

## Effect of Communication Skills on Patient Safety among Surgical Team Members in Operating Room: A Qualitative Study

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ARTICLE INFO	ABSTRACT
<p><b>Article type:</b> Original Article</p>	<p><b>Introduction:</b> Improvement of communication skills and all activities among the surgical team members during the operations can accelerate the patient safety (PS) and reduce the rate of surgical errors (SEs). Besides, the real impact of communicational skills on PS needs more attention. Thus, in the present qualitative investigation, the authors aimed to assess the probable significant relevancy among the impacts of precise communication of surgical team members and PS in operating room (OR).</p>
<p><b>Article History:</b> Received: 23 Dec 2021 Accepted: 9 Aug 2022</p>	<p><b>Materials and Methods:</b> The grounded theory approach was hired for investigation and the samples were selected purposefully. Then, interviews were applied among the surgical team members (n=8), including anesthesiologists, surgical technologists (STs), and the surgeons. Finally, Strauss and Corbin's assays were used for data analysis.</p>
<p><b>Key words:</b> Operating Room, Patient Safety, Communication, Qualitative</p>	<p><b>Results:</b> The findings revealed that the interfering agents influencing PS can be categorized into two time-periods of prior to the surgery (with 5 sub-categories) and during the surgery (with 3 sub-groups).</p> <p><b>Conclusion:</b> The communication and cooperation are two crucial essentials requiring for OR teamwork activities. Thus, the PS is directly affected by comprehensive communication among the surgical team members.</p>
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## Introduction

PS is explained as all necessary procedures preventing SE and surgical complications during the surgeries (1). There are two main outcomes for health care systems including high quality of health services and provision of PS. But today, along with many advances in medication, innovation of modern surgery approaches and new surgical tools, the SEs are still considered as the highest human errors (2). Thus, PS has been recently considered globally in medical systems (3). Approximately, 1/10 individuals is damaged in hospitals of developed countries. Besides, old surgical technologies in third world countries can be a double factor for occurrence of more SEs (4). Although there are no reliable statistics reporting the level of SEs in health centers of Iran, but the PE prevalence is estimated at a high risk status (1). Sheikh Taheri and coworkers (2013) reported a high number of mortality (approximately 24,500 individuals) related to the low level of SEs in Iran (5).

Since the anesthesia and the surgery are totally sensitive procedures, the OR is known as an environment with high-risk situation requiring serious attention for SE prevention (6). All OR-associated issues, including patient care, treatment protocols, modern technologies, and technical complexities, are critical factors affecting the PS (7). Each year, more than 230,000,000 operations are performed globally and approximately 3-16% and 0.4-0.8% of these operations contain complications and mortality, respectively (8). Although the practical skills of the surgeons are potential factor for a successful surgical outcome, the process of surgery also requires proper communications among the surgical team members (9). Macari and coworkers (2006) categorized the SEs into three main groups of human errors, leadership errors, and poor communication (10). Among these, 70% of SEs with detrimental consequences are directly associated to the poor communication techniques among the STs (11). Thus, in-surgery communications can lead to information transferring and consequently causes PS. Moreover, various studies indicated that the PS mostly depends on a constructive relationship in OR (12).

The communication techniques can help the individuals to represent the feelings effectively and fulfill the demands completely (13). The power of communication is explained as an essential tool for comprehensive health services. Some advantages of proper communication include feeling of being useful and career success, inhibition of SEs or job stress, and provision of job satisfaction (14). Thus, the provision of PS and inhibition of surgery-associated complications in OR can be effectively provided through the efficient communication (15). Nevertheless, inadequate communication in OR is widely reported by several papers (16). In this regard, the Pak Gohar and coworkers approved the presence of non-effective communication in more than 50% of health care providers (17). They also reported that intact communication is a considerable factor to achieve the therapeutic benefits. As the OR activities are based on cooperation, thus; each member of surgical team has definite responsibilities in this regard (18). The Lingard and coworkers reported 421 communications among the surgical team members for 48 surgical cases. Surprisingly, the results showed that 1/3 of the communications were wrong behaviors (19). However, it is not clear how the communication skills among the OR members can affect the PS positively. According to the critical role of PS in health systems, and the low number of papers representing the role of communication on PS, this study was designed to clarify the effects of communication in OR on the health of patient.

## Materials and Methods

Twelve members of surgical team (anesthesiologists, STs, and the surgeons) affiliated to the Hamadan University of Medical Sciences (Besat hospital) were selected for reviewing based on the qualitative content analysis. Also, purposive and theoretical sampling methods were hired. After primary samples collection, the obtained data were analyzed. Then, the secondary samples were also gathered. Theoretical saturation was hired for sample size determination when the samples had no new information added to the previous

findings. Thus, sampling was continued until all available new samples were collected. All ST individuals with experience

> 5 years were included in the present study and the participation consent were obtained from all members (Table 1).

**Table 1:** Participants' information

No	Gender	Age	Job	Work experience (year)
P1	Male	42	ST	20
P2	Female	36	ST	13
P3	Male	45	ST	18
P4	Male	39	ST	18
P5	Female	38	ST	12
P6	Male	51	ST	29
P7	Male	50	Surgeon	20
P8	Male	48	Anesthesiologist	17

ST: Surgical Technologist.

Related information was collected using semi-structured interviews (45-90 min for each interview). Primary pre-interview questions were also prepared, including; "How to ensure the presence of PS in OR?", "Can the surgical team communication skills affect the PS in OR?" and "How does this happen?". To clarify the subjective thoughts of the participants, the exploratory queries were also asked; "Can you give an example in this regard?" or "Please explain more.". The interviews were recorded and finally were transcribed (Microsoft Office v.16). Abbreviations (P1,P2, P3, etc) were also hired instead of the authors' names. Conventional content analysis was conducted throughout a 5-step Lundman-Graneheim procedure including; 1st interview implementation and several times assessments (to obtain correct understanding of the writings), 2nd semantic units extraction and classification, 3rd units summarization and categorization along with appropriate labelling, 4th sorting of subcategorization based on a comparison among the similarities and differences, and

5th selection of appropriate title for categories. For data accuracy assessment, the evaluation of the participants was conducted using Lincoln and Goba guideline (Credibility, Dependability, Transferability, and Confirmability indices). The accuracy of handwritings along with the consistency among the statements and experiences were also assessed. Data consistency and reliability were checked using two experienced experts through reviewing the interviews, coding, and categorization. Additionally, data transferability was evaluated through the educational level of the samples. Finally, the gathered information were synchronized with the experience of other surgical team members not participating in the study.

**Results**

For data collection, eight OR team members (five ST, two anesthesiologists, and one surgeon) were interviewed. As it was mentioned in Table 2, subgrouping was applied into two main themes and eight sub-themes.

**Table 2:** Sub-themes and main themes of the effects of communication skills on patient safety

Main Themes	Sub-themes
Factors affecting patient safety	<ul style="list-style-type: none"> <li>• Obtaining a correct medical history from the patients</li> <li>• Confirmation of patient identity</li> <li>• Proper planning for surgery</li> <li>• Management of patient stress</li> <li>• Preparation of the needed equipment</li> </ul>
	<ul style="list-style-type: none"> <li>• Provision of safety of the physical structure in operating room</li> <li>• Accelerating the speed of operation</li> <li>• Safe position</li> </ul>

## 1-Assessment of the PS Prior to the Operation

Pre-operative examinations were considered as the primary level for PS provision. These pre-operative assessments need strictly a comprehensive communication among the surgical teams and the patients. In other word, the PS is not achievable without proper communication. According to findings, some sub-themes were defined as important factors affecting PS prior to surgery, including; obtaining the correct medical history from the patients, verification of the patients` identity, patients` stress reduction, proper surgical planning, and preparation of necessary surgical equipment.

### 1-1. Obtaining Correct Medical History from the Patients

Medical history preparation seems a critical pre-operative index for PS. It is suggested that the underlying health problems can be easily recorded or better surgery protocol can be obtained following proper communication with the patients. Participant No. 1: *"...When a patient refers to the health center, he/she could have a series of problems. To understand these complications, we need to establish a proper communication with the patient..."*

Misidentification of the patients can potentially cause irreparable SEs in health care system. Thus, patient identification in OR is an important example of PS. Following patient admission to the OR, the identification process can be ensured through proper communication with the patient. Participant No. 2:

*"...Well, first of all, after patient admission into the OR, introduce yourself and ask the patients to introduce themselves. Then, ask about their surgery and try to calm them down..."*

### 1-2. Planning for Surgical Operation

The obtained results revealed that a safe and the right workforce for surgery strictly needs appropriate communication. Also, establishment of operation time and arrangement of daily operation can be easily achieved through the planning. Participant No. 3: *"...In some cases like personnel changes, for example, the operation may take two hours and the*

*members of surgical team needs to be changed, while in the morning an old skilled force is on the operation and in the evening an inexperienced young girl comes to the OR. If the surgical team has already estimated the need for a skilled force, they must inform the OR manager in advance. They must communicate so that no problems will be appeared..."*

### 1-4. Management of Stress in Patients

Stress, specially in patients, is considered a potential factor affects the outcome of the surgery negatively. Stressful situations can induce unstable body features such as accelerated heart rate and cardiovascular irregularities with risk of organ damage following anesthesia.

Besides, the OR is a stressful environment due to the surgical procedures and their unknown outcomes. Thus, pre-operative stress management can be easily achieved through the establishment of a friendly relationship among the OR personnel and the patient. Participant No. 4: *"...Since I have experienced, when a patient is under stress because the OR is an unfamiliar environment for the patient or the patient faces with the surgeon and the nurses for the first time, it's natural for the patient to be restless..."*

### 1-5. Surgical Equipment Preparation

Provision of surgical tools prior to the operation is a factor in ensuring the PS. Failure in application of medical devices with direct contact to the skin can potentially damage body or induce unpleasant feeling. Thus, providing high-quality operation with expected outcome is directly associated to the presence of new modern operation tools. Thus, preparation of these modern surgical tools or repairment of broken equipment are examples representing the beneficial role of proper communication among the different departments, such as equipment unit and OR. Participant No. 5: *"...Another part of PS is application of surgical devices in OR. There is a possibility of unwanted rupture by the use of cutters or the metal tools..."*

## 2- Assessment of the PS during the Operation

Since the operation process is based on teamwork efforts, complete communication

during the surgery among the surgical team members seems necessary to ensure the PS. Teamwork activities also require collaboration and communication. Providing a safe patient position is applicable through the proper communication among the surgical team members and the patient. The factors influencing PS are as below;

### 2-1. Safe Positioning

Surgical position of a patient is necessary for a successful operation. Wrong positions or injuries during the positioning are common medical complications. Since the patient positioning is a teamwork effort among the OR personnel and anesthesia team, right communication can lead to an appropriate patient position. Participant No. 6: *"...The next part of effective communication between the personnel is changing the mode of positions, especially in traumatized patients and there is a possibility of damage to sensitive organs such as the spine. Effective communication during the positioning can minimize the patient's injury can be minimized..."*

### 2-2. Acceleration of the Operation Speed

Since an effective communication among the surgical team members causes task division, this phenomenon leads to the acceleration of operation speed and reduction of waste time. Following apportion duties, whole activities will be performed quickly with no repetition. Participant No. 8: *"...When the personnel has no talking to each other in an OR, you never know what they actually want. Well, what we do or not to do at this situation? So, you have to wait and see what they do. They have no conversation with you at all, which is annoying. You do something, and later they do the same thing again. For example, you asked to bring a peg; then it was also prepared by them too ... this is how things are done in repetition in the OR."*

### 2-3. Securing the Physical Structure of OR

This factor is another agent affecting the PS with high levels of treatment outcomes. Improper OR ventilation increases organ infection. OR structural security can be achieved through communication among

different units including services, facilities, and equipment. Participant No. 7: *"... in terms of the structure of OR, the has no tissue infection later. For example, I can mention that the sewage system channels are passageways for insects to enter the OR, leading to a high infection rate. Thus, they are forbidden in the ORs or sterile areas. These objects must be checked frequently by the facility unit..."*

## Discussion

In the present investigation, the findings revealed that the PSs can be achieved through proper communication among the surgical team members. Thus, it can be concluded that this factor is a critical agent for provision of health services. Since whole OR behaviors are based on teamwork efforts, consideration of proper communication contain an impressive place in PS. In another study, the impressive role of communication was defined as a main tool necessary for emergency therapeutic activities (19). Teamwork activities are considered an essential factor in reduction of SEs and preservation of PS. Nobahar and coworkers explained the items of teamwork activities in three different stages of cooperation, communication, and being experienced. They also concluded that communication is a sub-theme of teamwork (20). Various studies stated that whole surgical or anesthesia team members should communicate with the patients and their family (21). Since the surgery is a sensitive proficiency require higher levels of focus, thus, the communication can help the surgical members to participate in operation with more consciousness. This phenomenon eventually causes PS. On the other hand, communication can enhance the practical skills, strengthen the solidarity, and create the trust among the personals (22). In the present study, the authors aimed to assess the causes, characteristics, and the impacts of enhancement of communication skills on PS before and during the surgery in the OR.

Pre-operative factors affecting the PS were found as one of the main themes. Important sub-themes included preparation of medical background, identification of patient, planning for surgery, stress management, and surgical equipment preparation. As the

Safazadeh and coworkers concluded, about 15% of SEs are directly related to misidentification of patients (23). Thus, two items of patient's identity and medical backgrounds can be achieved during patient admission into the OR. Similarly, these findings were also reported by Profit and coworkers (24).

The presence of unfamiliar surgical tools along with experiencing new treatment environment are OR-associated stressful agents. This condition with severe psychological burden makes the patients prone to communicate with the surgical and anesthesia team members to reduce the stress and anxiety as the examples of the PS (25). Gilmartin et al. concluded that the most patients in preoperative stages have feelings of abandonment and inattention because the nurses have no effective communication (26). Provision of facilities and achievement of surgical equipment are considered as two main task management factors for safe nursing care (20). As the Mohabbati et al. concluded, the medical centers with low levels of facilities or incomplete surgical tools are not able to achieve PS, adequately (27). Also, the communication among the hospital facilities and support units is important to provide new necessary operation tools and repair broken equipment.

Other items for PS establishment during the surgery were obtained following the interviews. Proper patient position can lead to high operation speed and secure the physical OR structure as important sub-themes. These activities are a clear examples of cooperation among the OR members leading to accelerated speed operation, high quality outcome, and reduced post-surgical anesthetic complications.

OR structure like sound, brightness, temperature, and all factor involved in human infection have a definite role in PS. A qualitative study in psychiatric department reported that the inappropriate atmosphere with abundant noise pollution can reduce the PS levels (28). Golmohammadi et al., following assessment of the probable relationship among the level of hospitals environment light (affiliated to Hamadan, Iran) with environmental standards, reported that the level of this factor is less

than the recommended threshold. They also found that these low light environments can induce many health problems from psychologic to physical complications which finally contain the potential to increase the SE rate (29).

## Conclusion

The analyzed results clarified impressive role of communication among the members of surgical team can potentially induce PS. Since there are several specialized teamwork in OR providing health services, complete treatment and PS can be achieved following precise coordination and communication.

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## Ethical approval

This study was approved by the research committee of Hamedan University of Medical Sciences with code of ethics (IR.UMSHA.REC.1397.849). Also ethical principles were observed in all stages of the research.

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