Cronbach's Alpha as showed in Table 2.

Table 2: Reliability Statistics for the satisfaction and Self-Confidence survey

	Section B: Satisfaction	Section C: Self-Confidence
Number of items	23	12
Cronbach's Alpha	.897	.871

The results of the satisfaction scale (α = .897) indicated overall satisfaction with simulation (($\bar{x}$ = 3.76 to 4.0). The participants mostly agreed with each statement and some strongly agree with the question statements. The highest satisfaction items mean indicating participants agree that the teaching methods and strategies used in the simulation were effective, clinical instructors / faculties did not embarrass them in front of others, and give them clear idea of what is expected from them. Table 3 shows the satisfaction survey with the means of its items sorted from higher to lower mean.

Table 3: Satisfaction Survey items arranged from higher to low mean

Satisfaction Items	Mean	SD
The teaching methods used in simulation were effective	4.09	0.743
Clinical instructors/faculties did not embarrass me in front of others	4.06	0.735
Clinical instructors/faculties give me clear ideas of what is expected from me during a clinical rotation	4.04	0.621
I enjoyed how my instructor/faculty conducted the simulation sessions	4.00	0.707
The teaching materials used in this simulation were motivating me to learn	4.00	0.67
The teaching methods used in simulation were helpful	3.98	0.799
Clinical instructors/faculties are making me feel comfortable about asking questions	3.98	0.788
Clinical instructors/faculties assign me to cases/scenarios that are appropriate for my level of competence	3.98	0.682
Clinical instructors/faculties view my mistakes as part of my learning	3.97	0.675
Clinical instructors/faculties are open to discussions and different opinions	3.95	0.655
Clinical instructors/faculties demonstrate a high level of knowledge and clinical expertise	3.95	0.68
Clinical instructors/faculties give me sufficient guidance before I perform technical skills	3.94	0.746
Clinical instructors/faculties are approachable	3.93	0.704
Clinical instructors/faculties provided feedback at appropriate times.	3.92	0.767
Clinical instructors/faculties facilitate my ability to critically assess my client's needs	3.91	0.738
Clinical instructors/faculties give me verbal and written feedback concerning my simulation experience	3.91	0.702
Clinical instructors/faculties are available when needed	3.91	0.682
Clinical instructors/faculties provide enough opportunities for independent practice in the lab and clinical sites	3.91	0.726
The simulation provided me with a variety of learning materials and activities to promote my learning process	3.85	0.867
The way my instructors/faculties conducted the simulation was suitable to the way I learn	3.85	0.746
Clinical instructors/faculties encourage me to link theory to practice	3.85	0.727
Faculty members behave professionally	3.84	0.84
Instructors/faculties are consistent among different clinical practice and lab sessions	3.76	0.625

Data elicited from self-confidence scale indicated overall high levels of self-confidence as a result of with simulation. Participants indicated that their self-confidence is built after clinical simulation experience. (Mean is 3.11 to 4.14). Participants either agreed or strongly agreed with the statements related to self-confidence. They indicated that they were particularly confident that they were able to recognize signs and symptoms of disease, able to obtain the required knowledge and skills to perform necessary tasks in clinical practice. In addition, they indicated that they could accurately assess an individual with any abnormalities. Table 4 shows the results pertaining to the self-confidence scale.

Table 4: Self-Confidence Survey

Self Confidence	Mean	SD
I am confident that I can recognize signs and symptoms of diseases	4.14	0.777
I am confident that I am obtaining the required knowledge from simulation to perform necessary tasks in a clinical practice	4.13	0.719
I am confident that I am developing the required skills from simulation to perform necessary tasks in clinical practice	4.11	0.713
I am confident that I can accurately assess an individual with any abnormalities	4.06	0.676
I am certain that I can accomplish my intended learning goals	4.06	0.687
I am confident that I am mastering the content of the simulation activity that my instructors presented to me	4.04	0.607
I am confident that I can deal efficiently with unexpected events	4.03	0.689
I am confident that I can develop appropriate nursing care plan for individuals with any abnormalities	4	0.601
I am confident that the simulation covered critical content necessary for the mastery of the curriculum	3.99	0.623
I can handle whatever comes my way in clinical practice	3.99	0.659
I am confident that I can always manage to solve difficult problems if I try hard enough	3.96	0.687
I am confident that I can evaluate the effectiveness of my interventions for an individual with any abnormalities	3.93	0.691
I am confident that I can appropriately intervene to meet the need of an individual with any abnormalities	3.91	0.695

The Nursing Education Simulation Framework (Jeffries, 2007), proposes that the outcomes of satisfaction and self-confidence are due to combination of factors related to demographic characteristics. In this study correlation is tested using different methods. The Spearman's test correlations were performed and results indicated that satisfaction had a statistically significant correlation with age. (P = .000). Mann-Whitney Test was performed and result indicated that satisfaction had a statistically significant correlation with Stream (P = 0.000) ANOVA Kluskle Walls test indicated that satisfaction had a statistically significant correlation with the courses (P = .002.). These result are presented in Table 5. In regard to self-confidence the results indicated that there was no statistically significant correlation with any of the demographic characteristics age, stream or the course. Result are shown in Table 6.

Table 5: Correlations of Satisfaction with Demographics

	Age (Spearman's Test)	Stream (Mann-Whitney Test)	Course (ANOVA Test)
Pearson Correlation	-.371**	-.353**	-.288**
Sig. (2 – tailed)	.000	.000	.002

** Correlation is significant at the 0.01 level (2- tailed)

Table 6: Correlations of Self-Confidence with Demographics

	Age	Stream	Course
Pearson Correlation	-.138	-.097	-.098
Sig. (2 – tailed)	.138	.299	.296

5.Discussion

Assessing nurse student satisfaction with their learning and self-confidence can provide a baseline for developing and executing educational program for nurses that improve their knowledge acquisition and clinical practice.

The results of this study showed that participants were satisfied with their learning and that the clinical simulation session improved up their self-confidence. Students indicated high satisfaction because e.g. the methods used in simulation were effective and give them clear ideas of what is expected from them. Also students indicted that learning by simulation enables them to improve and retain knowledge e.g. can recognize signs and symptoms of diseases and can perform necessary tasks in a clinical practice. These knowledge acquisition abilities improve their self-confidence. The result of this study is congruent with several studies done in different professions including nursing where results indicated that there is high learner satisfaction with learning by the clinical simulation and that learner's confidence in their skills (Bearnson & Wiker, 2005; Jeffries, 2007; Jefferies & Rizzolo, 2006; Laschinger et al. 2008; Mortan, 1995; Mould, White, & Gallagher, 2011; Hicks, Coke, & Li, 2009; Kiat, Mei, Nagammal, & Jonnie, 2007; & Agha, Alhamrani, & Khan, 2015).

Satisfaction with learning has statistical significant correlation with age, stream and course. This is also

in congruent with Nursing Education Simulation Framework by Jefferies (2007) as it suggests that the outcomes of satisfaction and self-confidence are due to combination of factors related to demographic characteristics. In this study self-Confidence did not have statistical significant correlation with demographic characteristics (age, stream, courses). In a study that evaluated the effect of a computerized training simulator on the retention of neonatal resuscitation skill participants indicated that their satisfaction as well as their level of self-confidence are high because simulation made learning interesting and creative and helped to prepare them to deal with real emergency in the future (Curran, Aziz, O'Young, & Bassell, 2004).

Although Alinier at al. (2006), indicated that their study was unable to determine whether or not the use of simulation leads to a higher level of confidence, several studies indicated that their confidence in their skills increase after simulation activity (Bearnson, 2005; Hicks, Merritt, & Elstein, 2003; & Laschinger, 2008)

Nurses must have high level of self-confidence in their abilities to conduct, appropriate health assessments, perform effective intervention, participate as an effective team member and recognize patient deterioration events (Hart, Spira, & Moreno, 2014). The confidence scale in this study indicated high means for items that are considered essential elements for recognizing clinical determination as indicated by Australian Commission and Quality & Safety in Healthcare. (ACSQHC, 2010), which include assessment and documentation (Buykx, 2011; Kinsman et al. (1), 2012; Kinsman et al. (2), 2012).

The result of this study is congruent with a recent study done at College of Medicine Riyadh where medical students were found to be satisfied with simulation based education (ACSQHC, 2010).

6.Conclusion

The result of this study ensure that using simulation as a strategy for clinical education promote student satisfaction with their learning and improve self-confidence. Simulation prepare the student to for real-life experience and speed the transition to professional career. Although simulation proved as an effective strategy for learning it is still it cannot replace the real-life practice experience but has to be used as an adjunct with it. Nurse educator have to be very developed in the area of simulation so as to use it in their training of student and staff nurse for better outcome.

7.Limitation

This study has some limitations. The first limitation is, the study is done in one college. Second, the population is small which makes it difficult for generalization of the result. Also, the sampling process is convenient sample due to the small number of population. Despite this limitation the result of this study indicated high mean for both outcomes satisfaction with learning and self-confidence.

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Conflict of Interest

Researcher declares no conflict of interest with any organization regarding the materials discussed in this paper.

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