

Satisfaction and Self Confidence on Clinical Simulation Experience among Undergraduate Students at Selected University in Ajman, UAE

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Abstract

Introduction

Simulation-based medical education involves the use of techniques that help replicate real scenarios that health profession students will come across in the clinical areas. This research sought to investigate the mastery that students are able to gain, and the comfort experienced after undergoing simulation training.

Methods

Totally, 352 undergraduate students in various disciplines of the health care professions like Nursing, Medicine, Dentistry and Health Science Programs at Gulf Medical University, Ajman, UAE were selected for the study based on a set criteria. Two Standardized Questionnaires were used to collect data.

Results

Results reflected that, the Mean Values were 19.45 and 30.29 in regards to the satisfaction and confidence experienced by students, while the Standard Deviation was 2.42 and 2.86 respectively. Correlation between the variables showed a strongly positive relationship at $p < 0.001$ level. The relation between the Satisfaction of students with selected demographic variables was significant ($p < 0.05$) along with an association ($p < 0.05$ level) between the Self – Confidence of Students and the program they are pursuing at GMU.

Conclusion

Clinical simulation enhances the amount of positivity, trust and motivation of undergraduates. Hence it is necessary for the faculty to realize the importance of simulation

and encourage students to learn and master skills in a learning environment that makes them feel safe.

Key Words: Satisfaction, Self Confidence, Clinical Experience, Undergraduate Students, Health Care Professions

Introduction

Students pursuing health care professions are expected to deal with real patients. They often feel very scared, threatened and inadequate when it comes to applying or re-demonstrating clinical skills. Simulation can be explained as an artificially created or man-made replication by which students can learn in order to acquire the necessary clinical skills. They can be mannikins or equipment that will enable students to practice on several times, without the fear of harming or endangering the life of the patient. It also helps learners gain expertise and competence¹.

Health science faculty use this as an effective strategy for teaching, learning and training as it gives a near to normal experience for students². Owing to the Covid-19 pandemic, it was practically impossible for learners to gain adequate clinical learning exposure. The simulation labs served as an atmosphere of actual client centered learning³. Many students have a high level of cognition which helps them grasp concepts at a satisfying level. However, when it comes to putting their knowledge into practice, they find it difficult to carryout techniques and demonstrate appropriate clinical skills and manual dexterity.

In the contemporary era, where everybody is focusing on competency-based education, it is necessary for students to master their skills and abilities. They also need to develop the ability to provide direct patient care in the clinical settings. Multiple sessions of practice can enable students to feel equipped with what is expected of them. It also allows the patient to feel safe when the student approaches them with the utmost confidence at the bed side.

Traditional methods of educating students in the healthcare profession is practically not enough in recent times. It is the lab exposure wherein students learn on high fidelity mannikins and gain increased levels of self motivation⁴.

Literature Review

The pandemic period has made the present era students to be more tech-savvy. They are experts in using latest technology. Students are able to utilize their creative thinking and bring better solutions to problems. This also gives them a satisfying learning experience. This has posed a challenge to today's teaching faculty⁵.

It has been hypothesized that, students in the nursing profession are expected to gain sound knowledge out of the cases they encounter during their bed side learning. But the truth is that, they acquire knowledge only by repeated practice of a particular procedure⁶. Butler & Hardin-Pierce found that, students perceive decreased levels of confidence and more fear of a procedure as they did not feel free or have enough opportunity to practice⁷.

A study regarding Simulation Learning on Clinical decision making and Communication skills among 88 student nurses revealed that, learning using the SBAR tool helped in precise clinical decision making and professional communication which was showed significance at $p < .0001$ level⁸. A study on perceptions of Simulation Based Learning (SBL)

among students pursuing medicine showed majority (90.7%) reporting that, SBL helped in development of their clinical skills. Findings also revealed that the perceptions were higher among female students than males⁹.

A study was conducted on 497 dentistry students' evaluation on simulation experience. Findings showed that, 94.6% of students perceived simulation as beneficial for confidence and improvement in their clinical experience. A comparative study was conducted on Traditional vs Simulation learning among medical and nursing students. Findings revealed that, students reported higher levels of learning of their clinical roles with simulated learning while their stress levels increased with traditional clinical learning methods¹⁰.

Gulf Medical University (GMU) has a state-of-art simulation facility called the Centre for Advanced Simulation in Health Care (CASH). Students at GMU are fortunate to utilize this facility for their clinical simulation experience. Students pursuing undergraduation programs in dentistry and physiotherapy have their own simulation labs as well. Hence the investigators sought to explore the personal comfort and expertise levels of learners in GMU.

Aim and Objectives

The researchers aimed at exploring Satisfaction levels and Self-confidence of Undergraduates pursuing health care professions, on their clinical simulation experience at Gulf Medical University. The research objectives were based on, exploring the Undergraduates' Satisfaction and Self-confidence on their Simulation practice experience, correlating findings of the variables and associating their experiences with demographic variables.

Materials and Methods

A Quantitative Approach with Exploratory Survey Design was used. The study setting was Gulf Medical University which is a leading medical university in the Gulf region. The university offers Medical and Health Professional Education in the field of Medicine, Dentistry, Pharmacy, Physiotherapy, Nursing, Medical Laboratory Sciences, Anesthesia and Surgical Technology, and Medical Imaging Sciences. The participants of this study were students pursuing second and third year in College of Nursing, Medicine, Dentistry, Physiotherapy, Medical Imaging Sciences and Anaesthesia Technology, students who had been exposed to a minimum of 5 simulation sessions at the time of study, students of all nationalities and both gender were included for the study. The researchers chose to exclude students undergoing Extended Clinical Practicum training and Internship and those who are not willing to participate in the study. Total Enumeration Method was used for sample size estimation and totally, 352 students participated in the study.

Instruments

The researchers used two standardized instruments for collection of data. The Simulation Design Scale (Student Version) is basically a 20-item tool developed by Pamela R. Jeffries and Mary Anne Rizzoloa (2005). It is a five-point scale designed to evaluate five components of the instructor-developed simulations used in the NLN/Laerdal study. The five features are, Objectives/information, Support, Problem solving, Feedback and Fidelity. The instrument is divided into two sections where, one part has questions on the elements in the simulation, while the other part has questions related to the significance of these elements to

the student. It is a validated questionnaire with a reliability of 0.92 in the first part and 0.96 for the importance of these elements as measured by Cronbach's alpha¹¹.

The second tool was Student Satisfaction and Self Confidence in Learning which was also developed by Jeffries PR and Rizzoloa (2005) as a part of the 2003 NLN/Laerdal simulation research study. This 13-item instrument is designed in order to measure student satisfaction (five items) with the simulation activity and self-confidence in learning (eight items) using a five-point scale. Reliability was tested using Cronbach's alpha that measured satisfaction to be 0.94 and self-confidence as 0.87. It consists of statements on the opinion of the practice sessions and information on the instruction and guidance received from the faculty prior to and during the sessions in the lab¹¹.

A pilot study helped to determine feasibility. After approval from the Institutional Review Board (IRB) of GMU, consent was obtained from all the students who were invited to participate in the study. The students had full right to refuse participation in the study. After approval from the IRB, permission was sought from the Deans of all disciplines like College of Nursing, Medicine, Dentistry and Health Sciences. Written Consent was obtained from the study samples. Google Forms were used to collect data from students.

Results

Section – I: Demographic Characteristics of Undergraduate Students

Totally 352 Undergraduate students from various disciplines in the health care professions participated in the study. Majority 213(60.5%) were between 18 to 20 years, 267(75.9%) were females, 131(37.2%) were Arabs, 156(44.3%) were from the Emirate, Ajman in UAE and 320(90.9%) stayed in their own accommodation. Totally, 143(40.6%) were pursuing Medicine & Dentistry programs, 188(53.4%) belonged to Year II of their study and 12(3.4%) had other qualifications.

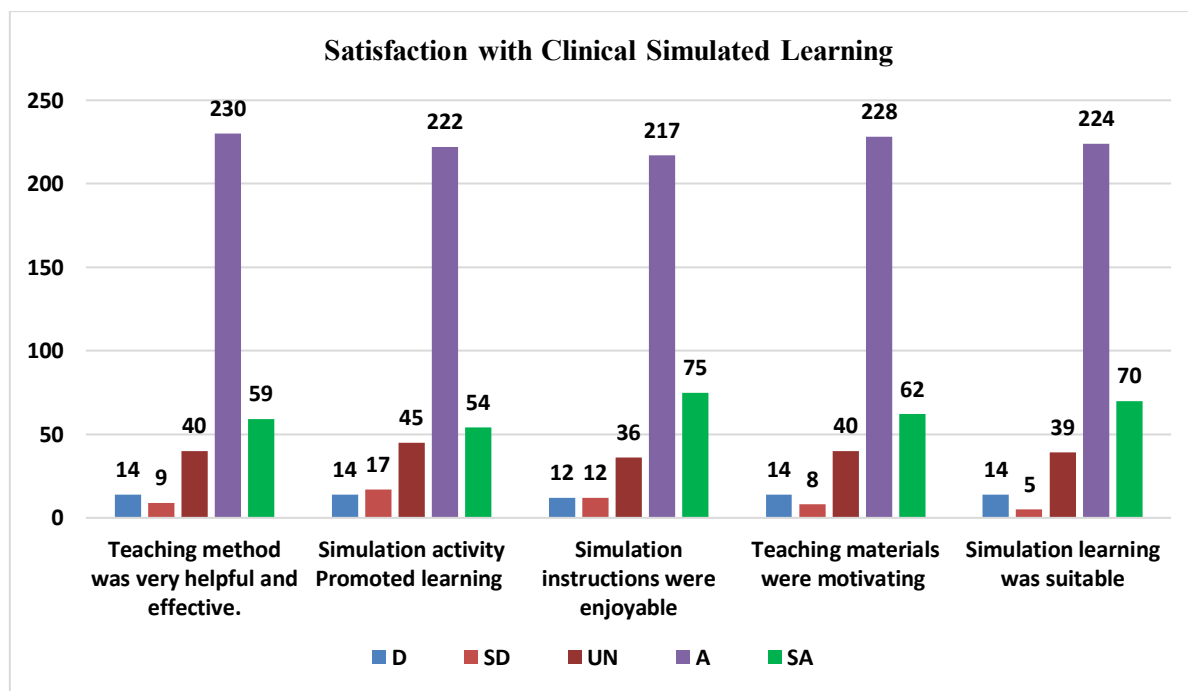


Figure 1: Satisfaction of Undergraduate Students' with Clinical Simulated Learning

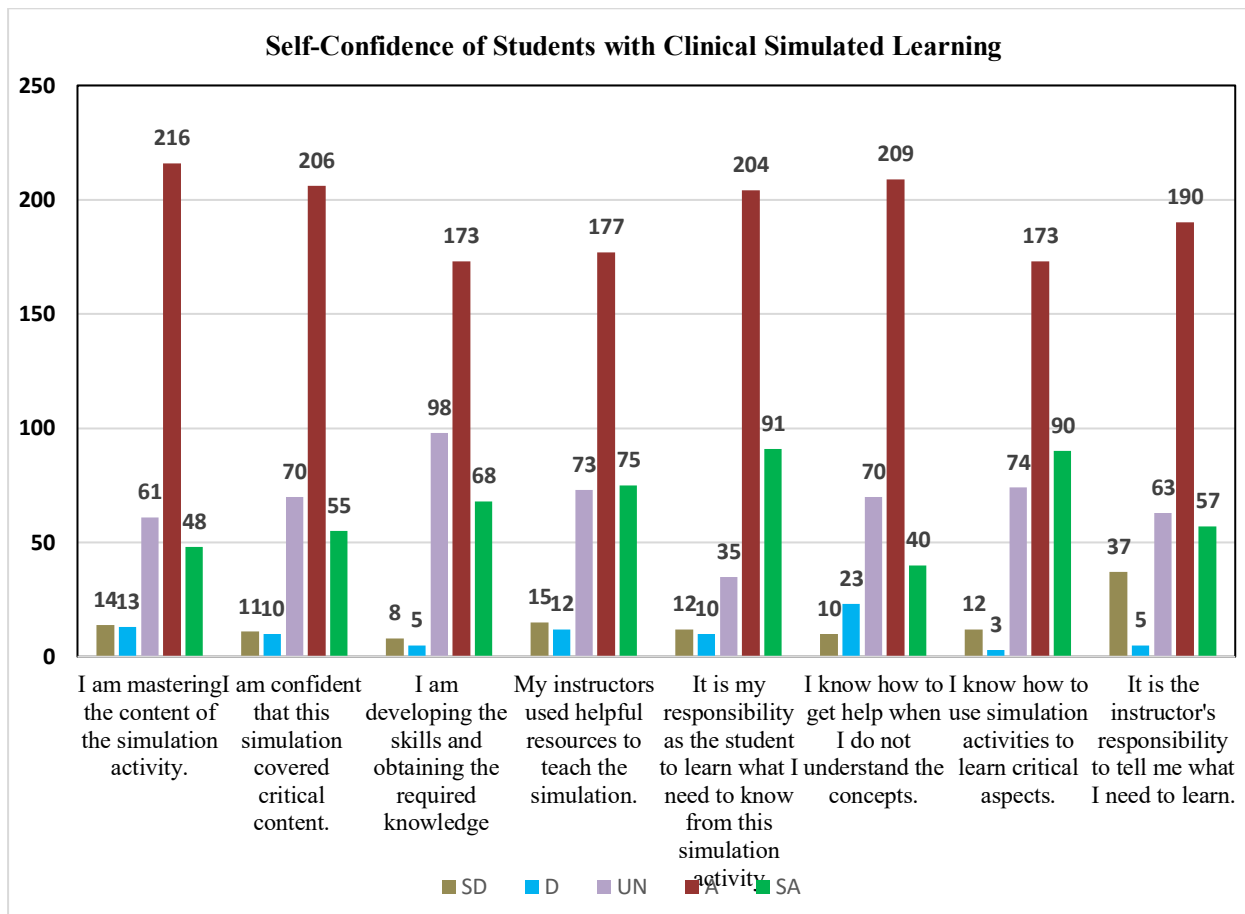


Figure 2: Self-Confidence of Undergraduate Students’ with Clinical Simulated Learning

Table 1: Clinical Simulation Experience of Students (n=352)

Items	Mean	Std Deviation
Level of Satisfaction	19.45	2.42
Level of Self Confidence	30.29	2.86

Table 2: Mean and Standard Deviation of Various Components in the Simulation Design Scale (n=352)

S. No	Components	Mean	SD
1	Objectives and Information	20.02	2.41
2	Support	15.55	2.04
3	Problem Solving	19.14	2.44
4	Feedback/Guided Reflection	16.68	2.32
5	Fidelity/Realism	08.09	1.55

Table 3: Correlation of Students’ Satisfaction & Confidence with Simulation Facility Experience (n=352)

Items	‘r’ value	‘p’ value
Satisfaction with clinical simulation experience	0.30	0.001*
Confidence after Practice Sessions	0.25	0.001*

r: Pearson coefficient *Significant at p ≤ 0.001

Table 4: Association among Fulfillment of Students using Clinical Simulation Experience with Demographic Variables.

Demographic Variables	Mean Value	Standard Deviation	F	'p' value
Age of Students in Years				
18-20	18.64	2.66		
21-23	20.83	0.99		
24-26	20.50	2.36	19.59	0.001*
27-30	19.25	1.03		
Above 30	18.00	-		
Gender				
Female	19.33	2.44		
Male	19.82	2.32	t=2.66	0.104
Nationality				
UAE/Arabs	18.88	3.04		
African	19.07	1.41		
Asian	20.01	1.57	5.45	0.001*
Others	19.77	2.51		
Emirate Living In				
Ajman	18.68	2.58		
Abu Dhabi	18.16	2.85		
Dubai	19.61	2.27		
Sharjah	20.93	1.29	13.11	0.001*
RAK	19.20	0.45		
UAQ	16.01	1.21		
Fujairah	17.33	2.31		
Current Area of Stay				
Home/Own Accommodation	19.45	2.45		
Hostel	19.47	2.06	t=0.002	0.97
Program of Study at GMU				
BSN	17.51	2.93		
MBBS	19.76	1.61		
BDS	17.88	3.34		
BPT	21.00	1.31	30.12	0.001*
BSc-AT	21.04	1.74		
BSc-MIS	18.88	1.94		
Year of Study				
Year II	18.87	2.47		
Year III	20.11	2.18	t=24.66	0.001*
Other Educational Qualifications				
Yes	14.16	3.24		
No	19.63	2.16	t=71.02	0.001*

*Significant (p<0.05). (F) Anova test (t) t-test

Table 5: Association between Self-confidence of students using Simulation with demographic variables.

Demographic Variables	Mean Value	Standard Deviation	F	'p' value
Age of students in Years				
18-20	30.05	2.87		
21-23	30.78	2.82		
24-26	29.10	2.84	2.14	0.08
27-30	30.12	1.88		
Above 30	34.00	-		
Gender				
Female	30.45	2.72		
Male	29.77	3.22	t=3.64	0.06
Nationality				
UAE/Arabs	30.45	2.79		
African	30.92	2.61		
Asian	30.14	2.86	1.35	0.26
Others	29.85	3.07		
Emirate Living In				
Ajman	30.36	2.66		
Abu Dhabi	28.33	3.55		
Dubai	29.80	3.05		
Sharjah	30.63	2.98	1.39	0.21
RAK	30.80	1.78		
UAQ	31.80	1.48		
Fujairah	29.66	3.21		
Current Area of Stay				
Home/Own Accommodation	30.20	2.81		
Hostel	31.15	3.25	t=3.26	0.07
Program of Study at GMU				
BSN	30.46	2.57		
MBBS	30.01	2.87		
BDS	27.94	3.42		
BPT	30.51	2.53	4.49	0.001*
BSc-AT	30.25	2.95		
BSc-MIS	31.92	2.73		
Year of Study				
Year II	30.31	2.72		
Year III	30.25	3.01	t=0.04	0.84
Other Educational Qualifications				
Yes	29.08	2.23		
No	30.33	2.87	t=2.22	0.14

*Significant (p<0.05) (F) Anova test (t) t-test

Discussion

Satisfaction of students with clinical simulation experience revealed that, majority of 230(65.34%) undergraduate students agreed that, simulation teaching methods were helpful and effective (Figure 1). The Self-confidence of students with clinical simulation experience revealed that, 216(61.36%) agreed that, they were able to master the content of their simulation

activity (Figure 2). Mean values of the two variables studied were 19.45 and 30.29 respectively while the Standard Deviation was 2.42 and 2.86 respectively (Table 1).

The researchers to enrich their study findings in Satisfaction level of Simulation Exposure among, prefinal and final year learners handling patients who needed Respiratory care, Critical care and Anesthesia programs revealed a greatly measurable difference in scores of the Simulation-based Clinical Education among the students being trained in different disciplines, the highest being those in the anesthesia group compared to the other group ($8.4 \pm 2.4, p=0.002$)¹²

Students exposure and the comfort levels with regards to various components to clinical simulation was determined. The 5 components assessed were, goals, the assistance offered, techniques to find solutions to questions, responses and reactions of students and the amount of true-life scenarios. The mean scores with Standard deviation of all five components are given in Table 2. The reflection of the simulation practice sessions, and perceived sense of expertise gained by students at the facility revealed a strongly positive correlation at $p < 0.001$ level (Table 3).

In another research, the ultimate sense of fulfillment and simulation experience among 118 undergraduate nursing students highlighted a weak correlation between the two variables¹³.

A study on the happiness and level of comfort among 45 medical students on the experiences of practice sessions in the lab showed that, students perceived that the non-threatening environment helped alleviate the fear of harming a real patient while gaining expertise in a calm atmosphere. There was a strong correlation between the actual feeling of the exposure gained at the facility, and the sense of achievement that students verbalized¹⁴

A research examined the association of best practices of 187 students pursuing baccalaureate nursing program and their learning experiences with patient simulators. The findings brought out the fact that, stating clear goals and debriefing enabled the students to be benefitted to the maximum¹⁵.

A study on Simulation Based Learning (SBL) among 247 medical students revealed that, 72.5% of seniors students of the female gender had favorable perceptions of SBL. Majority of them felt that, there was a significant learning improvement with patient simulators which could also be replaced in their Objective Structured Practical Exams⁹

The experiences of 100 undergraduate dental students who practiced with simulators reported more self satisfaction, better learning and belief that they could undoubtedly administer anesthesia injections without fear, when compared to others who did not study through the simulation technique¹⁶.

Association between satisfaction of students with clinical simulation with demographic variables had significant association between the Satisfaction with students' age, nationality, Emirate of stay, Program and year of Study, and other Educational qualifications ($p < 0.001$) (Table 4). Association between the self confidence of students with clinical simulation and demographic variables showed an involvement with the Program they were undergoing at GMU at $p < 0.001$ level. (Table 5).

Interprofessional education between nursing and medical students has shown to be provoke interest in young learners in recent times. Student nurses and students undergoing physician training were exposed to the conventional and modern simulated learning after which

their connative and communication skills were examined. The study subjects reported that, they were able to identify and define their roles and expectations after the practice sessions¹⁷.

Limitations of the Study and Scope for Further Research

This study included undergraduate students only from selected colleges within Gulf Medical University, Ajman, UAE. Since most of the students were on clinical practicum postings outside the University, reminders for completing the questionnaires could be sent only by e-mail. Novice students in the health care professions were not involved as they were just getting exposed to clinical simulation. Final year students and those undergoing Extended clinical practicum training and Internship were involved with direct patient care and hence were not included. Further research can be undertaken on students' experiences with high fidelity mannikins. Research can also focus on the perceptions of novice students and their experiences and expectations regarding simulated sessions.

Implications of the Study

Students in the health care arena need to be competent and develop a readiness for lifelong learning. These budding health professionals must be equipped with knowledge, skills and a positive attitude and energy towards patient centered care. This study has thrown light on the need for continued simulation sessions and instruction for students who will be dealing with live patients in their daily practice. The study has implications for health care administrators, teaching faculty of health professions education and the institution at large. The study highlights the fact that, students need an enriched atmosphere that can foster permanent learning and make them assertive. The use of more high-fidelity simulators can bridge the gap and enhance skill acquisition, while providing students with more confidence.

Conclusion

When students are not able to meet their goals and expected outcomes in the hospital settings, they feel out of control, depressed and a sense of inadequacy creeps in. There is also a possibility that, a student who has not gained enough expertise and confidence in carrying out a procedure can cause a potential harm to the client. Exposure and several hours of practice at labs can enhance permanent learning and equip the student with knowledge and skills in his/her profession¹⁸. Hence clinical simulation for undergraduate students pursuing health care professions can be an excellent teaching-learning method of instruction which also enhances their satisfaction and self-confidence while approaching patients during their clinical practicum training.

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Author Contributions

The Principal investigator and corresponding author, Dr. Beryl Juliet Sam was responsible for overall organization and co-ordination of the study. Ms. Sija Binoy provided the study data and aligned the references for the study. Ms. Vimala Varatharajan and Dr. Beryl Juliet Sam contributed towards analysis of data and presentation of the manuscript.