

Auditory of Safe Surgical Practices in the Operation Rooms of Educational Hospital Centers of Mazandaran University of Medical Sciences in 2018

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ABSTRACT

Background: Complications of surgery are one of the main causes of death and disability worldwide. Considering the importance of patient safety and the necessity of auditing in operation rooms, therefore, the aim of this study was to evaluate the auditory of safe surgical principles in operating rooms of educational Hospital centers of Mazandaran University of Medical Sciences in 2018.

Materials and Methods: This was a descriptive cross-sectional study conducted on 100 surgical operations rooms in general surgery, orthopedic, urology, cardiology, ophthalmology, plastic surgery, and ENT Hospitals centers of Mazandaran University of Medical Sciences in the year 2018 within a period of three months. Safe surgical checklist, which included the patient's safety standards in the surgery room were evaluated. Data were analyzed using SPSS software version 16.

Results: The mean Safe surgical score in Razi Hospital was 26.41%. In Fatemeh Zahra Hospital, the mean score was 30.43%. In Abuali-sina Hospital, the total mean score was 34.83%. In Imam Khomeini Hospital, the mean score was 37.1%, and the mean Safe surgical score of Zare hospital was equal to 52.28%.

Conclusion: Hospitals of Mazandaran University of Medical Sciences were overall in desirable to very desirable levels in terms of the standards for safe surgical principles in operating rooms.

Key words: Safe operation checklist, Operation room, Hospital, Standard

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INTRODUCTION

Patient safety is now considered as an important issue worldwide, and has been centered on clinical governance. Evidences suggest that approximately 10% of patients in hospitals suffer from medical errors which have negative consequences [1]. Patient safety involves the establishment of a regulatory system that minimizes errors and mistakes and maximizes the security coefficient in the implementation of processes [2]. The incidence rates for patient safety are 850,000 of the total of 8 million annual admissions in the UK and extra days' expenses of admission are estimated at 2 billion pounds [3]. Accordingly, the patient safety protocol has been designed in order to focus on reduction of errors, risk management, avoidance of treatment complications and prevention of injuries [4]. The operation room is a complex, high-capacity work environment for medical

errors indication, so the use of guidelines for assessing preoperative processes has been increasingly recommended by professional organizations in recent years [5,6].

Surgical complications are a significant cause of death and disability worldwide [7]. In Italy, nearly 8 million people are undergoing surgery every year, and 4% of them suffering from avoidable injuries due to mistakes or poor service delivery [8]. According to the World Health Organization (WHO) approximately at least 7 million people are injured by surgery every year [9].

Auditing is a part of the ongoing process of quality improvement. An ongoing audit of patient care, along with a decision to resolve existing problems, is a way to improve quality and change the behavior of employees [10,11]. Considering the importance of patient safety and the necessity of auditing compliance with the relevant standards, it is necessary to evaluate the current state of the surgery in terms of safety issues in the operation rooms, based on the "safe surgical checklist" and the gap between the standards. Therefore, the aim of this study is

to conduct an audit of safe surgical principles in the operation rooms.

MATERIALS AND METHODS

This was a descriptive cross-sectional study conducted on one-hundred surgical operations over a period of three months. Ethical approval was obtained from Mazandaran Research and Ethics Committee before undertaking the study (Ethical code: IR. MazUMS.96. S. 148). The study population included all criteria related to safe surgery in general operation rooms, burn and recovery, orthopedics, gynecology, ENT, urology, eye and cardiology wards of educational Hospital centers of Mazandaran University of Medical Sciences.

Safe surgical checklist for each operation rooms of randomly selected Hospital wards were assessed and recorded. Information on safe surgical procedures in the operation room was compiled using the "Surgical Safety Checklist" which includes the patients' safety standards in the surgery rooms. Surgical safety Checklist has been regulated with the efforts of the Global Health Alliance dependent to WHO, in partnership with surgical, anesthesiologist, nurses and patients in order to help reduce the incidence of unwanted disability and death from surgical procedures in patients under operations [11].

The "Surgical Safety Checklist" consists of three parts: the first part (before the patient's anesthesia) including 7 phrases, the second part (after the patient's anesthesia and before the skin incision) including 8 phrases and the third part (during or exactly after the surgery until the patient leaves the operation room) contains 5 phrases.

The checklist is based on a three-point score (true: 2 points, not true: 1 point, doesn't not perform, 0 points). To complete the checklist, the operation procedures from the beginning to the end of the surgery were observed.

Generally, the first part consists of 14 points, the second part is 16 points and the third part is 10 points. The entire checklist also has a maximum score of 40 and a minimum score of 0 points. The higher the scores, the closer will be the surgical procedures to the standards.

To calculate the mean scores of dimensions and total surgical safety scores, the mean scores for each dimension and total scales will be combined.

To simplify the interpretation of scores for each dimension and total scale, the mean scores are converted to "average percent", which is a number between 0-100, and finally the scores in terms of the percentage of the score, are classified in the three undesirable (0-50), Desirable (75-50) and highly desirable (100-75) categories [12].

Data were analyzed using SPSS software version 16 using descriptive statistics (frequency, percentage, mean, and standard deviation) and independent sample t-test.

RESULTS

Table 1: The scores of dimensions and the total surgical safety checklist in operation rooms of Razi hospital of Ghaemshahr city

Surgical Safety Checklist Parts	Average Obtained Score	Score Percentage	Standard Total Score	p-value	Final Classification of Each Area
First Part (The Time Before Patient's Anesthesia)	8.61	61.50%	14	0.001	Desirable
Second Part (After Patient's Anesthesia and Before The Skin Incision)	10.31	64.45%	16	0.0001	Desirable
Third Part (After Closure Of The Wound Until The Patient Leaves The Operation Room)	7.49	75%	10	0.003	Desirable
Total	26.41	66.02%	40	0.0001	Desirable

In the Table 1, the average scores dimensions of the surgical safety checklists in the operations room of Razi hospital in Qaemshahr were compared with the standard rating and the final classification of each area. The average score of the pre-anesthetic parts of the patient Razi hospital was 8.61% and the score percentage was 61.5%, which according to the standard score of the score and p-value of 0.001. We can conclude that this area has a significant difference with the total standard score and was evaluated at a desirable level. The mean score obtained before skin incision was 10.31 and the score percentage was 45.46%, which according to the total standard score was in a good manner. The mean score and total percentage for the third part of the surgical safety checklist was 7.49 and 75%, respectively which was evaluated at a desirable level. Total surgical safety score for Razi Hospital was 26.41 and the percentage was 66.02% which was is at a desirable level.

Table 2: Dimension scores and the total surgical safety checklist in the operation rooms of Fatemeh Zahra Hospital

Surgical Safety Checklist Parts	Obtained Score	Score Percentage	Total Standard Score	p-value	Final Classification Of Each Area
First Part	10.1	72.14%	14	0.06	Desirable
Second Part	12.34	77.12%	16	0.2	Very Desirable
Third Part	7.99	79.90%	10	0.1	Very Desirable
Total	30.43	75.82%	40	0.2	Very Desirable

Mean scores of dimensions for surgical safety checklists in the operation rooms of Fatemeh Zahra Hospital and its comparison with the standard rating are shown in Table 2. The mean score of the first part of the surgical safety

checklist was 10.1 and its total percentage score was 72.14%, which was evaluated at a desirable level.

The mean score for the second part was 12.34% and with the percentage of 12.27, which can be concluded that this area does not have a significant difference with the total standard score and it was evaluated at a very desirable level.

The mean score obtained for the third part was 7.99 and their score percentage was 79.9%, which is possible to conclude that this area does not differ significantly from the total standard scores. Total surgical safety score for Fatemeh Zahra Hospital was 30.43 and with the score percentage of 82.85%.

The score obtained from the three stages did not differ significantly from the standard scores. Overall, the hospital was evaluated at a very favorable level.

Table 3: Dimension scores and total surgical safety checklist in the operation room of Abuali-sina Hospital

Surgical Safety Checklist Parts	Obtained Score	Percentage Score	Total Standard Score	p-value	Final Classification Of Each Area
First Part	12.87	91%	14	0.3	Very Desirable
Second Part	13.52	84.50%	16	0.38	Very Desirable
Third Part	8.44	84.40%	10	0.26	Very Desirable
Total	34.83	87.07%	40	0.5	Very Desirable

The mean scores of the dimensions for the surgical safety check list in the operation rooms of Abuali-sina Hospital and its comparison with the standard rating are shown in Table 3.

The mean score for the first part of the surgical safety checklist was 12.86 with score percentage of 91%, does not have a significant difference with the total standard score and was evaluated at a very high level of satisfaction.

The mean score for the second part was 13.22 and their percentage was 84.5%, which does not have a significant difference with the total score and it was evaluated at a very desirable level. The mean score for the third part surgical safety check list was 8.44 with percentage of 84.4%, which does not have a significant difference with the total standard score, and are equal and at a very good level.

The mean score obtained from total surgical safety check list in Abuali-sina Hospital was 34.83 and the percentage score was 87.07%, which there was no significant difference with the total standard score, and in general, this hospital was evaluated at a very favorable level.

The mean scores of the dimensions for the surgical safety check list in the operation rooms of Imam Khomeini

Hospital and its comparison with the standard rating are shown in Table 4.

Table 4: Dimension scores and the total surgical safety checklist in the operation room of Imam Khomeini hospital

Surgical Safety Checklist Parts	Obtained Score	Score Percentage	Total Standard Score	p-value	Final Classification of Each Area
First Part	13.1	93.57%	14	0.5	Very Desirable
Second Part	14.77	92.31%	16	0.23	Very Desirable
Third Part	9.23	92.30%	10	0.9	Very Desirable
Total	37.1	92.75%	40	0.1	Very Desirable

The mean score for the first surgical safety checklist was 13.1 and the score percentage was 57/93% which does not have a significant difference with the total score and it was evaluated at a very high level (Table 4).

The mean score for the second part was 14.77 with percentage of 92.31%, which according to the total standard score had a very desirable level. The mean score for the third part was 9.23 and their percentage was 92.3%, which does not have a significant difference with the total standard score, and are equal and at a very good level.

The mean score obtained for total surgical safety check list in Imam Khomeini Hospital was 37.1 and their percentage was 92.75%. It can be concluded that the total surgical safety check list was not significant with the total standard score, and in general, Imam Khomeini Hospital was evaluated at a very favorable level.

Table 5: Dimension scores and total surgical safety checklist in the operation room of Zare hospital

Surgical Safety Checklist Parts	Obtained Score	Score Percentage	Total Standard Score	p-value	Final Classification Of Each Area
First Part	10.72	57.75%	14	0.02	Desirable
Second Part	10.59	18.66%	16	0.001	Desirable
Third Part	7.21	72.10%	10	0.001	Desirable
Total	28.52	71.30%	40	0.001	Desirable

The mean scores of the dimensions for the surgical safety check list in the operation rooms of Zare Hospital and its comparison with the standard rating are shown in Table 5. The mean score for the first surgical safety checklist was 10/72 and its percentage was 57/75%, which had a significant difference with the total standard score and it was evaluated at a desirable level.

The mean score obtained for the second part surgical safety check list was 10.59 with the percentage of 18.66%, which had a significant difference with the total score and also it was evaluated at a desirable level.

The mean score for the third part was 7.17 and their score was 72.1%, which had a significant difference and it was at a desirable level.

The total standard score in Zare Hospital was 28.52 with total percentage of 71.3%, which had a significant difference with total standard score. The overall status of Zare Hospital was evaluated at a desirable level.

DISCUSSION

One of the most prominent human rights is to be safe from the risks and injuries when receiving health services. The concept of patient safety is an essential component of health systems. The operation room is one of the most important parts of the hospital in order to reduce the mortality and complications of hospitalization. It is imperative to observe patient safety guidelines in all parts of the hospital especially in the operation rooms because of the possibility of unexpected errors or accidents [13].

Paying attention to creating and maintaining standard safety and health conditions for employees and patients is one of the main concerns of hospital managers by observing safety standards in terms of physical standards, fire prevention, safety Staff, patient safety, equipment, as well as infection control have always been considered for general evaluation of hospitals.

The operation rooms of Hospital centers of Mazandaran University of Medical Sciences had a good safety record. The mean total scores for safety surgical procedures in Razi Hospital of Ghaemshahr were at a desirable level. The mean scores for total surgical safety check list in Fatemeh Zahra Hospital was evaluated at a satisfactory level. The mean score of surgical safety of Abuali-sina Hospital was evaluated at a very high level. The mean total scores for safety surgical procedures in Imam Khomeini Hospital of Sari was evaluated at a very high level, which did not have a significant difference with the standard score. The mean score for total surgical safety check list in Zare Hospital was evaluated at a desirable level.

In a descriptive-analytic study in Shahrekord's operation rooms, revealed that the quality of compliance with the control of infection in the hospitals was far from international standards. These are including the lack of supervision and controlling the infection by the managers, involvement of non-professionals in the control of the infection, infection of the equipment by the operation room staff, the lack of availability of necessary facilities to adhere to the principles of infection control. For example, insufficient fabric equipment such as masks, in some operation rooms, the inappropriate physical space of the operation rooms such as floor coverings, doors, failure to observe the principles of infection control by employees, which were the most inconsistent with standards [14].

In a study conducted in Mashhad, the status of operating rooms in eight parts including scrub, operation room, the patient's treatment room, the consumable room,

recovery unit, and the standard of safety and equipment in the five sections has been discussed. The most important reason for the weakness in the physical space of the operating room is its old structure [15].

Christian *et al.* conducted a prospective study of patient safety in the operation rooms. They organized a team of experts in fields of human factors and surgeons in a university hospital to observe 16 surgeries and recorded their observations. The way employees communicate, loss of information, increased workload and job duties were considered to be the greatest threat to patient safety in practice [16].

Hospitals of Sabzevar University were at desirable and average levels in terms of safety surgical procedures [17] which were consistent with our study.

In the subject of pre-anesthetic procedures in all hospitals, the name registration of the patient, type of the surgery, patients' satisfaction, and pulse oximetry monitoring was confirmed in 100% of cases. The introduction of surgical team by their name and surname, the name of the patient, procedural type and surgical site needs to be confirmed. In Christian *et al.* study [16], it has been concluded that problems in communication, information flow, inaccurate identification of patients, and patients' load are among the factors influencing the performance of the team's procedure quality and patients' safety. Chung suggested that adhering to proper patient identification protocols is effective in reducing medical errors [18].

CONCLUSION

The operation room of Mazandaran University of Medical Sciences is safe and they are at a good safety level. The mean total surgical safety in Razi (Qaemshahr), Zare and Fatemeh Zahra (Sari) were at the optimal level and Abuali-sina and Imam Khomeini.

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