Original Article

Consequences of exposure of operating room students to clinical learning challenges

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Article Info

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Abstract

Background & Objective: Clinical environment is a significant component in relation to students' learning. Exposure to the challenges of the clinical learning environment has some consequences for students and can affect their learning. Identifying these consequences will moderate the challenges, and therefore, improve the quality of learning in such environments. The present study aimed to explain the consequences of exposure to clinical learning challenges among operating room students.

Materials & Methods: This study was conducted based on the qualitative content analysis approach at Shahrekord University of Medical Sciences, Shahrekord, Iran, in 2022. A total of 14 surgical technology students were selected by a purposeful sampling method. The required data were collected using in-depth, semi-structured face-to-face interviews. The data were analyzed using Graneheim and Lundman's approach.

Results: The results of the study revealed two categories (i.e., learning distress and using harmful clinical shortcuts) and four subcategories (i.e., feeling of helplessness in learning, anxiety, incomplete care, and wrong modeling). Under the conditions and challenges in the learning environment, students felt helpless toward learning, experienced anxiety, and suffered from learning distress. It was also found that in the clinical learning atmosphere, when faced with the existing challenges, the students would be likely to facilitate the care process and attempt to do unprincipled care by imitating the wrong personnel examples.

Conclusion: Faced with the learning challenges of the clinical environment, the operating room students suffered from learning stress and resorted to harmful clinical shortcuts. Examining students' anxiety and their disappointment and helplessness toward the conditions and challenges of clinical education, identifying clinical wrong patterns in the care process, as well as modifying the care process provided by the personnel as wrong role models of students can have an effective impact in reducing the existing consequences.

Keywords: Clinical Education, Clinical Learning, Learning Challenges, Learning Outcome, Operating Room

Introduction

Clinical learning is an important part of health science education. Considering that clinical learning takes place in complex environments, the quality of clinical environments can play an effective role in increasing students' clinical knowledge and skills (1, 2). Effective clinical learning, done correctly, can assist students in developing their knowledge, attitude, competency, and psychomotor skills, and in turn, empower their communication, problem-solving, critical thinking, and professional skills as well as professional and clinical qualifications (3). Various studies have investigated the effect of an appropriate clinical environment in increasing the motivation and learning of students in the clinic and have reported the failure to meet these expectations as one of the factors inhibiting clinical learning (4, 5).

Clinical education is a process that takes place in challenging clinical environments and is influenced by various factors and variables (6). Among the challenges of the clinical education environment, one can count the
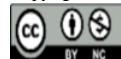
lack of sufficient access to instructors, the gap between clinical learning and practice, the inappropriate treatment of medical personnel with students and instructors, and the absence of facilities and equipment in the clinical environment (3, 5).

The learning process can be impacted by multiple factors, resulting in various consequences for students. These consequences can affect the learning process, and therefore, influence the scientific and practical competence of students as the future workforce (7). Since students of various fields of medical sciences spend a lot of their learning time in the clinical environment, in addition to recognizing the existing challenges, it is necessary to identify the consequences that students experience when facing these challenges. It is essential to understand these consequences and how various effective factors affect their learning process (8). Students' exposure to the clinical learning environment and its challenges can influence their learning in such environments (9). Examining and identifying students' experiences of facing the challenges of clinical education and the consequences they employ in facing these challenges can clarify the weaknesses and strengths of education in clinical environments and would be effective in educational programs and the improvement of the quality of education. Since clinical education is the students' primary source for learning professional attitudes, values, and norms, their experiences can be the most important characteristics of clinical education (10, 11). To understand what is experienced in clinical environments, one should go beyond observational and descriptive studies and investigate students' experiences as effective members of clinical learning. Examining the experiences of students concerning the consequences they have encountered with learning difficulties in clinical environments can be more beneficial than anything else in this field (12).

Acknowledging the students' experiences in the realm of consequences arising from their encounters with challenges in medical settings that influence their learning process will lead to the formation of improved strategies for preparing them to undertake their part effectively in the near future (13). The point that necessitates the examination of students' experiences in this field is that until we do not become aware of what challenges students face as customers of education, what positive and negative consequences they experience in the clinical learning process, and what their needs and expectations are, any suggestions about the quality of education will not be based on a solid basis (14, 15). In

this regard, students' issues and problems during the learning process in the challenging environment of clinical education and its consequences should be continuously evaluated to increase the quality of education (16).

Numerous studies have been conducted on the clinical education environment of nursing and medical students and its related problems; however, the consequences of exposure to the challenges of the learning environment among the operating room students have been less considered an important component in the clinical education process (17-19). The results of various studies also indicate that learning environments are not ideal and are accompanied by challenges (3-5). Meanwhile, Chan et al. (2018) stated that clinical learning environments in local hospitals could not lead to learning outcomes because of existing challenges (2). Pakpour et al. (2010) reported that nursing students of the Tehran University of Medical Sciences did not have a positive view of the clinical learning environment and its consequences (19). Tharani et al. (2017) also mentioned that there was a difference between the students' understanding of the real clinical learning environment and the ideal learning environment, and this would have consequences for the students (20).

Considering that the clinical learning environment is naturally associated with problems and challenges and the presence of students in these environments affects their learning process, and therefore, has consequences for them, identifying and examining the experiences of students regarding these consequences can have an effective role in dealing with clinical challenges, and as a result, increase the quality of clinical education. The study aimed to explore the experiences of surgical technology students regarding the consequences of clinical learning challenges in the operating room due to a lack of transparency in this regard.

Materials & Methods

Design and setting(s)
The present study was carried out to illustrate the consequences of exposure to clinical learning challenges among operating room students at Shahrekord University of Medical Sciences in 2022. Considering the fact that the question of the study addressed explaining the nature of students' experiences of the challenges of clinical learning, and also due to the existence of few studies on this topic and in the context of Iran's health systems, the

approach of conventional content analysis was chosen to conduct the study.

Participants and sampling

The population consisted of operating room students who had learning experiences in the clinical environment of the operating room. The samples were selected using a purposeful sampling method. The inclusion criteria were being able and willing to express experiences and having passed the clinical course in the operating room environment. Interviews with the participants were conducted over 4 months; accordingly, 14 face-to-face interviews were conducted with 14 students.

Data collection methods

To collect the required data, in-depth semi-structured interviews were held individually and face-to-face. The place and time of the interview were determined according to the choice and consent of the participants. After explaining the purpose of the study to the participants, their demographic information was collected, and then the main interview questions were asked in a semi-open form (e.g., Please explain what educational challenges you have encountered in the operating room environment; Please state what implications the challenges of the clinical learning environment have had for you) and exploratory questions were asked to obtain more details (e.g., What did you mean by what you said?). All the interviews were conducted in Persian language and recorded using a digital audio recorder. Interviews were continued until reaching data saturation and up to the point that no new themes or categories were obtained from the interviews. The average duration of each interview was 30 min. The interviews were held in the operating room and the faculty. Data saturation was achieved after performing 12 interviews; however, 2 more interviews were conducted to ensure data saturation.

Data analysis

The qualitative content analysis of Graneheim and Lundman was employed to analyze the data. According to this method, the interviews should be transcribed word for word and read completely several times to get a comprehensive understanding of the transcripts. Afterward, the text is divided into semantic units, which are abstracted and labeled as codes. The codes are compared and classified into categories and subcategories according to their similarities and differences. Finally, the themes are formulated as the expression of the hidden contents of the text (21).

In this study, firstly, the interviews collected by the researcher were transcribed and the text of the interview was read several times for a comprehensive understanding of the content of the text. Subsequently, the semantic units of the interview text were identified and initial coding was done. The initial codes were compared and classified based on their similarities, differences, and content. All interviews were transcribed and analyzed by the researcher under the supervision of the research team.

To increase the trustworthiness of the study, the criteria of Lincoln and Guba were applied (22). After being coded, the interview text was returned to the participants to ensure that the researcher and the participant had the same understanding. The researcher's constant mental occupation with the collected data, as well as the process of analysis and coding, indicated immersion in the data. The process of coding and data analysis was supervised by experts from the research team who had sufficient experience in the field of qualitative research and education. To increase the appropriateness, the researcher attempted to document all the stages of the research, including collection, analysis, and formation of categories and subcategories so that it could be examined by others.

Results

The demographic characteristics of the participants are presented in Table 1.

Table 1. Demographic characteristics of the participants

Participant	Age	Gender	Semester	Marital status
1	22	Male	4	Single
2	23	Female	4	Married
3	22	Female	4	Single
4	28	Female	4	Single
5	21	Female	4	Single
6	28	Female	4	Single
5	26	Female	8	Single
6	24	Female	8	Single
7	25	Female	5	Single
8	24	Female	5	Married
9	22	Male	6	Single
10	21	Male	5	Single
11	23	Male	6	Single
12	21	Female	7	Single
13	29	Female	7	Single
14	21	Female	7	Married

Based on the results of the study, two categories (i.e., learning distress and using harmful clinical shortcuts) and four subcategories (i.e., helplessness in learning, anxiety, incomplete care, and wrong modeling) were obtained. The categories and subcategories of the study

are tabulated in Table 2.

Table 2. Categories and subcategories of the result of the exposure to clinical learning challenges among operating room students

Categories	Subcategories	Some of the initial codes
Learning distress	Helplessness in learning	Feeling perplexed due to lost power
		Conflict as a result of observing the non-scientific performance of some personnel
		Fatigue caused by ineffective learning
	Anxiety	Possibility of not achieving learning goals in the future
		Constant avoidance of overcoming problems due to fear of failure
		Ineffective learning due to unresolved fear
		Anxiety caused by thinking about unknowns
Using harmful clinical shortcuts	Incomplete care	Insistence in doing the wrong process of care because of simplicity
		Doing the facilitated process of clinical care procedures because of feeling experienced
		Unnecessity of some care steps from the student's point of view
	Wrong modeling	Insistence of the personnel on their wrong performance as role models of students
		Students being accustomed to the wrong care from the staff
		Wrong attitude among students about becoming similar to personnel

1. Learning distress

This category refers to the conditions in which students experience perplexity under the conditions and challenges in the learning environment. The feeling of helplessness toward learning and anxiety experienced by students makes them suffer from learning distress.

1-1. Helplessness in learning

The experiences of the students showed that when faced with the different conditions of the clinical environment and the lack of effective adaptation to it, they felt powerless, a conflict between theory and practice, and fatigued due to their ineffective efforts to learn, as well as defeated and helpless. In other words, the situation is such that they cannot overcome it, and as a result, this helplessness leads them to learning distress.

A 23-year-old male student stated that: "…I witnessed an action against scientific principles. But everyone said "Do it". I really don't know which action is right".

A 28-year-old female student mentioned: "…Many times, I gave a suggestion to the supervisor to control the infection ... He said ok, but he did the wrong thing. I'm tired of saying".

1-2. Anxiety

Based on the students' experiences, they felt afraid that the existing conditions could not meet their learning needs, and consequently, they would not become competent individuals in the future. Not facing problems due to fear of failure, not knowing, and inadequacy in occupational future time perspective causes anxiety. If students cannot adapt to these conditions, they will experience learning distress.

A 24-year-old female student said that: "…I always think that I haven't learned many things and this worries me a lot".

A 22-year-old male student stated that: "…I didn't learn much in my studentship and I don't like to think about them because I get worried".

2. Using harmful clinical shortcuts

This category refers to the fact that students in the clinical learning environment, facing the existing challenges, shorten the process of providing care for ease of work and try to perform unprincipled care by imitating the personnel.

2-1. Incomplete care

The experiences of the students indicated that in the process of clinical learning, adopting some measures, such as eliminating some of the standard steps of care, as well as emphasizing and justifying this wrong process and repeating it several times, would lead the process and steps of clinical care deviate from the standard and complete state and enter the harmful clinical shortcut phase.

A 23-year-old male student asserted "…I know what the scientific method of such a stitch is, but it's easier to do it this way, but it may harm the patient".

A 22-year-old male student stated that: "…We have become skilled and I think some of the urinary catheterization steps are not necessary and can be removed, although sometimes it becomes non-sterile".

2-2. Wrong modeling

According to the experiences of the students, they were influenced by some employees because of their attitude and wrong modeling and they preferred them to scientific care. This attitude of students caused them to employ harmful clinical shortcuts instead of correct performance due to modeling some of the wrong actions of employees, which are not only incorrect but also lead to

negative outcomes for their learning because it may harm patients.

A 23-year-old female student mentioned: "…My professor told me that I was doing the subcuticular suture wrongly, but I know Mr. so-and-so, who is very skilled, does it this way and I prefer to do it this way".

A 23-year-old male student stated that: "…Some personnel are role models for me, although they may not be suitable role models from the point of view of my professor and the educational system".

Discussion

The present study was conducted to explain the consequences of exposure to clinical learning challenges among operating room students. The results of the study revealed the existence of learning distress and the use of harmful clinical shortcuts, which were caused by such conditions as a sense of helplessness in learning, anxiety, incomplete care, and wrong modeling.

Mbakaya et al. (2020) investigated nursing and midwifery students' experiences and understanding of the clinical learning environment and reported that the students faced multifaceted challenges, including the absence of resources, poor communication with staff, and lack of support from clinical instructors, which had a negative effect on their clinical learning experiences. They also stated that students' communication with their surroundings and modeling them could play a considerable role in acquiring qualifications (10). Tharani et al. (2017) reported that the entrance of nursing students to clinical environments caused interference between their and nurses' responsibilities and resulted in subsequent problems. Among the factors causing problems between students and department staff, we can point out the mismatch between education and treatment, rejecting criticism, not providing enough equipment to students, and not paying attention to the list of students' responsibilities (20).

Chan et al. (2018) demonstrated that repetitive topics in the clinical environment caused negative experiences in students. Students enter the clinical environment with inadequate preparation and preconceived notions of the clinical environment and nursing. When they face an unsupportive atmosphere and negative behaviors and attitudes of nurses, they find a conflict between their expectations and learned subjects on the one hand, and reality in clinical environments on the other (2). Najafi Kalyani et al. (2019) stated that in the face of inappropriate conditions in the educational environment, students adopt strategies that lead to some consequences,

such as escape and development. Some of these strategies help them avoid unpleasant situations, lead them to professional development, and enable them to accept their role and the clinical environment; nevertheless, some strategies not only fail to solve students' issues but also impede their acceptance of professional duties (23).

The analysis of the results of the mentioned studies demonstrates that students' understanding of the educational problems and the deficiencies of the clinical environment will lead to various negative consequences, and if these problems cause a decrease in the quality of clinical education, it will also affect the qualifications of the students. When encountering these issues, students react in different ways; sometimes these reactions lead to a positive result in improving their learning, while sometimes these reactions have negative impacts. The students' negative attitude during their studentship makes them either refuse to enter the clinical environment in the future, or after entering, they turn into an employee who lacks job satisfaction. Reacting in various ways, such as harmful clinical shortcuts, also causes students not to learn the basic process of care and to suffer from professional competency in the future.

In a qualitative study, Karimi Monghi et al. (2010) addressed the clinical learning experience of medical students and pointed out some themes, such as worry and anxiety caused by the lack of planning and future perspective in clinical learning. Furthermore, the results of this study showed that clinical learning led students to become professionals in medicine (14). Papastavrou et al. (2016) reported that when students faced stressful and unpleasant factors in clinical environments, they tried to adopt coping strategies. Seeking support from friends was reported as one of the most important strategies employed by students (12). According to the results of a study by Doye et al. (2017), the interpersonal relationships between clinical instructors and nurses and students played a significant role in the development of students' personal and professional identities. Additionally, the negative relationships of clinical instructors and nurses with students and displaying behavioral and verbal aggression towards them were mentioned as the main causes of creating stress and a sense of ineffectiveness and disqualification in students (5). Plank (2018) stated that students in challenging clinical environments used coping strategies, such as transferring to another department, staying optimistic, and applying problem-solving skills, to reduce stress. The utilization of responsibility and problem-solving

strategies as well as analytical efforts to solve problems in stressful situations can have an effective role in the negative impacts of these environments on students (24). Considering the analysis of the results of these studies, it is noteworthy that worry and anxiety in students, whether due to inappropriate conditions in clinical environments or an uncertain future, can have negative consequences in the form of a decrease in the quality of students' learning. Fear of an uncertain future, if not managed, will lead to leaving the profession, and anxiety during learning will also make it difficult to achieve learning goals. The adoption of inappropriate strategies in facing stressful situations fuels the continuation of the vicious cycle of anxiety in students. Healthy communication with friends can play an effective role in managing anxiety in a person; nonetheless, unprofessional and friendly communication with employees can be considered a negative reaction, which not only fails to have an effective role in controlling anxiety but also sometimes causes them to distance themselves from the learning process and seek escape or a clinical shortcut. As one of the limitations of this study, several professors and staff members of the operating room could have been interviewed, but that was not possible.

Conclusion

The present study was aimed at explaining the consequences of exposure to clinical learning challenges among operating room students. The findings of the study revealed learning distress and the use of harmful clinical shortcuts, which were caused by such conditions as a sense of helplessness in learning, anxiety, incomplete care, and wrong modeling.

In line with the above results, it is worth mentioning that the managers of educational systems should try to identify the conditions that cause students to experience learning distress in the clinical learning environment and be inclined to resort to employing clinical shortcuts. Investigating students' anxiety about the conditions and challenges of clinical education and their feeling of disappointment and helplessness can be effective in decreasing its negative effects, such as learning distress. Wrong modeling should be corrected by identifying clinical wrong models in the care process and also modifying the care process provided by the personnel as wrong role models of students. Emphasis on clinical competence through the implementation of care according to existing standards by staff and students should be considered by hospital and faculty officials. Furthermore, the presence of clinical professors during the implementation of care and their guidance reduces the possibility of wrong modeling. Besides, being at the patient's bedside next to the student during the implementation of care by the staff and scientific explanations can lead to a reduction in the possibility of wrong modeling.

Ethical considerations

This study was approved by the Shahrekord University of Medical Sciences (IR.SKUMS.REC.1400.136). The ethical principles of consent, independence, and confidentiality were observed for the participants. To enter the study, written informed consent was obtained from all participants and their participation in the study was voluntary. They were also assured of the confidentiality of their information. Before conducting the interview, the participants were informed about the purpose and method of the study, and written consent was also obtained from them for audio recording and note-taking during the interview.

Conflict of interest

The authors declare that they have no conflict of interest.

Author contributions

M.R. conceptualized and designed the study, A.T. collected the data, SH.D. analyzed the data, and S.M. wrote the main manuscript text. The authors have met the criteria for authorship and had a role in preparing the manuscript. Moreover, the authors approved the final manuscript.

Data availability statement

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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