

Challenges of Intraoperative Documentation and Its Role in Patient Safety: An Integrative Review

Abstract

Background: Accurate and complete intraoperative documentation is crucial for maintaining consistency in patient care, facilitating handoffs between surgical teams, and evaluating outcomes. This integrative review aimed to investigate the challenges of intraoperative documentation and its role in patient safety. **Materials and Methods:** A search of English-language databases including EMBASE, Proquest, Web of Science, PubMed, ScienceDirect, and Scopus was conducted from 2001 to 2022 using the keywords “intraoperative documentation”, “patient safety”, “documentation”, and “intraoperative”. **Results:** Nineteen articles were included from the initial 86 identified studies. Key findings were that protocols, safe surgical plans, accurate documentation, error/complication prevention measures, teamwork, safety culture, checklists, and instrument/sponge counts positively impact patient safety. **Conclusions:** Operating rooms require precise patient information and documentation pre-, intra- and post-operatively. This review indicates intraoperative documentation can improve surgical team performance and patient safety by facilitating continuity of care, handoffs, and outcomes assessment.

Keywords: Documentation, integrative review, intraoperative, medical record, operating room, patient safety, safety culture

Introduction

Recording and documentation of treatment and care measures can increase patient safety and caregiver legal security. From a legal perspective, the medical team’s performance can be proven through documentation, and those cases that are well-reported and recorded will be accepted. Documentation also helps care providers to have proper planning and coordination and maintain continuity of care.^[1] Intraoperative documentation is one of the most important and necessary methods for the surgical team, especially the operating room nurses, to maintain consistency in patient care and compare the expected results.^[2] According to the World Health Organization (WHO) reports, each year about 234 million surgeries are performed worldwide, and the complications of these surgeries range from 3% to 17%. Moreover, the rate of surgery-caused mortalities is 0.4%–0.8%^[3]; however, no precise statistics is available to show whether these complications have been incidental or caused by an error. Many efforts have been made to ensure that the

patients recover fully after surgery and do not experience any complications or have minimal complications. Given the fact that some patients are under general anesthesia and, hence, are unconscious, they cannot take care of themselves. Therefore, it is the undeniable duty of all operating room staff to consistently monitor these patients in the operating room.^[4] Compliance with the principles of documentation, recordings, and evidence are important factors in revealing the causes of incidents that may lead to serious injuries to patients during surgery.^[1,2] A good indicator to check the quality of surgery and its procedures is the number of patient’s unwanted visits to the operating room within 30 days after the surgery.^[5,6] Patient’s medical records should usually provide appropriate information about the reasons for their unwanted visits, but because of the poor documentation, it usually remains unclear what has happened or what error has been made.

Based on the available evidence, there is a prevalent communication failure in the operating room that increases surgery-related

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Access this article online

Website: <https://journals.iww.com/jnmr>

DOI: 10.4103/ijnmr.ijnmr_413_23

Quick Response Code:



How to cite this article: Akbari L, Aarabi A, Bahrami M. Challenges of intraoperative documentation and its role in patient safety: An integrative review. *Iran J Nurs Midwifery Res* 2025;30:141-9.

Submitted: 31-Dec-2023. **Revised:** 16-Jun-2024.

Accepted: 16-Jun-2024. **Published:** 10-Mar-2025.

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accidents and complications. Intraoperative documentation of events, not only establishes a communication system between healthcare providers but such documents function also as important evidence in revealing the incidents that have led to serious harm to the patients.^[7,8] It should be noted that 25.3% of documentation-related errors have been reported in Iran.^[9] Correct documentation is one of the measures that can reduce errors, protect patient rights, and increase patient safety. Moreover, one of the main methods of increasing patient safety is to use a system of reporting, error recording, and providing facilities for analyzing and preventing errors.^[2]

Enabling the doctors and treatment staff to assess the patient and provide a treatment plan immediately, treatment and care control during hospitalization, establishment of communication between the treatment staff, continuity in the provision of care, increased productivity by conducting a quality review of care, creation of accurate and up-to-date documentation for insurance institutions, and the use of documentation for research, educational and legal matters are among the benefits of documentation.^[1]

Because the rate of errors in patients undergoing surgery is higher than in other patients, many interventions have been proposed to increase patient safety in the operating room. These interventions include reducing the number of surgeries in hospitals, where the number of surgeries is very high, creating educational programs for laparoscopic surgery, training to improve the quality of teamwork in the operating room, and preparing a surgical checklist.^[10] Currently, surgical operations are managed to some extent so that their number does not exceed the normal limits, and laparoscopic surgery training workshops are also increasing, but the quality of teamwork in the operating room remains at a low level.^[11] The surgery list is also sometimes not completed and checked correctly. Laparoscopic surgery training workshops are also increasing, but the quality of teamwork in the operating room remains inadequate, and the surgical checklist is sometimes not completed and checked correctly.^[12]

Several methods have been recommended to improve the quality and quantity of intraoperative documentation. One of the methods that has taken priority over other methods, is referring to operational standards for procedures. It refers to instructions that are defined to perform a procedure in a part-by-part manner. However, the implementation of standards without using a proper checklist is not secure. Currently, operational standards are implemented imperfectly. For example, according to the National Information Standards Organization, the following items must be recorded: the start time and the end time of the operation, the type of anesthesia, the type of operation, the side where the operation is performed, the place where the cautery plate is placed, any type of incident during the operation such as heavy bleeding, shock, cardiac arrest, etc.,

with a mention of the measures taken and the result, the place of sampling in case of taking a sample, the type and number of samples, the factors related to the gauzes, long gauzes and other tools used. However, based on the most conducted investigations, these items are mentioned and recorded incompletely.^[13] Although complete intraoperative recording is crucially important, the only common care procedures recorded intraoperatively in patient files include incorrect counting of sponges and sharp tools, and rarely include unusable instruments, incorrect labeling of sample containers, electrocautery pad attachments, the possibility of burns with the electrocautery, and the probability of patient falling.^[14] This means that some of the essential procedures and care that the operating room nurse performs, such as examining the patient's skin before and after connecting the electrocautery pad, the type of preparation solution, the type and duration of immersion of reusable instruments in filling solutions hit by a moving person and its type and the type and dose of medication used by the scrub nurse during the operation are not appropriately recorded, and a review is needed in this regard.^[5]

Given the factors mentioned about the operating room recording and documentation and the results of incorrect documentation, immediate action is needed to modify this process. The medical care system is not yet systematically required to do intraoperative documentation, and more care is needed for correct documentation. For example, during shift changes, when surgery remains in progress and surgical team members, especially operating room nurses, change for any reason should be recorded. In case of surgical errors, the actions that should be taken to fix these errors need to be recorded to prevent any ambiguity in the occurrence of such incidents. There are many weaknesses in our country about intraoperative registration.^[15] Precise documentation of intraoperative events can ensure patient safety and resolve many points of uncertainty related to intraoperative care. Accordingly, based on the researcher's experience in this area and the above-mentioned factors, This study was conducted to investigate the challenges of intraoperative documentation and its role in patient safety.

Materials and Methods

The integrative review of the texts was performed using Preferred Reporting Items for Systematic Reviews and Meta-Analyses. This type of review includes six stages:

Preparing the guiding question: The definition of the guiding question is the most important step of the review because it determines which studies are related to the research; Searching for or sampling the literature: This stage depends on the previous stage and aims at determining the sources that are related to the research question and are in line with the inclusion criteria. These sources should be reviewed by two researchers and in case of disagreement between them, the opinions of a third researcher will also be used; An extensive and varied search should be performed

in databases, including electronic databases, manual searching of journals, references described in selected studies, contacting researchers, and using unpublished materials.^[16] Sampling criteria are important indicators of the reliability and accuracy of results. The ideal method includes all found studies or a random selection of them. However, if both options are not feasible because of workload, inclusion and exclusion criteria for articles should be clearly explained and discussed.^[17] The desired results should be done according to the guide question. Thus, the criteria need to be determined by considering the participants, the intervention, and the intended outcomes, according to the guiding question; Data collection: To extract data from the selected articles, it is essential to use previously prepared tools that ensure the collection of all relevant data; moreover, a careful review of the data is needed to minimize the risk of transcription errors. First, a look should be taken at the searched sources to find the possible related articles; then, the potentially relevant articles are copied and read thoroughly to decide whether or not they meet the inclusion criteria. A list of articles with their specifications should be prepared to make access easier for later reviews, and the researchers should know the number of included or excluded articles.^[18] This method allows determining and synthesizing relevant information extracted from the included articles. Using standard data extraction forms makes the procedure stable and structured. When designing the form, we should think about what analysis we hope to do, what information we are going to extract and describe, and what data we want to present in our article. The form should include the title of the article, authors, publication type, publication type, article citation information, and the database or sources from which the articles are extracted. The type of extracted information depends on the research questions and the type of information that can be extracted; Critical analysis of the included articles: This stage requires an organized approach for measuring the accuracy and characteristics of each article. The clinical experience of the researcher helps evaluate the validity of methods and results and determine their practical usefulness;^[18,19] Discussion of results: At this stage, the data obtained from the analysis of the articles are compared with the theoretical references based on the interpretation and integration of the results. Not only does this stage identify potential knowledge gaps but it also sets priorities for future studies. However, to protect the validity of the integrative review, researchers should emphasize their conclusions and inferences, and explain the biases as well.^[19] Finally, the information obtained from the articles studied by the researchers is extracted based on the summarization and collection form. The forms are completed for each article and are adjusted in Word software. Then, the articles and the extracted texts entered in the summarization tables are categorized and the domains are specified; and Presentation of the integrative review: The presentation of the review should be so

clear and complete that the reader can critically evaluate the results. This information should contain relevant and precise information based on textual methodologies and without omitting any relevant document.^[18,19] Not only does such an approach allow concise organization of the data but is also facilitates comparisons between studies on specific topics, such as problems, variables, and characteristics. In this regard, the conversion of the findings into a visual form is helpful. The search results have to be in the form of a list of articles that are screened based on their relevance to the research question. The researchers had better keep the results in suitable resource management software such as Note End, so that they can easily omit duplicate articles.^[18]

This stage was performed to investigate the modality of intraoperative documentation and the extraction of the standards, guidelines, and procedures in authentic texts, as well as the status of documentation in other countries by referring to reliable databases and the system of associations related to intraoperative care. Foreground research questions were used in this review. Foreground questions refer to those questions that seek specific knowledge about evaluation, diagnosis, prognosis, and treatment. To develop foreground questions, the PICO model was used to determine the question components [Table 1]. After the PICO design, keywords were also determined. Synonyms and other related words, such as abbreviations, words with a wider or narrower range, different scripts, etc., were also specified if needed and the search began. Accordingly, the question of the present research was what is the required documentation for increasing the safety of the patient in the operating room?

To this end, extensive searches were conducted in ISC, Web of Science, Google Scholar, Science Direct, Medline, Scopus, CINAHL, Cochrane Library, Iran Doc, SID, Magiran, and PubMed databases. In this regard, the English keywords of protocol, guideline, strategy, documentation, surgical, intraoperative care, and perioperative operating room, as well as their combination through using “AND” and “OR” operators, were searched in the mentioned

Table 1: PICO* model was used to determine the question components

Search strategy for English keywords	
PICOS*	OR
AND	
P	Scrub nurse-Circular nurse - operating room nurse – operating room technologist- theatre nurse- theatre technologist
I	Education- standards- protocol – guideline – strategy
C	Surgical documentation - intraoperative documentation - perioperative documentation - error reporting- Errors- surgical events
O	Patient safety- patient safety culture
S	Qualitative - Quantitative - Mixed methods

*Population, intervention, comparison, and outcome

databases. The Persian equivalents of the keywords were also searched. The inclusion criteria were the studies related to the research question, articles whose full texts or abstracts were available, and other related texts published in the recent 20 years in Farsi or English [Tables 2 and 3]. The scientific published articles were searched in peer-reviewed journals and original books in the field of study concepts; those articles were searched whose focus was on the concept of intraoperative documentation. The study exclusion criteria were the unavailability of the full text of the article. The articles were selected by two of the researchers based on the inclusion and exclusion criteria. After collecting all the related articles, the titles and abstracts of the articles were reviewed, and duplicate articles were omitted. MAXQUDA software was used to analyze the articles. All articles that had the mentioned search strategy in their title, keywords, or abstract, were published between 2001 and 2022, were related to the research question, and were published in Persian or English were included in the review. However, 86 articles (including 16 Persian and 70 English articles) and 5 books were retrieved. After omitting the duplicate articles and texts that did not meet the inclusion criteria, 62 full-text articles and 6 books were included for the final review. With the help of the research team, the articles were reviewed in terms of the relevance to the title, and authors' expertise, review of the abstract of the articles, the sources used, the study method, whether or not the results were presented correctly, and the whole structure of the article was logical and regular. At this stage, 18 articles and 1 book, which did not focus directly on the concept of documentation in the operating room, were removed, and finally, 19 articles and 4 books remained for concept analysis [Flowchart 1 shows the data selection process]. Data extraction was based on a checklist including the type of study, year of publication, place of publication, field of research, and definition of the relevant concepts. All ethical considerations for review studies such as the non-interference of personal opinions of the researchers in the stages of data collection, analysis, and reporting were observed in this study.

Ethics considerations

All the methods of this research were carried out following the relevant guidelines and regulations and approved by the ethics committee of Isfahan University of Medical Sciences with the code of ethics (IR.MUI.NUREMA.REC.1400.080). We declare that to observe the ethical principles of research.

Results

In this study, 19 articles including a variety of quantitative and qualitative studies, published between 2001 and 2022, were reviewed. Based on the results, the most important factors related to intraoperative documentation and their impact on patients were as follows: a protocol for recording the surgical process, a safe surgical plan, proper documentation, measures to prevent intraoperative errors and complications, teamwork and attention to safety culture, a safe surgery checklist, and record of the counts in the operating room. The summary of the articles used in the intraoperative documentation, and its impact on patients is shown in Table 4. The role of documentation in maintaining patient safety has been confirmed in several quantitative and qualitative studies.^[20-24] First of all, we need to be careful about sponge counting errors, which are the most reported intraoperative errors. Meanwhile, for documentation to be proper, it should be performed at the closest possible moment to the procedure. Complete documentation is time-consuming at first, but over time it can be performed more quickly. However, spending time for precise documentation can fruitfully maintain the safety of the patient; instead, incomplete documentation can be hazardous and disturb care coordination. The challenges and difficulties of documentation were investigated in two case studies, a qualitative study and a descriptive study.^[25-28] These studies have also emphasized the significance of the role of scrub and circular nurses during surgery in the prevention of errors, especially in the prevention of items retaining in the patient's body and of surgery on the wrong

Table 2: Search strategy

Search Strategy	No.	Database	Row
("protocol*" [Title/Abstract] AND ("documentation" [MeSH Terms] OR "documentation*" [Title/Abstract] OR "record*" [Title/Abstract]) AND "intraoperat*" [Title/Abstract] AND ("patient safety" [Title/Abstract] OR "patient safety" [MeSH Terms])) AND (2002:2022 [pdat])	25	PubMed And Medlin	1
1 protocol* [Title/Abstract]			
2 "documentation" [MeSH Terms] OR "documentation*" [Title/Abstract] OR "record*" [Title/Abstract]			
3 "intraoperat*" [Title/Abstract]			
4 "patient safety" [Title/Abstract] OR "patient safety" [MeSH Terms]			
5 #1 AND #2 AND #3 AND #4			
TS((protocol* OR Guideline*) AND (documentation* OR record*) AND (intraoperat* OR surg*))	11	Web of science	2
noft((protocol* OR Guideline*)) AND noft((documentation* OR record*)) AND noft((intraoperat* OR surg*))	13	ProQuest	3
protocol AND documentation AND intraoperative AND patient safety	0	Science direct	4
(protocol*:ti,ab OR guideline*:ti) AND (documentation*:ti,ab OR record*:ti,ab) AND (intraoperat*:ti,ab OR surg*:ti,ab)	10	Embase	6

patient. A thesis^[29] had investigated the elements of safety culture in the operating room and pointed out the effective role of interdisciplinary cooperation in patient safety. The field of modern surgery is complex, and communication errors are fairly common in this regard. As mentioned before, the use of safe surgery checklists prevalent throughout the world. The safest surgery checklist is WHO safe surgery checklist with 19 items. The purpose of this checklist is to prevent uncommon but serious errors by reminding the surgical team to ensure identification of the

patient, surgical site, and other important factors such as comorbidities or complications.^[30-35]

Although these checklists hold promise for reducing surgical complications and mortality rates, pieces of evidence show that these improvements cannot be achieved without careful attention to an implementation strategy. When deciding for the implementation of these checklists in the operating room, administrators should assess their hospital culture to make the checklist relevant to those who will use it^[39] Without the support of the personnel, these checklists are unlikely to cause changes in patient outcomes.^[45]

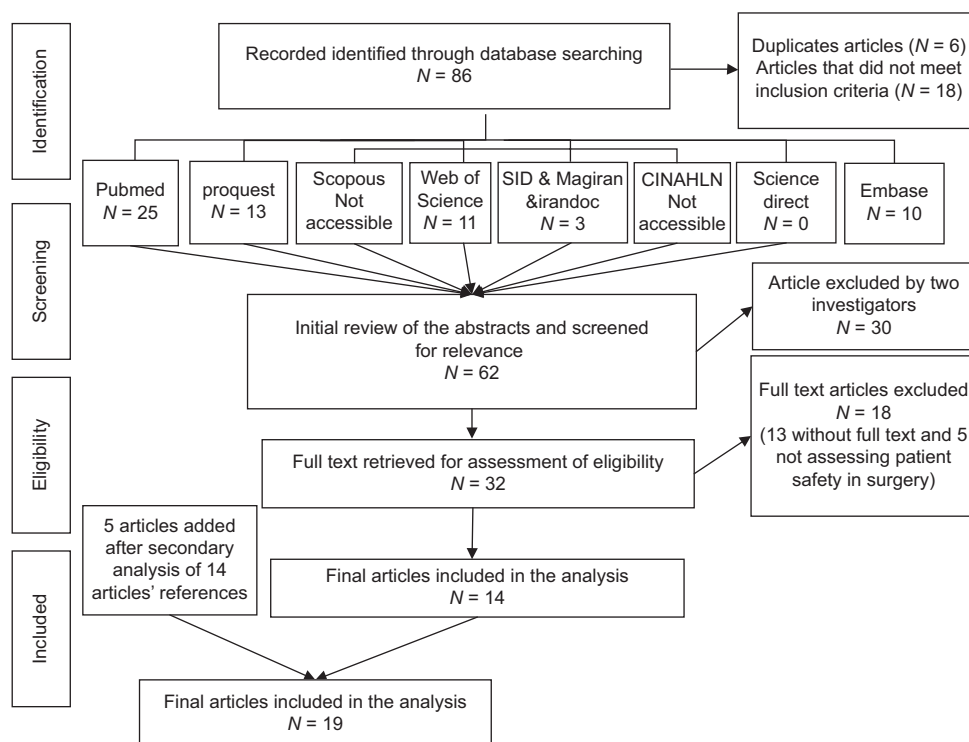
Table 3: Search strategy in Persian database

Search Strategy	No.	Database	Row
Persian equivalents of Surgery	2	ISC Irandoc	1
Documentation Operating room Patient Safety		SID	
Persian equivalents of Scrub nurse - circular nurse - operating room - surgery room	1	Magiran	4
Surgical care - intraoperative care - perioperative care - operation documentation			
Surgical documentation – perioperative documentation- intraoperative documentation - error - surgical error - surgical events			
Patient safety culture - patient safety			

Discussion

There are various aspects of intraoperative documentation. The present study has identified these aspects and has suggested strategies for increasing patient safety in the operating room.

Based on the results of the study, there are some decisions and tactics against the challenges of intraoperative documentation. Most of them maintain the safety of the patient especially during surgery, are safe surgical plans and protocols, recording correctly, team working, paying attention to the safety culture, having a safe surgery checklist and record of the counts as the most common error in the operating room. Chang's systematic review^[36] emphasizes the presence of a surgical protocol and acknowledges that better patient safety occurs with a specific surgical protocol because it is impossible



Flowchart 1: Search and selection of the articles

Table 4: Final results of the retrieved articles

Author, date, country	Study type	Aim of the study	Summary of the results
Chung RD, <i>et al.</i> (2017) Australia ^[36]	Systematic review	Intraoperative protocol	Better patient safety by employing the surgical protocol; it is impossible to evaluate the entire intraoperative procedure; image of the intraoperative procedure; the protocols show the usual barriers to effective surgery and quality of care.
Loftus T, <i>et al.</i> (2015) American ^[32]	Retrospective cohort study	A safe surgical program	Strategies for preventing the errors in the operation, wrong patient and wrong procedure
Søndergaard SF, <i>et al.</i> (2019) Danish ^[20]	Qualitative study	Investigating how to document in the operating room	Documentation is impossible without correct communication; documentation in the closest possible moment to the procedure; counting error is the most reported intraoperative error; complete documentation takes time at first, but over time this can be done more quickly; the documentation contents of different specialized fields will be used; the danger of incomplete documentation in care coordination.
Maraki Fatemeh, <i>et al.</i> (2019) Iran ^[21]	Interventional study		
Baumann Lisa, <i>et al.</i> (2018) Australia ^[22]	Systematic review		
Braaf Sandra, <i>et al.</i> (2011) Australia ^[23]	Review study		
Søndergaard Susanne F, <i>et al.</i> (2017) Danish ^[24]	Review study		
Platz Joseph and Hyman (2012) American ^[25]	Descriptive study	Prevention of intraoperative errors and complications	Referring to the challenges and difficulties of documentation; no documentation by non-surgeons; not mentioning the type and number of sponges and countable items in the description of the surgeon's operation; the significance of documentation in the incident of an error; presenting a diagram with regard to documentation and its outcomes; the role of intraoperative nurses in the prevention of WSS*, RSI**.
Stawicki PA Stanislaw (2012) American ^[26]	Case study		
Roesler Axel (2019) settle, USA ^[37]	Case study		
Watson DS (2015) USA ^[28]	Qualitative study		
Murphy VA (2018) California ^[29]	Thesis	Teamwork and paying attention to safety culture	Elements of safety culture in the operating room; the role of interdisciplinary collaboration in patient safety
Gutierrez LdS, <i>et al.</i> (2018) Brazi ^[38]	Exploratory descriptive	Safe Surgery Checklist of WHO	Use of a safe surgery checklist; improvement of interpersonal communication; documentation of the deficiencies related to surgical equipment as a significant part of errors; reduction of equipment-related errors by using pre-surgical checklists; role of using checklist in high-risk pediatric surgeries in reducing complications; improvement of the transmission of information and communication in different stages of surgery; use of these checklists will require spending time and effort; the important goal of the safe surgery checklist: communication and continuity in care and treatment; better team coordination and decision-making during operation; use of the checklist leads to better patient care in the operating room; use of the safety checklist requires time, persistence and long commitments; use of the safe surgery checklist is impossible without the participation of all members of the surgical team.
Haugen AS, <i>et al.</i> (2019) Norway ^[39]	Review study		
Gul Fahad, <i>et al.</i> (2022) Pakistan ^[40]	Descriptive observational		
Bartz-Kurycki, <i>et al.</i> MA (2017) Texas ^[41]	Descriptive observational		
Gołębiewska Maria, <i>et al.</i> (2018) Poland ^[42]	Descriptive		
Roybal J, <i>et al.</i> (2018) new Orland ^[43]	Descriptive		
Spruce L. (2016) Australia ^[44]	Review study	Count documentation	Counting at different intraoperative stages; documentation of the counted items by the circular nurse; final documentation of the count by the surgeon.

*Wrong Site Surgery

** Retained surgical items

to investigate the entire intraoperative procedure, and protocols can reveal the usual barriers to effective surgery and the quality of care. The study of Tan, *et al.* 2006^[30] and Raval, *et al.* 2020^[31] also confirm these results. In a recent retrospective cohort study, the presence of a safe surgery program was found to effectively maintain the safety of the

patient in the operating room, and it is the most important factor in preventing surgical errors, the wrong patient, and the wrong procedure^[32] Seiden and Barach (2006), Van Schoten, *et al.* (2014), and Kwaan, *et al.* (2006) have also reached the same results in their studies and emphasize having a safe surgical program.^[33-35]

Overall, all 19 studies have shown that proper documentation in the operating room can improve patient safety, reduce errors, and increase the quality of care. Therefore, it is very important to pay attention to this issue and create a culture of giving importance to documentation in the operating room. In a descriptive study, Spruce^[44] referred to the intraoperative documentation of counting surgical items and emphasized the significance of counting at different stages of surgery and recommended that the record of the counted items can be conducted by the circular nurse, and the final record should be performed by the surgeon. Despite the necessity of recording of counted items by circular nurse documentation by a non-surgeon still is not common, and operating room personnel consider documentation to be more a duty of the surgeon. Meanwhile, no mention is made of the type and number of sponges and other countable items in the descriptions of many surgery documents recorded by the surgeons.^[46] This issue will emphasize the critical role of intraoperative documentation in maintaining consistency in patient care. This means that the documentation process serves as a fundamental method for comparing expected outcomes, highlighting its importance in the broader healthcare context.^[47] Effective intraoperative documentation has been shown to have a positive impact on the performance of surgical teams. By providing a structured framework for communication, collaboration, and adherence to safety protocols, documentation becomes a cornerstone of improving the overall quality of surgical care. However, documentation without proper communication is almost impossible. The higher the levels of communication and cooperation in the operating room, the lower will be the rate of complications. While poor teamwork can cause errors, good teamwork leads to the identification and correction of errors.^[38] Kolodzeys^[48] 2020 study on systemic factors affecting intraoperative risk and resilience by using a new integrated approach to study surgical performance and patient safety also confirmed the results of the present study and showed that active team management support surgical team resilience. To eliminate the safety threats identified in the surgical environment, one can take advantage of managerial and technological measures, one of which is the documentation of surgical performance. Based on the findings of the study, the paper documentation provides practical recommendations for improving intraoperative recording practices. This may include implementing standardized protocols, training programs for surgical teams, and integrating advanced technologies to streamline documentation processes. Other research results suggest that paper documentation can help reduce information loss, improve productivity, and enhance organization and document management.^[49] However, some studies have shown that electronic documentation can also have its benefits, such as easier access to information and faster search capabilities.^[49,50] The findings of the present study show that the use of electronic medical records can

improve patient safety, reduce medical errors, and increase the quality of care. The present study is consistent with the study of Campanella *et al.*^[51] in 2016, which examined the effects of using electronic medical records on the quality of health care. In addition, the results of Adler *et al.*'s study in 2013, which examined the effect of electronic health records on healthcare costs, are similar to the present study and show that the use of electronic documentation saves costs. According to the results of this study, by addressing identified factors and adopting recommended strategies, healthcare institutions can foster a culture of safety, leading to improved patient outcomes and increased overall quality of care in surgical settings. In this regard, Farokhzadian *et al.*'s^[52] study (2018) which examines the challenges that affect the realization and integrity of the safety culture in health care from the nurses' point of view also showed that creating a strong safety culture in health organizations is complex. Implementation of practical strategies may be challenging and requires the adoption of modern management approaches by health managers to be able to respond to these barriers and promote culture of safety. Sacks *et al.*,^[53] who conducted a systematic review on safety climate with the aim of improving surgical safety culture, concluded that although there are different strategies and techniques to improve and measure surgical safety culture and some approaches were used in terms of interventions, the overall improved safety culture appears to be associated with positive effects, including better patient outcomes and increased healthcare efficiency.

As mentioned before, there are some communication deficiencies in the operating rooms and results of studies have shown that safe surgery checklist can improve interpersonal communication in the operating room. Transfer of information and communication in different stages of surgery play an important role in the maintenance of patient safety. The main objective of the safe surgery checklist is communication and continuous care and treatment, and its benefits include coordination and better decision-making of the treatment team during the operation, which will lead to better patient care in the operating room.

Treadwell's, *et al.* (2014) and Burgess's, *et al.*^[54] (2015) study pointed out the importance of the checklist. They also emphasize that application of the safety checklist requires time, persistence, and long commitments. It should be noted also that the application of this checklist is impossible without the participation of all members of the surgical team. Several other studies also^[38-43] have investigated the safe surgery checklist and its role in preventing surgical errors. As in a study^[40] researchers revealed that the use of the checklist can improve patient outcomes, i.e., reduce infection, respiratory complications, bleeding, blood transfusion complications, cardiac complications, and mortality rate, because it leads to better patient care in the operating room. Then today, the surgical community needs to look at the checklist as a tool for either the improvement

of communication or the improvement of safety culture. Both of these have direct impact on patient safety^[50]

Conclusion

Based on the results of the present study, documentation in surgery is a serious issue and includes a large number of issues related to patient safety. Therefore, it is recommended that the following items be used in the care management plan in the operating room. For managers, holding multi-professional collaboration meetings with the presence of operating room officials to review and improve patient safety processes and their relationship with proper documentation, developing and promoting patient safety culture in the surgical team, ensuring adequate access to physical, financial, and human resources to provide safe and quality care for patients. For the surgical team, using a safe surgical protocol along with proper documentation of activities and decisions, developing communication skills among surgical team members to increase coordination and create an effective work environment, and improving the performance and skills of operating room nurses regarding patient safety through appropriate training programs. and continuously, encouraging and supporting each employee's research to update their evidence-based practice. By implementing these recommendations, it is possible to continuously improve patient safety in the operating room and increase the quality of care. The strength of this integrative review was that this study helped to provide a comprehensive view of intraoperative documentation and allowed researchers to integrate and analyze different information about all fields and items that need to be documented. In addition, this study helped to understand the importance of patient safety and its correlation with correct and sufficient records. In integrative reviews, the careful selection of suitable studies for integration is of significant importance, so that the results of the study are accurate and reliable. In this study, we tried to do our best but finding the full text of some works of literature was impossible for us so this will be a weakness of this study.

Acknowledgments

The authors thank the Research Center of Isfahan University of Medical Sciences that approved this research with the number IR.MUI.NUREMA.REC.1400.080.

Financial support and sponsorship

Isfahan University of medical sciences

Conflicts of interest

Nothing to declare.

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