



# The Intervening Conditions and the Strategies for Effectively Implementing of the Surgical Safety Guideline in the Hospitals

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## Abstract

**Objectives:** There are deficiencies in codifying and implementing the surgical safety guideline, which may result in decreasing its positive outcomes. The aim of the current study is determining the intervening conditions and the strategies for effectively implementing the surgical safety guideline in the hospitals.

**Data Sources:** Content analysis was used for analyzing the 28 qualitative articles that were searched by the systematic review in English databases such as Science Direct, PubMed, Elsevier, EBSCOhost, and Google Scholar. Finally, 28 articles were entered into a research, and classified by the MAXQDA10 software.

**Results:** The intervening conditions were categorized in 21 sub-categories and three categories as follows: technical factors, human factors, and managerial-organizational factors. The strategies were categorized in 19 sub-categories and three categories as follows: technical strategies, human strategies, and managerial-organizational strategies.

**Conclusions:** It is necessary to consider the intervening conditions and strategies as a proper subset of factors related to safe surgical care.

**Keywords:** Patient, Surgical Safety, Checklist, Intervening Condition, Strategies

## 1. Context

Providing healthcare services is an interdisciplinary action that is performed by the team, including physicians, nurses, and other healthcare professionals. Teamwork is essential in providing safe care for patients (1), and deficiency in teamwork is the most important causes of flashing complications of healthcare activities (2, 3).

Surgery is the dispensable part of healthcare, and nowadays, surgeries are more explicated, safe, and effective. Nonetheless, its adverse events are reported at approximately 15% (4). A total of 234 million surgeries are annually performed around the world. Therefore, it is essential to design and perform a new system for promoting patient safety (5, 6). The adverse events and the rate of death were reported between 3% - 17% and 0.4% - 0.8% of surgeries in developed countries. Furthermore, the rate of death was reported to be between 5% - 10% in developing countries (7-9), while more than half of the lateral complications are preventable (10).

There are various factors affecting the quality and patients' safe cares, such as loose communication, coordination, and perception of roles and common goals in order to patients' safe cares between professional groups, limited

sharing team members, disagreements, etc. (11-13). Therefore, team work is a key factor for promoting patient safety and standards of medical education in system-based interventions (12). One of them is utilizing the surgical safety guideline. It was introduced for use in operating rooms by the World Health Organization in 2008. It contains 22 items that are evaluated on three levels, as follows: (1) before induction of anesthesia or break before anesthesia (nine items), (2) before surgical procedure or break before incision (eight items), and (3) after procedure or before patient leaves operating room (five items) (14). Although there is increasing the prevalence of utilizing the guideline in the hospitals and its correlation with the decreasing rate of surgical complications and death (15-17), there are challenges in effectively implementing the surgical safety guideline in the hospitals around the world (18).

In spite of the positive effects of using the surgical safety guideline, many questions are recently considered about facilitating the integration of the guideline into current working procedures and its actual effects on patient's safety (19-21). Therefore, effective utilization of it needs the high commitment of the surgery team, and organizational potential in accurately integrating the process of using the

guideline to other present processes and procedures (22, 23). The providential managerial viewpoint needs organizational and systemic changes proportionate to present conditions (24).

Developing knowledge and technology are rapid, and it results in increasing the general access to information and promoting public knowledge. Increasing public knowledge is a cause of increasing the community's demand for receiving high-quality services. The health-care organizations should be committed to improving the quality of cares due to their social responsibility. Therefore, patient safety is one of the principal indices of service quality. It is the baseline of clinical governance and accreditation. Patient safety and its strategies contain all caring procedures such as diagnosis and medication. The surgery is the high-risk procedure among caring procedures. Therefore, it is necessary to consider it in patient safety. The surgical safety guideline has been proposed for improving the present situation by the World Health Organization at a recent decade. It is implemented in Iranian hospitals from five years ago. Nonetheless, many studies around the world describe deficiency in implementing, performing, and realizing objectives of designers of the surgical safety guideline.

The guideline of surgical safety checklist was officially imparted to hospitals by the Iranian Ministry of Health (Ir-MoH) in 2010. The checklist was translated and validated by Surveillance and Accreditation Center of Medical Department of IrMoH, and then, it submits to hospitals' surgical centers. All national hospitals currently apply the checklists. Indeed, using the foresaid checklist is one of the most important goals of patient's safety and medical accreditation. A few studies were implemented in the field of evaluating effects and outcomes of applying the surgical safety guideline in Iran. Their results have shown improvement in safety qualifications (25, 26).

According to everything that was said around the effectively implementing of the surgical safety guideline, there are some problems and challenges, currently. Identifying and eliminating these obstacles could result in effectively implementing and gaining better outcomes.

## 2. Objectives

The aim of the current study was determining the intervening conditions and the strategies for effectively implementing the surgical safety guideline in hospitals.

## 3. Data Sources

The content analysis was used in the present systematic review of qualitative studies. A systematic review

was conducted in July 2016 to identify English-language studies on the intervening conditions and the strategies for effectively implementing the surgical safety guideline in the hospitals globally. Science Direct, PubMed, Elsevier, EBSCOhost, and Google Scholar were searched for the time period of January 1980 to July 2016. The key terms used in the search strategy were: surgical safety checklist, surgical procedures, operative room, surgery room, operative, surgical, surgery, checklist, intervening conditions, strategies, facilitator/facilitators, barrier/barriers, and challenge/challenges. A manual search of references lists of articles was also performed. The titles and abstracts were screened by researchers. Full-text screening of articles was also conducted by them.

Inclusion in the study required that: (1) the language of the article was English; (2) the method of the article was qualitative; (3) the publication date was between January 1980 and July 2016; (4) the article was original, and (5) the full-text was available. Review, reports, dissertations, working papers, comments, and letters to editor as well as non-English language articles were excluded from the study.

All included articles were reviewed by qualitative assessment and review instrument (QARI) (27). The most important criteria for assessing and reviewing qualitative studies were as follows:

- There was a clear and distinct explanation of research objectives, such as research question, main and specific research objectives.
- There was the clear and distinct explanation of research methods, such as literature review, methodology, and assumptions.
- There was the clear and distinct explanation of research results.
- There was the clear and distinct explanation of research data sources.

A total of 28 articles were included in the study (1, 13, 19, 21, 24, 28-50). The text of articles was classified by MAXQDA10 software for emerging categories and sub-categories. The content analysis process of qualitative articles was evaluated by a group of healthcare managers and hospital quality improvement experts. It assured accuracy and controlled bias in analyzing the process.

## 4. Results

Tables 1 and 2 present the results of content analysis of qualitative articles. According to Table 1, the intervening conditions of effectively implementing the surgical safety guideline were categorized in 21 sub-categories and three categories as follows: technical factors (1, 13, 21, 28, 30, 31, 33, 35-38, 40-43, 46, 49), human factors (19, 21, 24, 28-42), and

managerial-organizational factors (21, 24, 28, 30, 31, 33, 35-42, 44, 46, 47, 50). They have been categorized in ten, eight and three sub-categories, respectively.

According to Table 2, the strategies were categorized in 19 sub-categories and three categories as follows: technical strategies (1, 13, 21, 28, 30, 31, 33, 35-38, 40-43, 46, 49), human strategies (19, 21, 24, 28-42), and managerial-organizational strategies (21, 24, 28, 30, 31, 33, 35-42, 44, 46, 47, 50). They were categorized in five, eight, and six sub-categories, respectively.

According to the results of the systematic review, the intervening conditions could be reviewed in two groups as follows: (1) issues related to the guideline; (2) issues related to executors of the guideline.

#### 4.1. Issues Related to the Guideline

The subjects were described as follows: time-consuming, inconsistency with surgery type and critical situation of patients, deficiency in designing, lack of scientific evidence, verbal confirmation, papery version, etc.

#### 4.2. Issues Related to the Executors of the Guideline

The subjects were categorized into two levels as follows: (1) Micro-level: individuals (each person) or teams (persons); and (2) Macro-level: managerial or organizational. The subjects at the micro level were defined as the weakness of team-working, resistance in changing the environment, etc. in many studies. Furthermore, the subjects in the macro level were defined as the weakness of leadership, highlighting on organizational hierarchy, inconsistency with the routine procedures, and the processes in other studies.

## 5. Conclusions

The aim of the current study is determining the intervening conditions and strategies for effectively implementing the surgical safety guideline in the hospitals. The results present that effectively implementing the surgical safety guideline is restricted by the triple intervening conditions, including technical factors, human factors, and managerial-organizational factors. Furthermore, the strategies of effectively implementing the surgical safety guideline are described in the triple groups, including technical strategies, human strategies, and managerial-organizational factors.

According to technical intervening conditions and its strategies, one of the most important challenges in implementing the surgical safety guideline is presence of the deficiency in designing the guideline and the checklist. It is in accordance with other studies such as Bergs, et al. (51).

According to human intervening conditions and its strategies, it is necessary to consider patient safety in hospitals and medical centers, and use the patient safety culture (52). It is in accordance with other studies such as Zwarenstein et al., Nabilou et al., and Leonard et al. (53-55). Zwarenstein et al., highlight that the weakness of interdisciplinary performance results in intervening team working and jeopardizing patient safety and quality of care because medical professions are related to each other in caring and medical issues. The cornerstone of team working is the effective professional communications (53). Nabilou et al. highlighted that the healthcare workers in all classes and groups have an essential role in managing and coordinating patient safety. It is rooted in their attitude and knowledge in the field of patient safety and its essentiality and importance (54). Leonard et al. highlighted that the personnel of the surgery room need high professional commitment for accurately implementing the surgical safety guideline. Professional commitment is defined as full satisfaction and practical necessity into defined duties and assignments for human, provided that the person exactly fulfills them without any controlling and supervising system. The communication deficiencies are the principal cause of harms pertained to improvidences and inadvertence events in providing healthcare services. There are extricated clinical services and intrinsic restrictions of the human. Therefore, the managers of medical centers are obligated to standardize communication methods and tools. They should develop conditions for personnel to describe their anxieties in caring field. It equips them with a common language for informing team members of unsafe conditions (55). The effective communication among team members is depended on team members and working conditions. A most effective strategy is producing consistency with standard instruments and behaviors. It results in decreasing hazards pertained to work and increasing mentality of the team working. The teams have an important role in creating and maintaining the safer care for patients. The team members should advocate and respect each other for achieving the objectives. The effective multidisciplinary team working could assure prosperity to achieve objectives of patient care. There are differences between this type of team working in healthcare and team working in other countries. Therefore, it is very difficult to determine authority and responsiveness in healthcare teams. These teams are encountered to professional hiders and restrictions (56).

Finally, according to managerial and organizational intervening conditions and its strategies, it is essential to consider that there are five critical factors affecting on personnel's perception around safety culture, performing jobs by safe methods, and acceptance of implementing it by personnel. They are as follows: (1) senior managers' ad-

**Table 1.** The Intervening Conditions of Effectively Implementing the Surgical Safety Guideline

Category	Sub-Category
<b>Technical factors</b>	Time-consumption of completing checklist
	Problems in designing structure and content
	Lack of being evidence-based
	Verbal confirmation of items
	Lack of electronic checklist
	Checking most items in the last of working day
	Lack of consisting checklist with critical situation of patients
	Probability of out-breaking unanticipated risks
<b>Human factors</b>	Loosely communicating between anesthetist and surgeon
	Resistance of hospital personnel and managers
	Lack of change culture
	Lack of commitment among related personnel
	Lack of personnel's knowledge around the new process and checklist
	Weakness of interdisciplinary performance
	Fear of adopting responsibility in out breaking errors
<b>Managerial-organizational factors</b>	Weakness of organizational leadership
	Overemphasis on hieratical approach, and up-to-down
	Overlapping executive procedures and running proceedings
	Lack of transparency in personnel's roles and responsibilities

**Table 2.** The Strategies for Effectively Implementing the Surgical Safety Guideline

Category	Sub-Category
<b>Technical strategies</b>	Validating and proportioning checklist to running routine performance in hospitals
	Continually auditing process of completing the checklist
	Gathering and probating national evidence based on effects of performing checklists in promoting patient safety
	Full training, educating and introducing procedure, process and checklist before highlighting its execution
	Developing and transparency of measures of effectiveness of implementing the surgical safety guideline
	Presence of decentralizing organizational hierarchy in implementing the guideline
<b>Human strategies</b>	Presence of professional commitment and sense ownership sense of providers
	Full collaboration of quality assurance team in hospital
	Full collaboration of surgeons and anesthetists
	Full collaboration of surgery team
	Full collaboration of all personnel
	Transparency of role of each professional groups in the process of implementing the guideline
	Changing attitudes and behaviors of executive and senior team
<b>Managerial-organizational strategies</b>	Permanently receiving feedback related to quality and accuracy of the process of implementing the guideline
	Considering checklist as a hospital policy
	Integrating and consisting of the routine processes and procedures
	Developing leadership skills
	Support of hospital's managerial cadre
	Presence of effective communication

vocacy in safety programs, (2) lack of barriers in working environment, (3) minimum conflicts and proper communication among team members, (4) repeatedly providing feedback around the issues related to safety and its training by supervisors, and (5) personnel's accessibility into preventive tools and engineering controls. Three factors are more important among them. They are specified as

numbers 1, 4, and 3, respectively. Furthermore, organizational factors could affect providing safe care. Examples of this factor are as follows: ethical principles, the sense of safety in working environment, conditional factors such as personnel's job position and managerial advocacy, group working factors such as teamwork and team's leadership, and job factors such as the sense of self-confidence in work-

ing (52). It is in accordance with other studies such as Yaghonifar et al., Mahfoozpour et al., Sadoughi et al., and Afshari et al. (52, 57-59). Yaghonifar et al. emphasized that it is essential to highlight that the hospital's managers should not pursue violators in out breaking adverse events. They should consider rooting cause analysis, because the principal defaults may be in present systems, processes, and procedures. Attributing faults and errors to a person could result in repeating and out breaking them in similar conditions (57). Sadoughi et al. highlighted that the senior managers are the first level of the supervising system that could have the considerable effect on the implementation of reporting trend (58). Afshari et al. highlighted that it seems if the managers have the proper attitude they will act as the important role in reporting errors and events. It means if the manager has the attitude of retaining patient safety, it is possible to declare errors and adverse events in hospital's general panels and to competent referee for more extent investigations. It is essential for warning and voluntarily training others. Organizational managers and supervisors should consider the systemic problems in the organizations. It could procure the baseline of individual and organizational learning (59). It means that the manager or supervisor has a considerable role in developing a safety culture. Many factors related to the manager has an importance in patient safety and quality improvement such as his expectations and advocacy of personnel, and his interests, commitments, and actions in the field of patient safety quality improvement. It is helpful to consider various strategies including the manager's regular presence in the organization and actively listening to personnel' proposes around improving safety in the accurate diagnosis of the present situation. The manager that is committed to implementing safety always motivates personnel to adherence safety and encourages their proper actions. The leaders and managers need to have a systematic approach for implementing the safety culture. This approach could recede from individuals' blaming culture when errors appear. It focused on the problematic dimensions of the system (56).

It is essential to participate all beneficiaries, promoting and advocating team working and collaboration in order to improve quality of care. Performing the proposed actions and strategies has tightened the relationship with individuals' team participation and managers' financial and executive advocacies in the organization. Latino and Flood (60) state that even if the safety standards are annually evaluated in every high-risk process, but the organizational managers do not advocate it as a long-term strategy for improving safety, the effects of evaluating risks will be short-term. The senior managers and primary line personnel' participation accrete the convenient basis that causes promoting team working, the mutual apperception be-

tween two groups, advocacy of line personnel's ideas and actions by senior managers, and advocacy of senior managers' strategies by line personnel. The mentioned factors finally result in developing the safe environment and increasing the positive outcomes for patients.

It is necessary to highlight that the current research is the second systematic review study conducted in the field of quality and condition of implementing the surgical safety guideline. The first one was conducted by Bergs et al. (51). However, our research has many differences with the other one: (1) they merely reviewed one database (Medline) and mentioned this issue in their work as a limitation. Nonetheless, we reviewed five valid English databases. Therefore, there is the noticeable difference between them as numbers of the identified and included articles; it was approximately double; (2) after evaluating the quality of included articles in their research by QARI, we aimed that some of them were not suitable to enter in the current study; (3) they exclusively described barriers and facilitators of creating changes in using the surgical safety checklist into three themes as the checklist, implementation process, and local context. In total, nine sub-themes were proposed including the checklist content, lack of consistency among executing an existing process, and psychological ownership (factors related to the checklist), educating and training, unclear guidelines, and surgeon commitment (factors related to the implementation process), executive leadership, organizational culture, and communication and teamwork (factors related to the local context). Whereas, the intervening conditions were studied in three comprehensive themes and 21 subthemes. This content difference was naturally observed due to comprehensively reviewing the literature and including more various articles; (4) Furthermore, the strategies of effectively implementing the guideline, which was not scrutinized at the previous studies, are studied in three themes and 19 subthemes at the current research.

Effectively implementing the surgical safety guideline has the positive effects on the surgical process, the inter-professional communications, and the patient safety. It is a challenge in the health system that needs the participation of all members of the surgery team and their responsibility to promote the patient safety in the surgery process. Furthermore, it needs their positive understanding of the importance of the guideline. If they are not creating confidence and there is no the explanation of why and how in the field of the usage of the guideline, the cultural dimension and the social dimension will be ignored in order to achieve the safer care. It is necessary to continually assess the implementation of the guideline and to merge the guideline in the workflows. According to the multidimensional-interrelated challenges in implementing the surgical safety guideline, it is critical to consider

the mentioned strategies in this article.

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## Footnotes

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