



# MEDICO RESEARCH CHRONICLES

ISSN NO. 2394-3971

DOI No. 10.26838/MEDRECH.2019.6.4.518

Contents available at: [www.medrech.com](http://www.medrech.com)

## EXPERIENCE OF MEDICAL STUDENTS IN PEDIATRIC EMERGENCY SIMULATION AT KING ABDULAZIZ UNIVERSITY HOSPITAL-JEDDAH

**Dr. Manal Ahmed Mohammed Halwani**

*Assistant Professor of Pediatrics and Pediatric Emergency Consultant in King Abdulaziz University Hospital - Jeddah, KSA*

### ARTICLE INFO

### ABSTRACT

### ORIGINAL RESEARCH ARTICLE

#### Article History

**Received: July 2019**

**Accepted: August 2019**

**Keywords:** Simulation, simulation based-learning (SBL), pediatric emergency simulation, medical student, Clinical Skills & Simulation Center (CSSC)

#### Corresponding author\*

**Dr. M. A. M. Halwani**

**Objectives:** To assess the learning experience of undergraduate medical students during running a pediatric emergency scenario.

**Methods:** This cross-sectional study was conducted at the Clinical Skills & Simulation Center in King Abdulaziz University in Jeddah, Saudi Arabia in the academic year 2015-2016. The sample was comprised of all 5<sup>th</sup> year medical students (n= 179; 80 males and 99 females) studying at King Abdulaziz University in Jeddah, Saudi Arabia who are exposed to Simulation-Based Learning (SBL).

To gain a better understanding of students' satisfaction about simulation-based learning, a self-developed questionnaire on a Likert scale that indicated degrees of satisfaction was used to assess most of the dimensions in the questionnaire.

**Results:** All students responded positively, reporting that the simulation session provided realistic scenarios with good-quality briefing, debriefing, and an overall excellent learning experience with mean score (4.35±0.92).

**Conclusion:** Although there were few challenges, 57% of the students strongly agreed that simulation must be part of the undergraduate curriculum (question 9 table 2).

©2019, [www.medrech.com](http://www.medrech.com)

## INTRODUCTION

It has been a tremendous growth in the field of pediatric simulation over the last 10 years in different subspecialty most especially in pediatric emergency <sup>[1]</sup>. Simulation is increasingly used in medical education program (post-graduate & undergraduate) <sup>[2]</sup>.

Larger student groups and pressure on limited faculty time have raised the question of

the learning value of merely observing simulation training in emergency medicine, instead of active team <sup>[3]</sup>.

All pediatricians know that comparing with adults dealing with critical and emergency situations in children it is important to use simulation as an alternative method for training high-risk and/or low-frequency event in children <sup>[4]</sup>. Simulation has the advantage of

introducing students to scenario of serious clinical conditions without involving actual patients and provides an environment for students to gain practice <sup>[5]</sup>.

Our aim is to teach the large number of medical students on how to approach management of critical pediatric patients <sup>[6]</sup>.

Our objective is to assess the learning experience of undergraduate medical students during running a pediatric emergency scenario.

## METHODS

This cross-sectional study was conducted at the Clinical Skills & Simulation Center (CSSC) in King Abdulaziz University in Jeddah, Saudi Arabia in the academic year 2015-2016. The Clinical Skills & Simulation Center is equipped with numerous simulators varying from low to high fidelity, and are being used by medical students under the supervision of assigned instructors and also for assessment purposes. Simulation session is conducted before starting their training in the emergency department. Initially the session starts with a PowerPoint presentation on how to approach a critically-ill child and in the briefing, the educator does an orientation about the mannequin, monitors and the equipment's that can be used.

In the present study, the sample was comprised of all 5<sup>th</sup> year medical students (n=179; 80 males and 99 females) studying at King Abdulaziz University in Jeddah, Saudi Arabia who are exposed to Simulation-Based Learning (SBL).

To gain a better understanding of students' satisfaction about simulation-based learning, a self-developed questionnaire on a Likert scale that indicated degrees of satisfaction was used to assess most of the dimensions in the questionnaire. The questionnaire was about the evaluation of the simulator experience. The items for the questionnaire were selected after a thorough literature review. Only those items that were relevant to our setting were included. The questionnaire consisted of items related to satisfaction and challenges they faced during

simulation teaching. In addition, space was provided for open-ended follow-up questions to generate qualitative data on the strengths & weaknesses, and for the improvement of SBL. The questionnaire was validated by expert reviewers; one senior researcher from the medical education department, a biostatistician, and 2 faculty members involved in simulation teaching. The reliability was calculated for all the questionnaire items. Ethical approval was sought from the Faculty of Medicine Research Ethics Committee. Verbal consent was taken from the participants after being informed of the purpose of the study. They were assured that the information they provide would remain confidential and their identity would not be disclosed. The questionnaire was distributed immediately after simulation session and collected manually by the educator with the help of students' leaders. No incentives or follow-ups were undertaken. Data cleaning and assigning codes were carried out before the analysis. The analysis was based on the respondents who provided complete data. The data was entered and analysed using IBM SPSS statistical package for windows IBM Corp. version 25. The data was analysed on a group basis. Descriptive statistics was presented as frequencies and percentages (Table 2). The percentage of satisfaction of all students was calculated by combining frequency of levels of satisfaction for each item in the questionnaire. The responses on the Likert scale were totalled for each domain (from 1=strongly disagree to 5=strongly agree). Overall responses on open ended questions were coded, and themes were derived from the responses. Results were used to support the quantitative responses.

## RESULTS

In total, 179 surveys were collected from September 2015-February 2016 and majority of the participants were (55.30%) n=99 female and (44.70%) n=80 male (Table 1).

All students responded positively, reporting that the simulation session provided

realistic scenarios with good-quality briefing, debriefing, and an overall excellent learning experience with mean score ( $4.35 \pm 0.92$ ).

The 3 items that rated the highest among all learners were q4( $4.05 \pm 0.98$ ), q7( $4.06 \pm 0.93$ ) and q9( $4.35 \pm 0.92$ ). These questions were as the following: (q4) "the

simulation helped increasing the understanding of approach to pediatric patients in ER", (q7) "the simulation session was a valuable learning experience", and (q9) "the demanding of applying simulation in undergraduate curriculum" (Table 3).

**Table 1** Distribution of 5<sup>th</sup> student's demographic data (n=179)

Variables	N	Percent
Male	80	44.70
Female	99	55.30
Total	179	100

**Table 2** Results from the questionnaire

Grading	Q1		Q2		Q3		Q4		Q5		Q6		Q7		Q8		Q9	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Strongly disagree	4	2.2	2	1.1	4	2.2	3	1.7	5	2.8	4	2.2	2	1.1	9	5.0	4	2.2
Partially disagree	33	18.4	17	9.5	14	7.8	12	6.7	21	11.7	13	7.3	9	5.0	14	7.8	3	1.7
Neutral	65	36.3	39	21.8	25	14.0	28	15.6	40	22.3	53	29.6	33	18.4	45	25.1	22	12.3
Agree	48	26.8	71	39.7	79	44.1	66	36.9	59	33.0	65	36.3	67	37.4	50	27.9	48	26.8
Strongly agree	29	16.2	50	27.9	57	31.8	70	39.1	54	30.2	44	24.6	68	38.0	61	34.1	102	57.0
Total	179	100	179	100	179	100	179	100	179	100	179	100	179	100	179	100	179	100

**Table 3** Evaluation of the Simulator Experience

	Evaluation of the Simulator Experience	N	Mean	Std. Deviation
1.	I found it easy to treat the mannequin as a simulated human	179	3.3631	1.03152
2.	The briefing (orientation to simulator) made it easier to deal with the mannequin	179	3.8380	.97814
3.	The scenario was realistic like I was treating a real patient	179	3.9553	.98768
4.	The simulation helped increase my understanding of "approach to pediatric patients in ER"	179	4.0503	.98456
5.	I experienced nervousness during the simulation	179	3.7598	1.09306
6.	Because of this simulation I will be less nervous dealing with pediatric patients with similar disease in ER	179	3.7374	.98488
7.	This simulation session was a valuable learning experience	179	4.0615	.93112

8.	This simulation can substitute for clinical experience in ER	179	3.7821	1.14779
9.	Simulation must be part of our undergraduate curriculum	179	4.3464	.91959

## DISCUSSION

Since the start of using simulation in 2011, a wide acceptance from students and high consensus feedback was received. Also, of being a good experience which encouraged the faculty to apply it in the following year as part of the curriculum and work on to improve it.

The author started to give simulation session for 5<sup>th</sup> year medical students during their rotation in the pediatric emergency unit through their pediatric course to minimize the impact of the gap of the learning experience between the theoretical and practical parts <sup>[4]</sup>. The previous studies have shown that the use of simulation as an educational tool even a supportive or alternative method to other traditional ones has an active impact on learning outcomes due to the transforming of information into action in a safe environment <sup>[7]</sup>.

The results helped the educator to realize students' perceptions and the extent of their satisfaction in the simulation as an educational tool.

The statistical data that has been collected by the investigator of the study were collected from the questionnaire which was distributed to the students after taking the session where the responses on the specific questions of simulation session indicate to the high level of satisfaction with the session and the positive feeling towards it, where the majority of the students suggested on the need of adding more simulation sessions to the curriculum and to other courses.

Most students agreed that the situations given were so sensible and made them feel that they were treating genuine patients. The two scenarios were about the

most common cases of critically-ill pediatric patients that they will faced in the pediatric emergency. Furthermore, the students pointed out that this experience helped them to improve their approach to ER patients and know more about treating them compared to traditional methods.

Regarding the part of briefing session, the reactions was high where the instructor direct a direction on the running session to give them a reasonable and explicit guidance which helped the students to profit most successfully from that which reflected to keep the students in the sensible world.

Not all the trends were positive, some students have not thought about differentiating the mannequin as a simulated human; the author concluded that the reason for this may be due to the first time for students to deal with the mannequin.

All the study criteria are non-significant compared to gender, which there is no bias according to gender.

## LIMITATIONS OF THE STUDY

Although the findings of this study suggest student's satisfaction with SBL method. The study still has limitations first on the number of populations which is very small and the findings cannot be used for generalization. Secondly, it was conducted within one institution only.

## CONCLUSION

It shows up seemingly of great hopes to take advance steps of simulation programs for the development in the field of pediatric emergency. The use of simulation as a tool for effective teaching and training in medical school curriculum, as well as training programs works to fill the knowledge gap for students and trainees in pediatric emergency

programs, which cannot be done or covered by the use of traditional teaching methods. We truly need to incorporate the SBL in the pediatric curriculum.

## REFERENCES

1. Calhoun AW, Nadkarni V, Venegas-Borsellino C, White ML, Kurrek M. Concepts for the Simulation Community: Development of the International Simulation Data Registry. *Simul Healthc*. 2018 Dec;13(6):427-434. doi: 10.1097/SIH.0000000000000311.
2. Agha S, Alhamrani AY, Khan MA. Satisfaction of medical students with simulation-based learning. *Saudi Med J*. 2015 Jun;36(6):731-6. doi: 10.15537/smj.2015.6.11501.
3. Arab AA. Role of academic anesthesiology department in introducing patient safety module into medical school curriculum: 5 years-experience at King Abdulaziz University, Saudi Arabia. *Saudi J Anaesth*. 2019 Apr-Jun;13(2):112-118. doi: 10.4103/sja.SJA58618.
4. Reime MH, Johnsgaard T, Kvam FI, Aarflot M, Engeberg JM, Breivik M, Brattebø G. Learning by viewing versus learning by doing: A comparative study of observer and participant experiences during an interprofessional simulation training. *J Interprof Care*. 2017 Jan;31(1):51-58. Epub 2016 Nov 16.
5. Yager PH, Lok J, Klig JE. Advances in simulation for pediatric critical care and emergency medicine. *Curr Opin Pediatr*. 2011 Jun;23(3):293-7. doi: 10.1097/MOP.0b013e3283464aaf.
6. House JB, Choe CH, Wourman HL, Berg KM, Fischer JP, Santen SA. Efficient and Effective Use of Peer Teaching for Medical Student Simulation. *West J Emerg Med*. 2017 Jan;18(1):137-141. doi: 10.5811/westjem.2016.11.32753. Epub 2016 Nov 15.
7. Mills, B. (2016). The role of simulation-based learning environments in preparing undergraduate health students for clinical practice. Retrieved from <https://ro.ecu.edu.au/theses/1786>.