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ORIGINAL ARTICLE

Challenges of clinical education in the operating room from the teachers' viewpoint: A qualitative study

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Abstract

Introduction: Clinical education is an ever-lasting requirement in educational settings for students and faculty. However, it is associated with numerous challenges that can have an impact on the efficacy of both the students and the teachers. The challenge can be more prominent in specialized environments such as the operating room. In this qualitative study, we have tried to identify these challenges and provide solutions to them.

Methods: This is a qualitative content analysis study was performed with the incorporation of seven operating room and anesthesiology instructors of Bushehr University of Medical Sciences. The required questions were first collected and subsequently posed as interviews in the operating room setting. Data were collected through the recording of semi-structured interviews and until the data saturation.

Results: Research findings are reported in three themes and nine categories. The main themes were organizational structure, planning, and human resources, each of which with specific categories and/or subcategories as per the subject matter. In terms of organizational structure, the most serious challenges comprised a lack of welfare facilities and problems in the field of education, such as non-specialization of operating rooms and limited physical space. The challenges related to planning comprised of a lack of student self-evaluation, delay in surgery initiation, and a large number of students in various fields. As for the human resource challenges, the most apparent problems were insufficient education delivered to students before their entrance to the operating room and the lack of familiarity of officials with the operating room environment.

Conclusions: Given the questions posed to and the answers received from the instructors, most of the problems in the operating rooms in terms of education are related to the infrastructure-associated problems in the operating room and the students' approach to the operating room. Despite the enormous efforts of the instructors in education, as they were respondents in the study, it could not be clarified how the problems in human resource and teacher dimensions could help solve the overall problems, suggesting that further research is required with the help of students and other groups involved in education in the operating room.

Key words: Content analysis, Education, Operating Room, Qualitative study, Students

Introduction

Clinical education is the fundamental and significant part of medical education without which it would be very difficult or even impossible to train efficient and competent people (1). Clinical education is a process whereby students acquire skills gradually by attending a patient's bedside and

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build on the experience from logical reasoning to solve the patient's problems (2). To solve patient-assocoated problems is influenced by multiple factors and variables (2). In clinical education, students are given the opportunity to transform their theoretical knowledge into various mental, psychological, and motor skills that are required for patient care (3). Education experts recommend that more emphasis be placed on clinical education in nursing and other health groups, as most of their problems can be traced to clinical education (4, 5). Detection of the clinical education status quo contributes to eliminating or correcting weaknesses and can improve the achievement of educational goals, the training of skilled persons, and the provision of higher quality care services (3).

Although considerable progress has been made in higher education in the last decade, the obstacles and difficulties of clinical education need to be further explored, as identifying the appropriate solution for each of them will lead to improved education (6). Operating rooms, which are in fact a form of intensive care unit and an area to be highlighted for delivering patient care at various stages of surgery, provides the opportunity for the care team to participate effectively as individual members involved in the patient care process. The operating room environment is the primary learning environment for students in this field. Surgery in the operating room environment is a challenging activity whose stress can significantly affect the professional performance and decision-making ability of trainees during surgical practices (7). By identifying effectual learning environments, education stakeholders can consider teachers' perspectives and students' needs to enrich their clinical experience.

Research into clinical teacher problems in the clinical evaluation of nursing students has shown that the majority of the problems are concerned with the irrelevance of the clinical evaluation form with internship positions, inappropriateness of equipment and facilities available in the ward for student practice, and disproportion of ward-student ratio (8). In the meantime, there are challenges and problems that cause a great deal of stress for both students and teachers. Given the fact that clinical teachers are in tangible contact with clinical issues and problems, the present study aims to build on a qualitative approach to elucidate the challenges of clinical education in the operating room from the perspective of clinical teachers.

Methods

This study is a qualitative content analysis study consider the challenges of clinical education from the perspective of teachers in the operating room, with the code of ethics IR.BPUMS.1398.1620. The study population consisted of all teachers in the operating room and anesthesiology disciplines affiliated with Bushehr University of Medical Sciences. The participants included seven instructors, who delivered clinical education in teaching and non-teaching hospitals of Bushehr. They were selected by purposive sampling from among those who were willing to participate in the study. To develop the interview guide, we first posed a general question that assessed the viewpoint of the teachers on the challenges and problems they typically encountered in the operating room setting. One general question was repeated throughout the interviews, and the other questions were designed based on necessity and the participants' responses. All interviews were recorded using a digital audio recorder with the informed consent of the participants. Data were collected through semi-structured interviews, and sampling continued until the data were saturated.

Ranging in duration between 16 and 42 minutes, the interviews were conducted in the participants' workplace as desired by the participants. First, the data were collected from the participants and analyzed using the conventional qualitative content analysis method with an inductive approach. After all the interview sessions were recorded, we listened to the interviews and gained a general view of them. Subsequently, all interviews were transcribed verbatim and analyzed. Significant phrases and statements were identified, and the concepts were coded. Similar codes were merged and categorized. The categories were coded depending on the idea they contained; the extracted categories were compared and combined if similar.

Eventually, three main themes and nine categories emerged. The rigor and trustworthiness of the study were confirmed by the four criteria dependability, credibility, and transferability, and confirmability, as suggested by Lincoln and Guba (9). Credibility was established through member checking of the data, interpretations, and conclusions. Transferability refers to whether the results are applicable to other groups. In this case, we tried to achieve this feature by selecting informed and experienced participants. The dependability was established when the participants provided similar responses to the same questions that were presented in different forms. The confirmability of the research was also achieved by avoiding any bias in the subject matter before and after the interviews were conducted.

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Results

Seven teachers (four men and three women) participated in the present study. Participants were affiliated with the operating room and anesthesiology departments and held a bachelor's or master's degree (Table 1). Research findings are reported in three themes and nine categories (Table 2). The main themes comprise organizational structure, planning, and human resources. What follows is a brief description of each theme and its categories, illustrated with examples given by the participants.

Organizational Structure

The categories under organizational structure include a lack of welfare facilities and problems in the educational field. The problems were classified into five sub-categories, namely, outdated teaching tools, non-specializedness of operating rooms, insufficient educational fields, insufficient physical space, and repetitive surgeries. Participant # 2 reported the lack of welfare facilities:

One of the major problems we have is that we don't have a room in the operating room called a buffet, some break-room, where the student can sit and have a cup of tea and relieve some fatigue.

Participant # 5 spoke about the problems in the educational field:

Another problem is that we don't have specialized operating rooms. For example, in the orthopedic ward, I suppose I need to teach orthopedic theoretical materials. When I attend the clinic, I may suppose that students in the operating room only require orthopedic instructions. This is not the case, however. For example, in the theoretical section, I have to teach eye surgery technology or I teach pediatric surgery. But in the clinic, I have to know about the nervous system and neurology as well as orthopedics, ophthalmology, general surgery, and gynecology. In fact, I have to be as knowledgable in surgery as a general surgeon.

Concerning the problems in the educational field, participant # 2 added:

Because you are constantly training the operating room students, you should beware of not bumping into each other when you are passing by one enother; when the door opens, you should watch out not to hit someone. Despite that, when the operating room door opens, there is either an operating room student ot instructor behind the door. It is because we have nowhere else to stand and it is disappointing to us.

Table 1: Demographic characteristics of the participants

characteristics		Number
participants	Men	4
	women	3
Age, years	20-30	2
	30-40	3
	40-50	1
	50-60	1
work experience, years	1-5	1
	5-10	2
	10-15	2
	15-20	1
	20-25	1
education	Bachelor's Degree	4
	Master's Degree	3

Planning

The categories covered under this theme comprised ambiguity in student evaluation, surgery-associated issues (no surgery on the agenda, cancellation of surgery, delay in surgery initiations, and the low number of surgeries), and a large number of students. In the ambiguity in student evaluation category, there were three subcategories: lack of student self-evaluation, lack of specific tools for student evaluation, and inaccurate evaluation of students. There were four subcategories of surgery-associated problems: lack of surgery, surgery cancellation, delay in surgery, and a low number of surgeries. Participant # 5 commented on the ambiguity in student evaluation:

I think something like self-evaluation is quite good but lacking in our internship programs. I mean, we have not taught self-evaluation to students; we have not taught the students to evaluate themselves, for example, to score themselves, to understand what changes they have made in the course of time, or to recognize their mistakes. When the students evaluate themselves, it makes them decide to avoid the mistakes they made this time, to guard against the errors they have made, and to promote over time. Thus, I think we should teach self-evaluation to our students.

Participant # 4 discussed surgery problems:

There were occasions that they had special programs in the operating room; for example, they held a meeting session in the operating room, which continued up until 10, and our students could not stay any longer than 12:30. The surgeries were supposed to start at 10 a.m. but were postponed to evening, and thus far, our students have been deprived of many operations.

Participant # 3 added:

Yeah, then we have three to four surgeries in

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Table 2: Themes, categories, and subcategories of clinical education challenges

Subcategory	Category	Theme
	Lack of amenities	Organizational structure
Outdated educational tools Nonspecialized operating rooms Shortage of educational fields Lack of physical space Recurrence of surgical procedures	Problems in the educational field	
Lack of self-evaluation by students Lack of specific tools for evaluation Student inaccurate evaluation	Ambiguity in student evaluation	Planning
Lack of surgery Surgery cancellation Delay in starting surgery Small number of surgeries	Problems with surgery	
	Too many students	
No relationship between hospital management and university Lack of familiarity with the operating room environment Lack of proper planning for training	Head of department and faculty	Human resources
Lack of training for students before entering the operating room Not paying attention to practical tasks Lack of necessary education for students Not using time for student education Lack of training coach before entering operating room Not similar way of coach working Lack of careful supervision by the instructor Ignoring the coach's demands Instructor independence Lack of coach Trainer with extra fatigue	Coach	
Addiction to social networks Attendance False expectations Difference between generations Improper student communication with staff and physicians Inadequate proficiency in some operations Unspecified description of student tasks Students' disinterest and unwillingness to learn No sense of student responsibility Student dishonesty	University student	
Misbehavior with students Differentiate between fields of study Student fear of doctors Failure to cooperate with surgeon or anesthesiologist Disregard for the rules governing the operating room	Surgeon and anesthesiologist	
Taste of the procedures False expectations of students Lack of staff cooperation with students Disregard for the rules governing the operating room Not properly addressing students Misbehavior with students	Operating room staff	

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the operating rooms in a month – two in the gynecology operating room, an orthopedic operation, and in the neurosurgery operating room. With so many students, 6th- and 8th-semester students, the clerks and interns, who are required to take some responsibility in the operating room sooner or later. But then, what are the students due to learn with so few operations and so many students.

Participant # 2 highlighted the large number of students:

One problem is that we have a big number of students now in the operating room department, not only in the operating room department but in all the educational departments. Perhaps it is a common theme with other departments. For example, the new classes count to some 26, 28, or 30 students.

Participant # 5 said:

One challenge is the overriding number of students making the operating room overcrowded. In fact, I have ten 3rd-semester students; there are, on the same day, eight 7th-semester students in that field as well as eight anesthesia students. Therefore, each room will hold two of my students, two 7th-semester students, two anesthesiology students, one surgeon, and two more staff in the room where a patient is going to be operated on. I mean, there will be about eleven people together with my students in that room.

Human resources

Categories included in this theme comprise department head and faculty officials, teacher, student, surgeon and anesthesiologist, and operating room personnel. There were three subcategories in the department head and faculty officials category: no relationship between hospital management and university, lack of familiarity of officials with the operating room environment, and lack of proper planning for the clerkship.

In the teacher category, there were 11 subcategories including insufficient education delivered to students before their entrance to the operating room, inconsideration of practical tasks, insufficient education delivered to students, improper use of time for student education, lack of training to the teacher before s/he enters the operating room, teachers' inconsistent methods of teaching, lack of careful supervision by the instructor, ignoring the instructor's demands, instructor's lack of autonomy, insufficient number of instructors, and the instructor's fatigue. In the *student* category, there were 10 subcategories: addiction to social networks, attendance, false expectations, generation gap, improper student communication with staff and physicians, inadequate competency in some practices, unspecified student job description, student's disinterest in and unwillingness to learn, no sense of responsibility on the part of the student, and student dishonesty. In the surgeon and anesthesiologist category, the subcategories were five, including mistreatment with the student, discrimination between disciplines, student's fear of the physician, lack of cooperation of the surgeon or anesthesiologist, and disregard for the rules governing the operating room. Finally, in the personnel category, the six subcategories comprised personal taste exerted onto completion of the processes, false expectations from the student, non-cooperation of the staff with students, disregard for the rules governing the operating room, inappropriate manner of addressing students, and misbehavior toward the student.

Concerning the department head and faculty officials, participant # 3 stated:

The first problem we have is that our officials, those who decide for us at the macro level, are not entirely familiar with the operating room. They are usually from groups who have not worked in the clinical setting.

Participant # 2 commented on the teacher:

Now, however good-quality a teacher you might be, could you tell Dr. X, you should not wear bracelets or a watch; is it ever possible?

Participant # 3 complained about students not being trained before entering the operating room:

Another problem we have is that the student comes to the operating room as if s/he has not been taught anything already. They have not been trained well in terms of practice. Unfortunately, our practice is not sufficiently good.

Participant # 5 reported about students' false expectations:

Most students who are admitted at university in this discipline presuppose that they are going to be the surgeon's hand; strange things that they say, for example, we act as retractor holders; we are just retractor holders in operations and nothing more we do. They suppose that in the operating room, they are going to have the whole operating room in their control, or that they should be doing the whole surgery. That is why they may exclaim in surprise that, "In the operating room, should I just be holding the retractor, be handing the scissors, be giving a device."

Participant # 1 added:

That means you have to do it yourself. You may happen to do something wrong, make a mistake, or bring the wrong tool, things that you can put right. But it wouldn't be correct to stand somewhere so

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that you are told to bring something, to bring this or to bring that. That's for the 6th-semester students.

Participant # 1 explained about student attendance:

Students may come to me at eleven o'clock, ten o'clock, a quarter to ten, saying that "I need to go." I would say, "Well then, where are you going?", to hear that "I work, we have a plan today, we have to go." Then, you can't say anything to him/her anymore.

Participant # 2 described how the situation is like with surgeons and anesthesiologists:

They do not abide by the rules of professional work in the operating room. This is detrimental to my training. Surgeon X, or even colleagues of ours, fail to do hand washing, which is the alphabet of our work. They fail to do hand washing, wear jewelry. And the dressing – The surgeon wears a black scarf and coat; she wears bracelets and does not wash the hands prior to the operation as if she is a butcher coming to butchery.

Participant # 4 commented on the inappropriate behavior of the surgeon and the anesthesiologist toward students:

This was one of the problems that could be clearly seen where a lot of irrelevant blames were put on our students. Even once, the doctor himself did the extubation, but as the patient responded with a spasm, the student was reprimanded.

Participant # 2 explained about the operating room staff:

Well, what would happen now? They don't want a student in the room – the break-room I mean – and have pasted a big piece of paper on the door: "Entrance of students highly forbidden!" Well, this is so bitter an act to do. You may get hurt. After all, this is an educational setting. A student may come, let's suppose, to have tea. What would happen? They have prohibited students from entering their break-room. So what should the poor student do in the operating room? They don't consider students as part of themselves and don't consider themselves as part of students.

Participant # 5 illustrated the non-cooperation of the staff with students:

For example, I send the student into the [operating] room; "Go to the room; the X operation is due today; go get the equipment prepared and wait there so that the staff would take the stuff." But then the staff comes in and starts hastily to prepare things up, not allowing my student to touch anything.

Discussion

Clinical education can be fully responsive to student and teacher learning environments. This training, especially in operating rooms, can lead to significant improvement in patient outcomes. On the two poles of its spectrum, clinical education includes teachers and students, either of whom, alone or together, can affect the efficacy of education. As revealed in a study conducted at Tabriz University of Medical Sciences in 2012-2013, operating room and anesthesiology students considered teachers as the most important contributor to the quality of education, although objectives, curriculum, and type of behavior were also important (10). In a 2013 study in Zahedan, senior students of nursing, midwifery, and operating room rated goals, training programs, and the quality of teaching at a moderate level, and rated student evaluation as good (11). In another study of 140 senior midwifery students in the academic year of 2016-2017 at Ahvaz Jundishapur University of Medical Sciences, 56% of the participants identified the scientific and practical characteristics of the teacher, 42% found student characteristics, and only 1% considered the environment as the most important factor in educational quality (12). A study of 334 students at Bushehr University of Medical Sciences revealed that the highest stressors among students included teacher-to-student admonition in the presence of staff and physicians, lack of welfare facilities, and lack of teacher support (13).

A 2006 study among medical students found that a combination of practical work and an increase in student self-confidence can produce excellent results in education (14). In a study of 14 nursing faculty members at Kerman University of Medical Sciences, it was found that the most critical factors in the students' clinical skill acquisition process were recruiting more experienced teachers and increasing attempts to improve the teaching environment (15). In a 2013 study of 16 faculty members, 6 themes, 16 categories, and 9 subcategories emerged, indicating that the removal of the challenges of this group of lecturers and increase participation of these people may be helpful in educational issues (8).

In a 2005 study of 60 teachers working in Tehran-based nursing schools, it was found that education in the clinical setting and the welfare and training facilities are at a moderate level. It was also found that the main challenge for education was the disinterest and un-motivatedness of students (16). In another study in 2013, out of 82 papers published between 1995 and 2014, it was found that the ambiguity surrounding student activity, inappropriate behavior of the teacher, insufficient facilities in the educational setting,

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unclear structure of the summative assessment, and the gap between theoretical and practical education were the most critical challenges in nursing education in Iran (17). In another study (18) in 2015, with 42 people involved in nursing education, the basic challenges in education comprised low coherence in the training program, inadequate implementation of the program, intra- and extra-organizational management, and the lack of proper student understanding of the educational situation. Although it is the nature of qualitative studies, limitation of this study is the low number of participants that may reduce its generalization to different places.

Conclusions

According to the interviews and comments made by the teachers, the most significant problems in operating rooms of Bushehr-based hospitals can be the lack of welfare facilities, a lack of student self-evaluation, and insufficient training given to the students before they enter the operating room. This is also the case in other provinces. However, higher efficiency in therapeutic levels can be attained through proper planning on the part of the university and upon removal of structural deficiencies as well as more appropriate teacher and student training. Although it is the nature of qualitative studies, limitation of this study is the low number of participants that may reduce its generalization to different places.

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Conflict of Interest

There are no conflicts of interest to disclose.

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