RESEARCH ARTICLE

Perception of medical interns about simulation-integrated curriculum of their emergency medicine rotation

Loui Kamel Alsulimani

Abstract

Objective: To evaluate the perception of interns about their experience during one-month rotation in the emergency department, and the impact of adding simulation-based training.

Method: The retrospective study was conducted at King Abdulaziz University Hospital, Jeddah, Saudi Arabia, and comprised feedback surveys filled by interns at the end of their rotation in the emergency department between December 2017 and July 2020. The feedback questionnaire in use is aimed at evaluating interns' experience with the emergency department rotation and the common academic activities during the rotation period. A comparison was done between those who had received simulation-based training and those who had not. Data was analysed using SPSS 24.

Results: Of the 971 interns having done rotation in the emergency department, 718(74%) had completed the survey. Simulation-based training had been received by 208(29%) interns, while 510(71%) had not received it. Mean points given on a scale of 1-10 by the interns was 8.2+/-1.8. Overall, 684(95%) interns believed the rotation had met or exceeded their expectations (p>0.001). There was no significant difference between those who had received simulation-based training and those who had not (p>0.05).

Conclusion: Interns had a positive perception towards the learning experience during their emergency department rotation, but there was no difference between those who had received simulation-based training and those who had not.

Keywords: Simulation, Internship, Emergency medicine, Curriculum, Education. (JPMA 72: 1148; 2022)

DOI: https://doi.org/10.47391/JPMA.4623

Introduction

A medical internship training programme is an essential element of undergraduate medical education and should be designed in such a way as to enhance the knowledge and skills of interns in clinical practice.[1-3] In Saudi Arabia, internship training is an integral component of an undergraduate medical degree during which medical students are provided the opportunity to apply their knowledge and skills to real-life clinical settings after completing their final year of medical school. This programme aims at delivering supervised clinical experience in a wide range of specialties, thereby allowing interns to gain necessary knowledge, skills and attitudes, and to develop appropriate medical ethics and practices. The logistics of the internship year may differ from country to country; at Saudi universities, the internship training consists of 12 months of both core and elective medical rotations.[4,5]

Emergency medicine (EM) training is mandatory for all interns graduating from medical colleges in Saudi Arabia, and no intern can graduate without completing the training requirement in the emergency department (ED).[6] Typically, it is a one-month rotation. Interns can complete more months in the ED as elective rotation if they so wish. The internship year brings stress for the majority of interns, and the EM rotation is no exception, with 58.3% of interns reporting high stress levels during the EM rotation.[6] These high stress levels may have a negative impact on the interns' ability to achieve the desired outcomes of the internship rotation. Interns are not always satisfied with the educational experience provided to them.[7]

Given the fact that interns are at a stage where career decisions need to be made and residency applications need to be completed, they are often looking for ways to improve their career progress.[2,8] In a study from the eastern region in Saudi Arabia, 7.1% interns chose EM as their specialty.[3] When physicians enter EM residency programmes directly from medical school, most lack substantial experience with basic EM procedures, such as intubation and laceration repair. Many of these procedures are not difficult on a cognitive level and can be learned within a year. Any resident with at least one year of residency training should be as comfortable with these procedures as a second- or third-year EM resident. As such, specific training provided to the rotating intern is

Department of Emergency Medicine, King Abdulaziz University, Jeddah, Saudi Arabia.

Correspondence: Email: lkalsulimani@kau.edu.sa

likely to be of value when joining EM residency programmes, when they work on developing and refining their approach to interviewing patients, working in a hospital, and interacting with consultants and senior colleagues.[9]

Simulation has been proven to improve the competency of interns.[8,10] Adding simulation to training is a growing trend nowadays in the field of medical education. The current study was planned to evaluate the perception of interns about their experience during one-month EM rotation, and to assess the impact of adding simulation-based training (SBT).

Materials and Methods

The retrospective study was conducted at King Abdulaziz University Hospital, Jeddah, Saudi Arabia, and comprised feedback surveys filled by interns at the end of their EM rotation between December 2017 and July 2020.

After approval from the institutional ethics review committee, the sample size was calculated using the Raosoft® online calculator[11] with power 0.8, and based on the number of students in the class and the fact that 400 interns graduate from the university each year. The study sample included every survey form completed by an intern at the end of the EM rotation, which represents the whole population of interns in the university during the study period which coincided with the introduction of a new curriculum at the institution. All incomplete responses and repeated surveys from the same intern for the same month were excluded.

The new curriculum for interns was prepared in line with the Saudi National Commission for Academic Accreditation & Assessment (NCAAA) guidelines, which is mandatory for all courses in medical schools across the country.[12,13] The curriculum, including the survey tool, had been approved by the department as a new teaching development, and submitted to the Office of Vice-Dean for Academic Affairs in the faculty of Medicine. Regarding the SBT, it is conducted on the first day of each month at the Clinical Skills and Simulation Centre (CSSC). It is a two-hour educational activity that consists of four stations lasting 30 minutes each: airway station, suturing station, simulation scenario 1, and simulation scenario 2. The interns are divided into two groups, each with a designated instructor. In certain months, this activity was cancelled because of prior reservations at the CSSC. Therefore, a group of the interns received SBT, while others did not.

The evaluation survey form for the current study was focussed on the outcomes and objectives of the curriculum. It was designed around three themes: general satisfaction, simulation integration, and academic activities occurring during the rotation. It was reviewed by two EM physicians with previous experience in supervising and teaching ED interns. An electronic survey was developed using SurveyMonkey™ (Palo Alto, California, USA).[14] Completion of the feedback survey was voluntary and anonymous. The survey was distributed by a link sent to all interns through WhatsApp, which is known to be a reliable communication method.[15] The link was typically sent during the last two days of the month and was closed for participation at midnight on the last night of the month. Also, test-retest reliability was obtained for the study survey tool by conducting the same test more than once over a period of time with the participation of the same sample group.

Data were secured in an encrypted computer. Data was transferred to Microsoft Excel spreadsheets. Data was double-checked for accuracy and discrepancies, if any. Data was analysed using SPSS 24. Normality test was done using Kolmogorov-Smirnov test, and Student's t-test was used to evaluate statistical significance for parametric data, looking for confidence interval (CI) 95% and power 80%. The distribution of categorical data was expressed as frequencies and percentages. The differences in distributions of findings between subgroups were analysed with chi-square test for categorical data. Continuous data was expressed as mean and standard deviation, and as 95% CI. Differences in distributions of findings between subgroups were analysed with Student's t-test for continuous data. $P<0.05$ was considered statistically significant.

Results

Of the 971 interns having done rotation in the emergency department, 718(74%) had completed the survey. SBT had been received by 208(29%) interns, while 510(71%) had not received it. Mean points given on a scale of 1-10 by the interns was 8.2±1.8. Overall, 684(95%) interns believed the rotation had met or exceeded their expectations ($p>0.001$) (Table-1, Figure).

There was no significant difference between those who had received SBT and those who had not ($p>0.05$) (Table-2).

Interns were required to participate in 15-18 clinical shifts per month, and 554(77.2%) interns thought this was an adequate number. Also, 503(70%) interns responded that they would elect to do the EM rotation again, 610(85%) were satisfied with the teaching provided by ED specialists, 710(99%) thought the EM rotation was valuable, 503(70%) got the chance to work in the triage

Table-1: Overall rating of the rotation by the interns.

			Overall, how would you rate this rotation?					P-value
			Excellent	Very good	Good	Fair	Poor	
Did you have a simulation educational activity on the orientation day?	No simulation	Count (Percentage)	150(29.4%)	228(44.7%)	103(20.2%)	23(4.5%)	6(1.2%)	
	Simulation	Count (Percentage)	74(35.6%)	99(47.6%)	30(14.4%)	4(1.9%)	1(0.5%)	.088
Total		Count (Percentage)	224(31.2%)	327(45.5%)	133(18.5%)	27(3.8%)	7(1.0%)	

Table-2: Meeting of interns' expectations from the rotation.

How well did the rotation meet your expectations?							
Answer	All Participants		Simulation		No Simulation		P-value
	N	%	N	%	N	%	
Much better than expected	135	18.8	36	17.3	99	19.4	
Better than expected	276	38.4	89	42.8	187	36.7	
About what I expected	273	38	78	37.5	195	38.2	0.238
Worse than expected	31	4.3	5	2.4	26	5.1	
Much worse than expected	3	0.4	-	-	3	0.6	

area, and 65(9%) got the chance to work on paediatric cases.

Since the nature of the scheduling of EM rotations is flexible, interns take the chance to do academic activities that are not of the official EM rotation curriculum. Such extracurricular activities included Saudi Medical Licensure Examination (SMLE) 215(30%), Basic Life Support (BLS) course 194(27%), Advanced Cardiac Life Support (ACLS) course 86(12%), Advanced Trauma Life Support (ATLS) course 46(6.4%), Paediatric Advanced Life Support (PALS) course 14)(2%), and Neonatal Resuscitation Programme (NRP) 6(0.8%). Besides, 43(6%) interns participated in the weekly departmental academic activity, and 56(7.8%) participated in EM-related projects. Further, 130(18%) interns asked an EM attending physician for a recommendation letter by the end of the rotation.

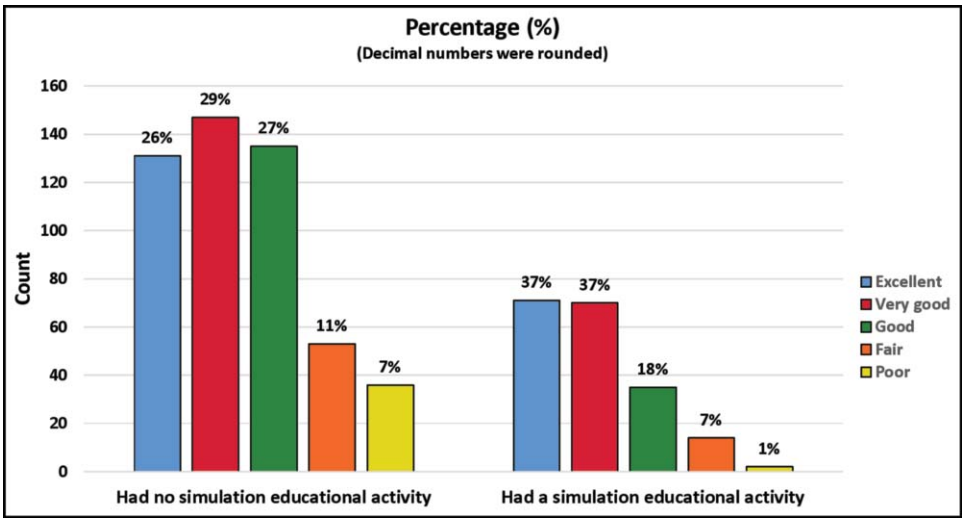

Figure: Satisfaction with teaching provided by emergency department specialists.

Among the 208(29%) interns who received SBT, 146(70%) believed it improved their performance during the rotation. In the SBT group, 158(76%) interns were more likely to repeat this rotation compared to a 341(67%) in the non-SBT group (p=0.15). Within the SBT group, 152(73%) interns believed that the content was helpful to them, 162(77%) felt comfortable asking questions during the activity, 127(61%) believed the airway station was beneficial, 165(79%) found the suturing station favourable, and 165(79%) found the simulation case stations to be beneficial. Almost all interns 203(97.6%) thought SBT instructors were engaging.

Of the total, 107(15%) interns had undertaken rotations at the beginning of the coronavirus disease-2019 (COVID-19) pandemic from March to July, 2020, and, of them, 73(68.2%) received a separate formal SBT regarding the use of personal protective equipment (PPE).

Discussion

Medical education systems aim at providing society with qualified healthcare providers who can offer patients safe and effective clinical services. Education and concomitant practical training are the means to achieve this goal. Medical students are the main stakeholders in this process, and, therefore, their input and feedback regarding their education and training are essential for achieving this

desired goal.[4,6,16] In addition, other stakeholders, such as academic leaders, programme planners, and educational instructors are in need of learners' contributions to achieve this goal. Internship is a stage in which medical students translate their theoretical knowledge into practice. Interns' input is a key factor in assuring the quality of the internship curriculum, which includes the learning experiences that take place during EM rotation. Evaluation surveys completed by students are an important source of data to guide the development of higher education.[17,18]

The level of interns' satisfaction about their experiences during internship is variable. A study with 106 medical interns showed that 50% of interns were satisfied with the quality of their education, with a mean score of 65.68±14.19.[16] The same study showed no relation between interns' demographics or college scores and their level of satisfaction. Interestingly, the interns were most satisfied with their experience in EM (23.36%) compared to the other specialties.[14]

The treatment received from supervising instructors is an important factor in interns' satisfaction.[7,19] In the current study, the interns were satisfied with the treatment received from ED supervisors and instructors.

There are several factors that have been previously investigated that affect interns' satisfaction.[4] These factors include the quality of supervision, learning environment, and workload,[20] all of which were examined in the current study. Simple interventions, such as stating course goals and objectives at the beginning of the course, may improve satisfaction.[16] The course orientation has been shown to have a strong influence on interns' satisfaction.[4] Additionally, training site services have been shown to influence overall satisfaction. In our setting, the orientation and simulation activities occur simultaneously, and both received high scores regarding interns' satisfaction. However, the effect of implementing SBT explored in the current study has not been previously studied.

Simulation Based Medical Education (SBME) is an important new method that has a proven impact on interns' performance in different medical specialties.[21-23] This applies to the ED rotation.[10] In the current study, those expressing satisfaction (92%) in the SBT group was significant ($p>0.001$). This could reflect the overall improved satisfaction with the rotation when SBT is conducted at the beginning of the rotation. This finding could also be attributed to the better preparation and early engagement for those who received this training.

There are many career-related commitments and academic activities during this year, and this factor should be given consideration when developing an internship learning programme. Most of these activities are related to the application for Saudi Commission for Health Specialties (SCFHS) clinical training programmes. The most important mandatory requirement is the Saudi Medical Licensure Examination (SMLE).[24,25] Almost all interns complete their SMLE exam during the internship. The current study showed that a large percentage of interns completed the exam during their EM rotation. This could be explained by the flexibility of the work schedule during this rotation and the ability to book days off without deduction from official leave days. Having the needed support, scheduling, and workload to undertake the post-graduation exit exam were important influences for interns' satisfaction, which is in line with a previous study.[19]

Exposure to specialties during the internship period contributes significantly to interns' career choice.[26] Interns usually choose their intended specialty early in their internship year.[3] As observed in the current study, interns typically complete the needed life support courses for their desired specialty during the EM rotation. Additionally, interns typically participated in extracurricular activities during the rotation, such as research projects or healthcare-related awareness campaigns.

The current study has its limitations, as the survey was general, and not comprehensive. This was because of the retrospective nature of the study. However, the main themes in the study coincided with the most important themes in literature cited above, and the aim of the study was to give a general direction for further studies in the future. The study was done at a single university, but it had a larger sample size than most other similar studies. Another limitation was the paucity of similar studies related to SBME for interns, specifically in the EM rotation, for comparison, but this factor actually contributes to the novelty factor of the study.

The current study provided a reflection of the situation, directives for future development, and guidance for those intending to develop curriculums for similar learning groups. Those designing and supervising the curriculum should take the findings into consideration. Integration of simulation should be considered when training graduating physicians, and such implementation should be planned in advance. Continuous feedback and evaluation process should exist for all practical field experience trainings, and consideration for appropriate extracurricular activities should take place when conducting practical training for medical graduates.

Conclusion

The interns had a positive perception of the learning experience during their EM rotation. There was no significant difference between those who received SBT and those who did not.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

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