

# Experiences of Surgical Technology Students of Their First Appearance in the Operating Room

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## Abstract

**Background:** Clinical education is a critical stage of education and plays a major role in shaping students' professional competencies. The clinical learning environment has a complex nature and has a significant impact on students, especially newly admitted ones. Thus, the initial experience in clinical settings will significantly affect the student's performance. To this end, this study sought to explore the experiences of surgical technology students of their first appearance in the operating room.

**Methods:** This qualitative study was conducted using a descriptive phenomenological approach. The participants were 15 second- and third-semester students of surgical technology who entered the study through purposive sampling. The data were collected through individual interviews. Data analysis was performed simultaneously with data collection through Colaizzi's seven-step content analysis method.

**Results:** A total of 101 primary codes were extracted from the collected data. The extracted codes were grouped into 7 subcategories. After removing duplicate codes, 3 main themes were revealed from the participants' experiences (conflicting perceptions in the learning environment, preparedness before attending the operating room, and feelings and emotions).

**Conclusion:** The students' experiences of their first appearance in the operating room indicated that their expectations changed compared to what they imagined. The stressful nature of surgical technology and the students' experiences when starting the internship highlight the need for some necessary measures to prepare students before entering the hospital and to improve the quality of clinical education for these students.

**Keywords:** Experience, Operating room, Surgical technologists

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## Introduction

The main mission of universities is to train the professional workforce needed by the community. Medical education as part of the higher education system that deals with human life should receive more attention (1). Thus, acquiring basic and professional skills in clinical settings is very important. Consequently, clinical internship courses are vital in shaping students' professional identity and such courses are considered the heart of professional education (2). Students gain knowledge in theoretical courses, but they need to acquire the necessary skills in real clinical settings. Studies have shown that the existing clinical education programs fail to foster necessary clinical skills in students (3). As a result, clinical education is one of the critical phases of education that plays a major role in shaping the professional competencies of students and provides essential training for medical staff who are responsible for maintaining and promoting community health. Thus, clinical education helps students apply their

theoretical knowledge in clinical settings (4).

Clinical professors play a key role in creating a suitable work environment in internships by providing new information and comprehensive support to students and exercising control over their performance in clinical education because 50% of educational programs are dedicated to training students in clinical settings. Hence, internships play an essential role in shaping the basic skills and professional competencies of medical students (5). Accordingly, many students have claimed that clinical experience enables them to acquire the necessary competency and adequacy in clinical skills and theoretical knowledge. Besides, the complexity and vital role of clinical internships have been confirmed in studies conducted in other countries. These studies have highlighted the provision of diverse learning opportunities, receiving effective feedback from instructors, and the atmosphere of the clinical settings as important factors in clinical education (6).



Surgical technology is one of the programs offered at universities of medical sciences. Surgical technologists provide preoperative, intraoperative, and postoperative care to patients in the operating room (7). The operating room is a high-risk environment for patients. Some of the problems that patients face after surgery are caused by the inadequate experience of the operating room personnel, which can cause irreparable complications for the patient (8). Thus, surgical technologists have a serious responsibility whose fulfillment requires knowledge of complete preoperative assessment, patient preparation, providing instructions to the patient, etc (1). Therefore, providing effective training to develop necessary skills in students of surgical technology is essential (9). Previous studies have shown that new students starting their internship courses in the operating room have adequate theoretical knowledge but they do not have sufficient skills in the clinical setting and are weak in providing practical procedures and routines (10). Moreover, almost all students describe the first day of internship in the new clinical setting as a stressful event (11). Clinical activities are stressful for students due to their unfamiliarity with the hospital environment, the absence of adequate knowledge and experience, and having a heavy responsibility for patient care (12).

The clinical setting is affected by various factors including anxiety (13). Anxiety is not a new concept and humans have experienced it at all times and in every culture. Anxiety also plays an important role in human life and health (14). Most of the students have experienced anxiety and stress during their academic studies (15). Anxiety is one of the factors affecting the students' learning in the clinical setting. They show varying degrees of mild to severe anxiety, which disrupts learning. Various factors such as clinical experiences and changing educational environments can induce anxiety (16).

Stressful situations happen to every person and student, especially students of surgical technology (17). These students are exposed to more clinical stressors due to psychological needs, low decision-making skills, and the need to acquire knowledge and multiple skills for their various and extensive roles (18). Esfandiari reported that nursing students had the highest stress score and poor general health (19). Therefore, the high level of stress in the clinical setting requires special attention from professors to prepare students mentally and emotionally. Analyzing the experiences of students who have been exposed to such stressful conditions can provide useful insights for professors and help them understand the stressful conditions experienced by the students. One of the ways to investigate these experiences is to use qualitative research. Qualitative research is a subjective systematic approach used to describe life experiences and give meaning to them. It also deeply investigates phenomena using a holistic approach (20).

Surgical technology students are constantly forced to perform various complex and invasive procedures in the operating room. They also have to learn a variety of skills and roles. Working in the operating room is problematic because students have to learn many interventions in the surgical process in the preoperative, intraoperative, and postoperative phases and they always experience a lot of stress during their internships. To the authors' best knowledge, no study has addressed the experiences of students of surgical technology. Hence, this study aimed to explore the experiences of surgical technology students of their first appearance in the operating room.

### Methods

Since the phenomenon in question was human experiences, the present study used a phenomenological method to explore the experiences of surgical technology students during their first appearance in the operating room and their first experience of serving as a scrub. The participants were 15 undergraduate students of surgical technology in the second and third semesters who had completed scrub and circulating nursing principles and techniques and were to start their internships. The interviews with the second- and third-semester students lasted from May to November 2021.

The participants were selected from the students who met the inclusion criteria using purposive sampling based on a list provided by the nursing school. The data were saturated after 15 initial interviews, and three students were interviewed more than once. Afterward, 5 more interviews were conducted to confirm the findings. Each interview lasted 30 to 40 minutes.

After obtaining the necessary permits from the Shahrekord School of Nursing and Midwifery, the researcher visited the hospital where the study was conducted and provided some instructions to the participants about the objectives of the study. She also obtained written permission to conduct the interviews. After selecting the participants (following the criteria for enrollment in the study), the researcher introduced herself and provided detailed information about the goals and significance of the study and the data collection and analysis procedures. The time and place of the interviews were determined with the participants' consent. Before starting each interview, the researcher tried to gain the participants' satisfaction and trust and started a free discussion with them. If the participants were willing to participate in the interviews, then written consent was obtained from them. In addition, all participants were assured that the collected data will remain confidential and they can withdraw from the study whenever they wished. After obtaining consent, the researcher recorded the interviews and transcribed them word by word after listening to them several times.

Each interview started with some general questions:

“Could you please tell me what you thought of the operating room before entering it and what you observed after entering it? “What did you do on your first day of work in the operating room?” “Can you tell me about your first operating room experience?” Furthermore, probing questions were asked to extract more detailed information about the phenomenon in question. The place and time of the interviews were selected with participants’ consent. The interviews were conducted in a calm environment face-to-face without the presence of other people.

Immediately after the completion of each interview, the researcher listened to the interviews carefully and transcribed them word by word on paper. The collected data were analyzed using Colaizzi’s seven-step content analysis method. First, the researcher read all the important descriptions and statements of the participants and developed empathy with them. Afterward, the significant statements, words, and sentences related to the phenomenon were specified and underlined. The theme related to each significant statement was coded. The thematically similar codes were merged into a category. The extracted categories were then merged into more general categories. Moreover, a core category that provided a thorough description of the phenomenon in question was extracted. Finally, the extracted themes were reviewed and confirmed by the participants and subject-matter experts.

To enhance the dependability of the data, the participants were selected with maximum variation and the transcripts were reviewed and confirmed by the participants and experts. The credibility of the data was also established by carefully recording the data collection and analysis procedures and the themes were described with an excerpt from the participants’ statements in the interviews. The protocol for the present study was approved with the code of ethics IR.SKUMS.REC.1400.062 by the ethics committee of Shahrekord University of Medical Sciences.

## Results

The participants’ mean age was 19.5 years. Besides, 11 of the 15 participants were living in dormitories and the rest were local students. A total of 20 interviews were conducted and 5 participants were interviewed more than once. In addition, 101 primary codes were extracted, and the codes with similar themes were merged into a single cluster. The extracted codes were grouped into 7 subcategories. Table 1 shows the extracted categories and

subcategories:

### **Conflicting perceptions in the learning environment**

The participants highlighted the conflicting perceptions in the learning environment. According to the participants’ statements, their presumptions and perceptions had changed with their first experience of being in the operating room. Some participants reported that before starting their work in the operating room, they thought sterilization instructions would be perfectly observed in the operating room, but after starting work in the operating room, they found that such instructions were not followed and everywhere was not sterile. Thus, they had dual feelings between what they had learned before and their current experiences in the operating room. One of the participants stated:

*“Before starting work in the operating room, I thought I had to work hard on myself to get used to these sterile conditions because I’m not generally a very organized person. After starting work in the operating room, the first things that struck me were the surgical drapes on the floor. It often happened that the instruments were on the patient’s legs instead of being on the mayo table, and the instruments were sometimes thrown on a corner and sometimes even the staff did not comply with sterilization principles”* (Participant 1).

Another participant added:

*“My impression before starting work in the operating room was that the personnel and the surgeon would perfectly follow the sterilization principles and the surgical process proceeds completely based on the surgical references, but after starting work in the operating room I realized that many aseptic and sterilization instructions are not followed, even though professors advised us to follow these instructions, when we work with the personnel, we have to follow their principles”* (Participant 13).

Some participants expressed a different experience in the operating room: *“I saw scenes that were not at all comparable to what I used to see in movies. The scenes were very real, painful, and strange at the same time”* (Participant 3).

In addition, a majority of the participants stated that they had a bad impression of surgeons and doctors before starting work in the operating room:

*“Before starting work in the operating room, I felt that the surgeons were unethical and arrogant and did not bother themselves to answer the student’s questions, but on the first*

**Table 1.** The extracted categories and subcategories

Categories	Subcategories
Conflicting perceptions in the learning environment	The conflict between theory and practice in the operating room
	A different experience in the operating room
Preparedness before attending the operating room	Lack of mental and psychological preparation to work in the operating room
	Lack of practical preparation to attend the operating room
	The effect of perceptions of surgical technology on performance
Feelings and emotions	Good feeling in the operating room
	Negative feelings about the operating room

day, I asked a few questions of the surgeon who performed lithotripsy in the urology ward. Even though I did not know that he was a surgeon, he very calmly and patiently explained the procedures and tools step by step until the end of the surgery” (Participant 4).

Some participants expressed the contradiction between what they had learned and what was practiced in the operating room:

“Before attending the operating room, I thought surgical operations are very specific and they are performed in a calm environment by a team of specialists, and I expected a lot of sensitivity, strange tools, and intimacy between the medical staff in the operating room, but after starting work in the operating room, I saw different surgeries that were not as I imagined and medical staff did not follow the related instructions” (Participant 6).

Failure to respect the patient’s rights and not paying attention to issues such as the patient’s privacy were also some issues frequently highlighted by the participants: “I thought that the patient’s privacy should be protected more and the number of medical staff in the operating room should be minimal” (Participant 5). Overall, the participants highlighted a gap between their theoretical knowledge and what was practiced in the operating room.

#### **Preparedness before attending the operating room**

The second main issue highlighted by the participants in this study was related to their preparedness before attending the operating room including the lack of mental and psychological preparation to work in the operating room, the lack of practical preparation to attend the operating room, and the effect of perceptions about surgical technology on the student’s performance. The participants reported that psychological, mental, and practical preparation is one of the factors affecting their first experiences of attending the operating room: Participant 2 stated: “On the first day, I was a little nervous because the staff wanted a tool called CSR and I did not understand what it was. Honestly, I expected to appear professional from the very beginning. The first time I felt very good during that week was when I removed a pin from a patient’s ankle, and I told this story to almost everyone so much that everyone got tired” (Participant 2). The participants’ statements also revealed that working in the operating room requires having theoretical information, which could reduce their stress and help them to work independently: “On my first day in the operating room, I observed orthopedic, urology, and neurosurgery operations and I saw how the staff replaced the calcaneal joint and intervertebral disc, and because I didn’t know anything about these surgeries, I was very confused and stressed” (Participant 5). Another participant stated:

“The surgeon asked me to untie the gloves, pour serum, bring the pan, and adjust the cautery. At first, I didn’t know how to do these things, but I learned by asking questions and

seeing these procedures a few times. I was a little stressed, I was just afraid that I would do something wrong and cause a disturbance during the procedure. Some instruments were new to me and I didn’t know how to use them. I was afraid that I would make a mistake and the device would be unsterilized, or that I would be careless and touch the sterile environment, or that I would accidentally touch the surgical gown while tying it and it would be unsterilized” (Participant 10).

The participants also believed that the instructors should prepare the students mentally before attending the operating room: “I was only stressed on the first day and the first surgery because so far I hadn’t seen surgical procedures or so much blood, and I was stressed and afraid that seeing the blood would make me sick, but thank God everything was fine” (Participant 12).

Some participants also stated that their perceptions about surgical technology affected their performance: “The operating room has a special atmosphere. Honestly, for a week, when I saw the surgical procedure, I wished I had studied medicine. I wanted to have a bigger job and a bigger responsibility” (Participant 2). Another participant reported, “I am interested in this field, so I did not do much and I tried to focus more to do the job better” (Participant 15).

#### **Feelings and emotions**

The participants also reported that their feelings and emotions affected their experiences of working in the operating room and they had both good and bad feelings about the operating room and surgical procedures. Some participants reported that they had a good feeling about working in the operating room: “I liked the atmosphere of the operating room. It feels good to talk to and work with educated people” (Participant 1). Another participant stated, “The fact that in the operating room, you have to have fun and be energetic while being serious was very attractive to me. I wanted to learn everything very quickly and to work as a scrub nurse with the surgeon as a professional. I like it and I hope to work as a more useful person as soon as possible” (Participant 2).

Some participants reported that their perceptions of the operating room changed as soon as they started working there: “I imagined the operating room to be a quiet environment without any movement. But upon starting working there, I noticed that the operating room was very small and noisy” (Participant 11). “I was curious about the operating room because I feel good and enthusiastic about learning new things, but after finishing the class leaving the operating room, I got disappointed when seeing the patient families staring pleadingly at the door of the operating room” (Participant 5). Another participant stated, “After I entered the operating room, it was very interesting for me to see the whole surgical operation with all its details, and I could have a useful role there. The operating room



was a new and interesting space for me where I could see a new operation every day and I was also happy that I could help the surgeon and the operating room staff" (Participant 14). Overall, the analysis of the participants' statements indicated that feelings and emotions can have a major impact on the experience of students and prepare them for a successful future in this field. Moreover, stress and negative feedback can lead to frustration and a sense of hatred toward the field of surgical technology in students.

## Discussion

The present study examined the experiences of surgical technology students of their first appearance in the operating room. The findings of this study showed that the students' perceptions about the operating room before starting working there affects their first experience of working in the operating room. The findings also suggested that the students' psychological reactions ranged from a pleasant feeling toward performing activities in the operating room to a negative feeling about the environment of the operating room. Similarly, Pearcey and Draper showed that nursing students were disappointed in their first appearance in the clinical setting because the truth and reality of the clinical setting did not match their expectations from the nursing profession (21).

The closed and stressful environment of the operating room makes the students feel apprehensive after starting work in the operating room and seeing major surgeries, and if they are not prepared in advance, they will not be able to forget these stressful situations for a long time. Esfandiari showed that midwifery students experience more stress compared to students of other fields (21) possibly due to the labor environment and its stressful conditions.

Shoqirat and Abu-Qamar examined the experiences of 12 final-year nursing students in clinical settings. Three themes emerged from the data. The first theme was related to the environment of clinical placement and included two sub-themes: from orientation-to-team work and from tiredness-to-ignorance. The second theme was about the faculty and preceptors as reflected by the lack of coordination between the clinical settings and the faculty, plus inconsistency in students' evaluation. The third theme concerned patient preferences including a lack of interest in receiving care from students (22).

The results of the present study indicated that the lack of practical and psychological preparation causes the students to not know what they are going to face after being in the operating room. Thus, the students get stressed, worried, and confused, and these negative feelings have some adverse consequences for subsequent procedures. Pearcey and Draper suggested the stressful nature of childbirth and the labor room make the students experience some kind of involuntary stress (20). Thus,

preparing students mentally and physically can lead to a pleasant experience after attending the labor room. Melincavage examined students' experience of stress in the clinical setting. The results showed that students often feel helpless in the first days of being in the clinic and face new things that aggravate their stress (23). Similarly, the findings of the present study indicated that surgical technology students were also confused when they were in the operating room, especially during major surgeries.

Aliakbari et al analyzed midwifery students' experiences of their first appearance in the delivery room and found that the students' previous beliefs often changed after the first appearance in the labor room, and various factors are effective in the first experiences of the students (24). These findings were consistent with the results reported in the present study. Sharif and Masoumi conducted a qualitative study on the experiences of 90 nursing students at Shiraz University of Medical Sciences in clinical settings. The results revealed four themes: (a) initial clinical anxiety, (b) the gap between theory and practice, (c) clinical supervision, and (d) professional role (25). Similarly, the students in the present study reported a gap between theory and practice in the operating room.

One of the limitations of the present study was that some participants might have refused to give true answers to the questions asked in the interviews. Besides, a lot of time was spent conducting the interviews with the students as they had to be interviewed on different days because the students did not attend the university at the same time due to the COVID-19 outbreak.

## Conclusion

The participants reported different experiences of their first appearance in the operating room, which were mostly related to the students' preconceptions about the operating room and partly related to the clinical education setting. Since surgical technology students have to work in the operating room, university officials must pay special attention to the clinical setting, especially the operating room, to reduce stress and conflicts in students and prepare them before attending the operating room. The findings of this study can be used as a guide and a framework for future studies.

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## Authors' Contribution

**Conceptualization:** Samaneh Dehghan Abnavi, Leila Ebrahimi Shaikhshabani, Fatemeh Aliakbari.

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### Competing Interests

The authors declare that they have no conflict of interest.

### Ethical Approval

This study was approved by the Ethics Committee of Shahrekord University of Medical Sciences "IR.SKUMS.REC.1400.062". The objectives and protocol of the study were explained to all participants. Verbal and written informed consent was obtained from the participants.

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