

Original Article



Examining the Status of Clinical Training of Undergraduate Students in the Operating Room at Hamadan University of Medical Sciences in 2023

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Abstract

Background: The operating room is a critical therapeutic area, accounting for approximately 60% of unintended hospital incidents. At times, due to insufficient staff experience, life-threatening issues may arise for patients. Thus, the role of clinical education for operating room students, who form a segment of future personnel stationed in the surgical team, is highly vital and impactful. The effectiveness of this education can be significantly improved by receiving feedback from these students. The aim of our study was to evaluate the effectiveness of clinical education from the viewpoint of operating room students.

Methods: This descriptive cross-sectional study was conducted from February 2023 to April 2023. The research population included all Hamedan University of Medical Sciences operating room students. A sample of 47 individuals was selected by the census method. Data were collected using a demographic questionnaire and the Choo and Bowley effectiveness evaluation questionnaire. The data were analyzed using SPSS-25 and descriptive statistics.

Results: Overall, 59.6% of the subjects were females, and the remaining 40.4% were males. No significant relationship was observed between the students' age, gender, marital status, and academic semester and the average evaluation score of the effectiveness of clinical education ($P > 0.05$). The average effectiveness score for clinical education programs was 35.50 ± 10.74 , indicating that for most individuals (66%), the educational program was somewhat effective, and for 34% of individuals, the educational program was highly effective.

Conclusion: The results revealed the relative effectiveness of the clinical education program for operating room students; thus, the satisfaction of clinical learners was somewhat satisfactory. However, further student satisfaction and more effective clinical education are necessary. Therefore, serious attention from managers and clinical instructors to implement innovative educational programs to enhance the level of clinical learners seems necessary.

Keywords: Nursing education research, Student health services, Operating room

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Introduction

Universities are considered one of the most important educational centers in the country, and the main missions of these centers are to train the specialized human resources needed by society, to promote the improvement of knowledge, and to provide a favorable environment for the development of the country (1). Medical science education is a part of the higher education system that deals with human life; paying attention to its quantitative and qualitative aspects is particularly important (2).

Clinical education is considered the first source of learning and shaping the professional identity of medical students (3). It is highly important as it is known as the heart of professional education because it constitutes more than half of the educational time of medical students, and the basis for acquiring professional skills is embedded in them (4).

Clinical education is a dynamic process during which students gradually gain experience at the patient's bedside and apply the learned concepts in practice in interaction



with the instructor and the environment (5,6). During clinical training, the lessons learned are practiced, skills are taught, and students face the realities of the work environment (7). In the clinical learning environment, students apply what they have learned according to the patient's request to improve and promote their health and physical, mental, and social support with an original approach (8). Therefore, internships are essential in shaping medical students' basic skills and professional capabilities (9).

Clinical environments have variable and unpredictable characteristics, which have caused them to inevitably affect the education of students and make the role and performance of clinical instructors necessary. Some experts and educational experts have considered clinical education more critical than theoretical education (10).

External, comprehensive, and educational environment factors influence clinical education. The clinical instructor is a critical and fundamental element in planning and acquiring clinical experiences and is an essential factor in creating favorable conditions for realizing clinical education goals (11). On the other hand, students, as the recipients of the professional services of lecturers, are the best source for identifying the clinical teaching behaviors of their lecturers. In clinical training, the student, in interaction with the instructor and the clinical training environment, applies previously learned theoretical and practical concepts in real-life situations and to actual patients (12).

Nursing, intelligence, and operating rooms are all fields that need to be taught practical work in the best possible way. Therefore, clinical education in these fields is of particular importance and plays a more prominent role so that students, at the end of their study period, should be able to implement various skills with the necessary adequacy (13).

A bachelor's degree in the operating room is a new field and depends on practical and clinical skills. After completing the bachelor's degree and working in the operating room, the students of the operating room can perform duties as scrub person and circulating person. In the medical dictionary, the word "scrub" means "washed hands" (14).

In general, the scrub person operates in a sterile condition during the surgery, and in contrast to the mobile person, he performs many non-sterile tasks during a working day. The practical role of the scrub and mobile person in the successful surgery process is undeniable (15). It is noteworthy that, due to the clinical nature of the field, operating room students should be trained in the clinical environment. Although the operating room field has changed from an associate degree to a bachelor's degree in the past few years and the number of internship units for students at the new level has increased, it seems that the creation of necessary infrastructure, such as human resources specialized in clinical training and clinical training spaces, corresponding to the increase

in the number of students and internship units, has not been considered desirable (16). The importance of clinical training for students is essential; it is unique because the first mistake in surgery can be the last and leave irreparable damage to the patient (17).

By implementing a national plan, the researchers identified the obstacles to effective clinical education in five critical factors, including the lack of quality clinical environments and the lack of number of faculty members (lack of proportion related to the number of faculty members to students). The other factors were problems related to the number of students, negative modeling of clinical environments, and student exposure to clinical settings (18).

Weak planning in education, especially clinical education, leads to the weakness of the clinical skills of graduates and the reduction of the efficiency and effectiveness of the educational system and the quality of providing healthcare services to society. The gap between what the clinical instructors say and what they do, the inadequacy of the facilities and the exhaustion of the training centers, the dominance of the doctorate atmosphere in the training centers, and the disinterest of the paramedical students in their field of study are among the most critical problems of clinical education in our country (19).

Improving the quality of clinical education requires continuous a review of the current situation, recognition of strengths, and correction of weaknesses. In this regard, students' opinions and ideas as the primary educational element can pave the way for future programs (20). Therefore, educational planners should remove the obstacles of clinical education and provide an environment where students can acquire the necessary knowledge and skills during their internship. To ensure the effectiveness of clinical education programs, it is better to continuously monitor the education results through the review of opinion observation, and the effects of training should be evaluated as well. Based on the mentioned material and the importance of the subject, our study aimed to evaluate the effectiveness of clinical training from the perspective of operating room students.

Methods

Design and Sampling

This descriptive-cross-sectional study was conducted between February 2023 and April 2023 at Hamedan University of Medical Sciences. Sampling was performed in an accessible manner.

Participants

The statistical population included all undergraduate students of Hamadan University of Medical Sciences, who were 78 people. The research population included 47 students who met the inclusion criteria and had the desire to participate in the study.

The inclusion criteria for the study included the

following items:

1. Passing at least two academic semesters (because the students do not go to the clinical environment in the first semester)
2. Part of the students should not be guests.

Data Collection

In this study, a demographic information collection form was used, and Choo and Bowley's training program effectiveness evaluation questionnaire, translated into Farsi by Moghimi et al (21,22), was used to evaluate the effectiveness of clinical training. The validity and reliability of the questionnaire have been confirmed (Cronbach's alpha coefficient was estimated at 0.81), the purpose of which is to evaluate the effectiveness of trainers. This tool includes 16 items with a 5-part Likert-type scale (totally agree = 5, agree = 4, neither agree nor disagree = 3, disagree = 2, and totally disagree = 1). The scoring of this questionnaire is such that a score of 55-80 indicates the high effectiveness of the training program, a score of 30-55 is somewhat effective, and a score of less than 30 points represents a low efficacy of the training program.

Procedure

To perform the study and collect data, the researchers started their study after approving the plan at Hamedan University of Medical Sciences and obtaining the necessary permits to conduct the research. After providing the necessary explanations to the research samples, informed consent was obtained from them. Then, the questionnaires were delivered to the studied samples. When completing the questionnaires, the researcher's colleagues were available and answered the possible questions of the respondents.

Statistical Analysis

Descriptive and inferential statistics were used to evaluate the effectiveness of the clinical training of continuous undergraduate students in Hamedan University of Medical Sciences operating room in 2023 by SPSS software (version 25) at a confidence level of 0.95. First, the demographic characteristics (descriptive information and frequency distribution) of people are provided in Tables 1 and 2. Moreover, Tables 3 and 4 present the data related to the questionnaire for evaluating the effectiveness of clinical training programs and the obtained results.

Results

This study was conducted to evaluate the effectiveness of clinical training from the perspective of operating room students. Results related to demographic characteristics and effectiveness questionnaire for clinical training programs are given below.

Descriptive Findings Related to Demographic Characteristics (Age, Gender, Marital Status, and Academic Term)

Based on the data in Table 1, 59.6% of the surveyed people were females, and 4.40% of them were males. Further,

Table 1. Frequency Distribution of the Surveyed People in Terms of Age, Gender, Marital Status, and Academic Term

Demographic Characteristics	Frequency	Percent	
Age (y)	18-20	16	34.04
	21-23	24	51.06
	25-27	5	10.63
	≥ 28	2	4.25
	Total	47	100
Gender	Female	28	59.6
	Male	19	40.4
	Total	47	100
Marital status	Single	46	97.9
	Married	1	2.1
	Total	47	100
Academic term	Second semester	4	8.5
	Fourth semester	20	42.6
	Sixth semester	12	25.5
	8th semester	11	23.4
	Total	47	100

Table 2. Descriptive Information of the Samples in Terms of the Effectiveness Score of the Clinical Training Programs

Statistical Characteristic	Average	Standard Deviation	Minimum	Maximum
Effectiveness of clinical training programs	50.53	10.74	32	80

most surveyed people (97.9%) were single, while 1.2% were married. In addition, most of the surveyed people were in the fourth semester (42.6%).

Findings Related to the Effectiveness Questionnaire for Clinical Training Programs

Based on the findings, the average effectiveness of clinical training programs was 74.10 ± 35.50 (Table 2).

The results demonstrated no significant relationship between the demographic characteristics of the students and the effectiveness of the clinical training program ($P > 0.05$) (Table 3).

The results represented that the training program was adequate for most people (66%), and the training program was highly effective for 34% of people (Table 4).

Discussion

Clinical education is a process that facilitates learning, and in this activity, which is performed in the clinical environment, the student and the instructor are equally involved. Its purpose is to prepare the student to perform clinical care. Students who are influenced by effective clinical education are placed correctly, and at the end of the study period, they can implement the various skills learned adequately (23). The state of students' clinical education should be continuously evaluated to determine

Table 3. The Relationship Between the Effectiveness of the Clinical Training Program and Demographic Characteristics

Demographic Characteristics	Effectiveness of Clinical Training Programs (P value)		
	Somewhat Effective	Effective	
Age (y)	18-20	0.07	0.09
		0.11	0.08
		0.09	0.10
	21-23	0.13	0.07
		0.07	0.12
		0.08	0.10
		0.10	0.13
	25-27	0.07	0.09
		0.11	0.10
		0.08	0.11
≥ 28	0.13	0.14	
	0.07	0.09	
Gender		0.08	0.08
	Female	0.11	0.10
		0.08	0.10
		0.09	0.11
	Male	0.08	0.14
Marital status		0.14	0.11
		0.10	0.13
	Single	0.09	0.07
		0.13	0.14
		0.07	0.08
Academic term	Married	0.15	0.08
		0.07	0.10
		0.11	0.15
	Second semester	0.11	0.09
		0.07	0.09
		0.08	0.14
	Fourth semester	0.11	0.10
		0.13	0.11
		0.08	0.11
	Sixth semester	0.14	0.08
	0.07	0.09	
8th semester	0.09	0.13	
	0.08	0.07	
	0.13	0.11	

Table 4. Distribution of the Frequency of People Examined in Terms of the Effectiveness of Clinical Training Programs

Effectiveness of Clinical Training Programs	Frequency	Percent
The educational program was somewhat effective (score 30-54)	31	66
The educational program was highly effective (score 55-80)	16	34
Total	47	100

the strengths and weaknesses in the clinical environment. This will lead to an assessment of improving the quality of clinical education and greater satisfaction. Many variables, including the trainer, department personnel, and factors in the clinical environment, affect learning results. These factors should be evaluated to ensure that the clinical environment is helpful for learning (24). The relationship between the evaluation of the effectiveness of clinical education and the demographic characteristics of the students underwent investigation. No significant association was observed between the students' age, gender, marital status, and academic semester and the average evaluation score of the effectiveness of clinical education ($P > 0.05$). In line with this study, in the study of Zarei et al, students had relatively good satisfaction with clinical education (25). The results of the study conducted by Ghorbanian et al on 149 students of the operating room and intelligence department of Tabriz University of Medical Sciences demonstrated that, according to the operating room students, the most important influencing factors in the clinical education situation were the instructor, the process of dealing with the student, and the educational goals and program (16). Löfmark et al, in their study conducted on 380 nursing students in Norway, found that the students considered the supervision of preceptors and university instructors to be positive and beneficial for their clinical activities and noted that this supervision has dramatically helped in learning clinical skills (26).

Contrary to the results of our study, those of the study of Shrestha et al indicated that despite the overall positive opinion of students about clinical education, there was no adequate support system for them, which can be due to the stress on the educational environment and the lack of security in the educational space in the eyes of the students (27). The clinical environment is essential for developing students' confidence in learning and fulfilling their goals.

Study Limitations

Among the limitations of the research, we can point out things such as the small number of samples and the lack of cooperation of some of them, making it difficult to generalize these findings to the opinions of other operating room students in the clinical education environment.

Conclusion

According to the results of this study on the relative effectiveness of the clinical training program for operating room students, the satisfaction of the clinical learners has been somewhat satisfactory. The average effectiveness score indicated that the level of satisfaction with clinical training was not high enough, which should receive more attention. The low level of effectiveness may lead to a decrease in motivation and an increase in students' mistakes in the future. On the other hand, the students of the operating room, as the personnel of the surgical team, must give their best performance according to the special

conditions of the room. Therefore, by determining factors affecting the quality and quantity of clinical education in the operating room environment, it is possible to prepare the ground for realistic planning to empower operating room students and improve the level of care services by educational planners, and with the knowledge of challenging resources, limiting it or raising the level of students' awareness will increase their adaptability to different situations and provide a suitable environment for education. Conducting studies on a broader group that does not have the limitations of the present study can increase the generalizability of the findings. The small number of samples is the most critical limitation of this study, which should be considered in the generalization of the findings.

Suggestions

Considering that the consequences of insufficient training and insufficient satisfaction from clinical training can affect the quality of therapeutic work of operating room personnel, managers should pay serious attention to the use of new training programs with the aim of investigating the reasons for student dissatisfaction.

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Authors' Contribution

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Competing Interests

None declared.

Ethical Approval

The research project was submitted to the Ethics Committee of Hamedan University of Medical Sciences and received an ethics permit (with code IR.UMSHA.REC.1400.539) after approval. Informed consent to conduct the research was obtained from the research units, and the necessity and method of doing the work were explained to all the students. The research units were assured to keep the information confidential. In all stages of the study, the researchers adhered to the principles of the Declaration of Helsinki and the confidentiality of data in all phases of the research, from design to the publication of findings.

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