Original Research Study

International Journal of Nursing Education
Volume 15 No. 4, October-December 2023

Nursing Students' Perception of the Effectiveness of the Health Care Simulation at the University of Tabuk

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How to cite this article: Ablao JN, Alyami W, Alarki H, Alzahrani W, Alshareff M, Alemrani F, Alaysuy H, Alatawi F. Nursing Students' Perception of the Effectiveness of the Health Care Simulation at the University of Tabuk 2023;15(4):35-41

ABSTRACT

Background: Simulation has been recognized as a teaching strategy in nursing curriculum that efficiently fosters learning, competence acquisition, self-assurance, and safety of students. Simulation-based learning (SBL) has emerged as a valuable tool in nursing education, enabling students to attain the necessary clinical competencies essential for their future success.

Objective: This study aims to evaluate the nursing students' perception of the effectiveness of the healthcare simulation sessions at the University of Tabuk.

Methods: Descriptive cross-sectional design was used with 128 nursing students who responded to the online survey using the Modified Simulation Effectiveness Tool (SET-M).

Results: This study showed that almost all respondents strongly agreed on the effectivity of the healthcare simulation in the pre-briefing phase (81.65%), scenario phase (68%), and debriefing phase (74.38 %). There were no significant differences between students' responses on the effectiveness of healthcare simulation sessions across all phases between gender, age, and academic level. However, the GPA has a significant difference in pre-briefing (P= .002) and scenario with a (P=.001) except for the debriefing with a (P=.352) which (P= >.05).

Conclusion: The results of the study revealed that the healthcare simulation sessions held during the Academic Year 2022 at the University of Tabuk were deemed effective in enhancing various areas and aspects essential for students' learning.

Keywords: Healthcare, simulation, M-SET, University of Tabuk, Nursing students, Saudi Arabia

INTRODUCTION

Simulation has been recognized as a teaching strategy in nursing curriculum that efficiently fosters learning, competence acquisition, self-assurance and safety of students[14].Simulation is a pedagogical method that imitates clinical practice in authentic environments to teach theoretical concepts, evaluations and clinical skills. It typically focuses on providing a supportive environment by utilizing various therapeutic scenarios[2]. As a result of the rigorous healthcare protocols, clinical courses were temporarily suspended during the COVID-19 pandemic, leading to widespread adoption of simulation training[1].

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Simulation-based learning (SBL) has emerged as a valuable tool in nursing education, enabling students to attain necessary clinical competencies essential for their future success[3]. SBL is utilized in nursing schools in Saudi Arabia at various levels, either in place of or in addition to practical training, and low to high-fidelity manikins are used[3].The adoption of SBL provides a secure environment to achieve teaching objectives, minimizing the possibility of causing harm to real patients. It's a safe place for students to practice skills that they have learned previously on mankinis or high-fidelity simulations (HFS) without putting an actual real-life patient in danger or at risk [3].

As mandated by the University of Tabuk, the Department of Nursing started to integrate simulation-based education in the first semester of the academic year 2019. This is to improve the students' clinical performance experienced in the hospital setting by building their confidence, competence, teamwork, and attitude in simulation. Therefore, it is deemed necessary to evaluate the students' perception of the effectiveness of simulation sessions to know the areas of strengths and weaknesses to further improve the simulation experience of the students.

REVIEW OF RELATED LITERATURE

A cross-sectional study wasconducted in four universities situated across three major cities within the Kingdom of Saudi Arabia (KSA). The results showed that nursing students were weak in pre-briefing with (2.7%), debriefing (5.3%) and the scenario (17.1%) [3]. Phenomenological researchwas conducted in the Kingdom to explore nursing students' perceptions of their clinical encounters with HFS revealed that participants had a favorable response towards simulation experiences, which led to an increase in their confidence levels when working collaboratively during simulated sessions[4].

The students in the nursing program who participated in a simulation session involving standardized patients (SP) to augment their knowledge and communication abilities affirmed that the SP encounter presented them with unique experiential learning since they received immediate feedback, which was critical for improving their clinical aptitude[9]. Utilizing SP presents a considerable asset for instructing and evaluating clinical expertise, encompassing areas such as physical examination, interpersonal communication, data collection, and providing education and guidance to patients[6].

A study was conducted in Korea to investigate the attitudes of nursing instructors and students towards SBL with a contrary to the perceptions of instructors who believed that conducting examinations using co-orientation model led to psychological strain and passive cognitive frameworks among students, these issues were not identified by the student participants in this research[12].

A study conducted in Spain about nursing students' satisfaction with OSCE in clinical simulation revealed with a high degree of satisfaction rated more than 8 out of 10 (mean score = 8.43, SD = 1.25) especially in debriefing, however, acquisition of skills in OSCE and its impact to stress and anxiety should need further study[7]. A repeat measurement method conducted was used in the study on Integrated Care in Emergency and Critical Care course about the effects of simulation-based learning on nursing students' perceived competence, self-efficacy, and learning satisfaction. The study is statistically significant after repeated exposures to simulation with $p < .001$ [8].

In Saudi Arabia, the extent of research on simulation and its impact on nursing students' attitudes remains inadequate. There is no research study exists as to how healthcare simulation sessions are perceived by nursing students in Tabuk region. Therefore, this study aims to evaluate the nursing students' perception of the effectiveness of the healthcare simulation sessionsat the University of Tabuk.

METHOD

Research Design & Setting

This study used descriptive, cross-sectional design to gather data describing the effectiveness of healthcare simulation sessions among nursing students conducted in Clinical Simulation Unit at the University of Tabuk.

Sample

The study used random sampling to sample size of 128 students who attended simulation sessions in A.Y 2022.

Inclusion: Nursing students who participated in simulation sessions

Exclusion: Nursing students who attended simulation seminars or workshops only.

Instrument

The study used the 19-item SET-M tool which was developed by Leighton, Ravert, Mudra, and Macintosh[13]and granted permission to be used in this study. It has three subscales with acceptable internal consistency: Pre briefing (α = .833), Learning (α = .852), Confidence (α = .913), and Debriefing (α = .908)with an overall internal consistency of (a=0.936). A higher score result would mean a positive perception of the healthcare simulation.

Data collection

The data collection is between the period of January 01, 2023 and February 12, 2023 after approval from the IRB of University of Tabuk. The roster of students attended simulation sessions during A.Y. 2022-2023 was requested from the program advisers across different levels. Utilizing randomization technique, the study implemented an odd-numbered selection method until achieving the targeted sample size. The participants were requested to fill out a Google Form questionnaire which was sent to them via email. A contact detail of the correspondents was provided to raise inquiries related to the questionnaire. Once the respondents finished and submitted their responses, the researcher automatically retrieve the collected data to utilize for data analysis.

Ethical consideration

Approval was obtained from the IRB(UT-250-88-2023) on January 01, 2023. Obtaining data was done anonymously and without any forms of identification, and privacy in data collection. The risk was also mentioned such as providing their socio-demographic profile and no financial compensation involved in participation in the study. They are guaranteed their right to voluntarily participate and withdraw in the study without being coerced or deceived. Finally, the data was kept confidential on a secure device with a password to ensure privacy.

Statistical Treatment

Descriptive statistics was used for demographic characteristics and perceptions of nursing students on experience variables of healthcare simulation effectiveness. The t-test and anova were used to determine significant differences regarding the agreement level between categories of demographic characteristics. The cut-off for statistical significance was p 0.05.

RESULTS

I. Respondents' Demographic profile

The male respondents were 58.8% and 42.2% were females. The data revealed that the majority of those who responded were between the ages of 22 and 24. The lowest age proportion was from the age group of >25, with 3.1% of all the respondents. The fourth year represented 65%, while the third year represented 35% of the respondents. The third year represents (35%) of the total respondents, while fourth year represent (65%) of the total respondents. The GPA (4.1-4.5) represents 33%of the total respondents, GPA (3.6-4) represents27% of the total respondents, GPA (3.1-3.5) represents 18% of the total respondents, and GPA (4.6-5) represents 10.9%from total respondents.

II. Respondents Evaluation on the Effectiveness of Healthcare Simulation Sessions

Majority of the students have strongly agreedthat the healthcare simulation sessions conducted is effective in the pre-briefing phase with a total percentage of 81.65%with a total mean equivalent of 2.79. Moreover, in scenario majority of the respondents have strongly agreed that the healthcare simulation sessions conducted is effective with a total percentage of 68% with a mean equivalent of 2.62. They state that it made them better at preparing to respond to the changes in the patient's condition, better understanding of thepathophysiology, more confident in their assessment skills, felt more empoweredtomakeclinicaldecisions, a better understanding of medications, more confident in using evidence-based practice to provide care. Furthermore, in debriefing, majority were also strongly agreed with a total percentage of 74.38%and the mean equivalent of 2.70 stating that it contributed to their learning as well as allowed them to communicate their feelings and self-reflect.

III. Significant Difference between the Students' Responseon the Effectiveness of Healthcare Simulation SessionsAcross the Demographic Profile.

No significant differences were identified between students 's response on the effectiveness of healthcare simulation sessions in all phases and the demographic profile as to gender (p=.20,.18,.45),age (P=.94,.57,.90), and academiclevel (P=.93, .31, .86).Whereas, there was a significance difference on the students 's response on the effectiveness of healthcare simulation sessions in pre-briefing and scenario phases between the GPA (P=.00,.001)however, no significant difference identified in debriefing (P=.352). Therefore, the hypothesis was rejected (Table 1 to 3).

Table I: Students' Response on the Effectiveness of Healthcare Simulation Sessions as to Gender

Gender	N	Mean	SD	P - value	T-TEST
Pre -briefing	Male = 74	2.7568	.43983	.203	4.839
	Female = 54	2.8426	.31955		
Scenario	Male = 74	2.5923	.39416	.183	2.531
	Female = 54	2.6728	.28679		
Debriefing	Male = 74	2.6865	.37901	.446	.000
	Female = 54	2.7370	.36202		

Table 2: Students' Response on the Effectiveness of Healthcare Simulation Sessions as toAge

AGE	N	Mean	SD	P - value	ANOAV(F)
Pre -briefing	19-21 =54	2.8056	.38137	.940	.062
	22-24 =70	2.7857	.41329		
	25+ =4	2.7500	.28868		
Scenario	19-21 =54	2.6389	.30672	.567	.570
	22-24 =70	2.6071	.39168		
	25+ =4	2.917	.25000		
Debriefing	19-21 =54	2.722	.37751	.902	.103
	22-24 =70	2.700	.36634		
	25+ =4	2.650	.47258		

Table :. Students' Response on the Effectiveness of Healthcare Simulation Sessions as to Academic level

Academic level	N	Mean	SD	P - value	T-TEST
Pre -briefing	3rd year =45	2.7889	.41954	.932	.244
	4th year =83	2.7952	.38283		
Scenario	3rd year =45	2.5833	.36063	.314	.359
	4th year =83	2.6496	.35013		
De-briefing	3rd year =45	2.7156	.36304	.861	.481
	4th year =83	2.7036	.37788		

Table 4: Students' Response on the Effectiveness of Healthcare Simulation Sessions as to GPA

	GPA	Mean	SD	P - value	ANOVA(F)
Pre -briefing	>3	2.4286	.67531	.002	4.451
	3.1-3.5	2.9565	.14405		
	3.6-4	2.8000	.32540		
	4.1-4.5	2.8095	.38179		
	4.6-5	2.8214	.31666		
Scenario	>3	2.3690	.38078	.001	4.725
	3.1-3.5	2.6196	.31465		
	3.6-4	2.7786	.21479		
	4.1-4.5	2.6429	.29580		
	4.6-5	2.4643	.59261		
Debriefing	>3	2.6143	.38801	.352	1.116
	3.1-3.5	2.7130	.375775		
	3.6-4	2.8114	.32879		
	4.1-4.5	2.6714	.39217		
	4.6-5	2.6429	.37767		

DISCUSSIONSEESW

This study showed that more than half of the students have had a great perception that the healthcare simulation sessions were effective. It is worth noting that most of the students who participated in our study were male, comprising 58.8%, and most of them were 4th year (65%). This trend differs from research conducted in different universities in the Kingdom where females accounted for majority (82%) of their participants and 44.5% were belong to 4th year[7] which could suggest potential differences or limitations amongst gender and year level of respondents' perceptions towards healthcare simulations. Furthermore, with regards to the Grade Point Average, a significant proportion of the students who took part in the study scored between 4 and 4.5 which aligns with similar studies where GPAs ranged from 4.1-4.5; simultaneously, concerning age demographics, a considerable number of participants were aged between 22 to 24 years old whereas previous research reported that most students fell within the age range of 19 to21 years old[7].

This research has revealed that an overwhelming majority of the participants

(81.65%, SD=.39, mean=2.79) strongly affirmed the effectiveness of healthcare simulation during pre-briefing phase. In contrast to this finding, a separate investigation conducted in three universities within the Kingdom[3] reported a lower percentage (55.5%) of individuals who strongly agreed with their mean being 3.171 and SD (0.963) during pre-briefing stage; however, both studies indicate high levels of agreement in terms of pre-briefing among respondents when compared against each other's respective percentages obtained.

The phase involving a scenario received a majority response of strong agreement and was deemed effective with 68% in percentage, SD of (.35) and mean score of (2.62). When compared to the previous study that scored (53.3%) on strongly agreeing, it resulted in their mean score being 17.237 with an SD of (5.523)[3], showing high percentages for both studies regarding scenarios' effectiveness. Respondents claimed that participating in these simulations helped them face patients confidently while understanding pathophysiology ultimately empowering them to make clinical decisions successfully.

During the healthcare simulation, the phase of debriefing was evaluated for its effectiveness by a majority group who strongly agreed with it at a percentage of 74.38%, an SD of (.37), and mean (2.70). This outcome closely compares to another study, where participants also strongly agreed (53.3%) that debriefing was effective; their mean score being (7.517) with an SD of (2.360)[3]. Both studies revealed high levels of agreement regarding debriefing in terms of student learning, expression of feelings, as well as improvements in clinical judgment and self-reflection skills among students. The findings suggest similarities between both researches. Overall, there is strong agreement on all aspects related to the effectiveness and importance of incorporating adequate debriefings into healthcare simulations sessions that can enhance educational outcomes for students delving into this phase.

The present research has revealed that gender, age and academic level have no significant difference among nursing students' perception of effectiveness of healthcare simulation sessions across all phases (p=<.05). However, there is a significant difference in GPA for pre-briefing (P= .002) and scenario (P= .001), but not for debriefing as evidenced by non-significant results (P=.352; p> .05). Furthermore, when compared to other studies conducted on similar topics such as student GPAs in pre-briefing (P=.437) or scenarios (P=.662), it was found that there are no statistically significant differences between them except for debriefings where results were statistically significant at P=.022 with findings supporting hypothesis based on significance levels set at P = >0.05.

CONCLUSION

The results of the study revealed that the healthcare simulation sessions held during Academic Year 2022 at the University of Tabuk were deemed effective in enhancing various areas and aspects essential for students' learning.

Recommendations

Future studies with equivalent sample sizes in literature could be employed to investigate how different students perceive the efficacy of simulations.

Conflict of Interest:

There is no conflict of interest to be declared

Source of Funding: Self-funded

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