

## Factors inhibiting the use of surgical safety checklist in hospitals: Literature review

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World Journal of Advanced Research and Reviews, 2024, 22(01), 609–620

Publication history: Received on 28 February 2024; revised on 07 April 2024; accepted on 09 April 2024

Article DOI: <https://doi.org/10.30574/wjarr.2024.22.1.1115>

### Abstract

The surgical safety checklist is a medical communication tool in the operating room that is recommended by WHO to minimize surgical errors. This tool has been introduced since 2008. However, until now, surgical errors have still been found in many hospitals worldwide. Therefore, this study aimed to determine the inhibiting factors in using surgical safety checklists in hospitals. The research method used was a literature review using the Preferred Reporting Item for Systematic Review and Meta-Analytic (PRISMA) analysis method. Article searches were conducted through the PubMed, ScienceDirect, and Google Scholar databases using the keywords “patient safety incident” OR “adverse event” AND “surgical safety checklist” AND “barriers” AND “hospital.” The total number of articles found was 1.201, but only 9 met the inclusion criteria. The study was conducted in 93 hospitals in 9 countries and found several factors inhibiting surgical safety checklist implementation. Most inhibiting factors come from individual surgical staff and hospital organizations. The inhibiting factors in using surgical safety checklists in hospitals can be classified into 4 factors: the surgical safety checklist itself, individual factors, team factors, and organizational factors.

**Keywords:** Adverse Events; Hospital; Inhibiting; Patient Safety; Surgical Safety Checklist

### 1. Introduction

One location in the hospital where adverse events are often found is the central surgical unit. These events usually cause mortality and morbidity and increase health costs [1]. Therefore, the World Health Organization (WHO), in 2008, through the campaign “Safe Surgery Saves Lives,” launched a communication tool for surgical teams, namely the Surgical Safety Checklist (SSC). The device was released to ensure patient safety in the operating room [2]. The surgical safety checklist consists of 3 phases: sign-in, time-out, and sign-out. During the sign-in phase, the surgery coordinator will verbally confirm the patient’s identity, the accuracy of the surgical procedure and surgical location, verify whether the marking on the side to be operated on, approval before induction of anesthesia, and confirm the presence or absence of allergies in the patient, airway difficulties, and blood loss. Then, in the time-out phase, each surgery team member will introduce themselves and their roles and confirm further regarding the accuracy of the patient, the surgical location, and the surgical procedure before the skin incision. In addition, a review is conducted of anticipated critical events, prophylactic antibiotics, equipment availability, and imaging results. Then, in the sign-out phase, a review of the operations that have been carried out will be carried out, a calculation of the completeness of the number of instruments and consumables such as sponges and gauze, and labeling of specimens before leaving the operating room [3].

After 10 years of development, surgical safety checklists have played an essential role in hospitals worldwide, providing safe surgical services to patients [2]. In addition, surgical safety checklists have significantly reduced surgical complications and mortality, improved communication and work of the operations team, optimized work processes, and improved quality and cost reduction [4]. However, using surgical safety checklists in hospitals is not optimal. This is because many patient safety incidents remain, especially in the central surgical unit.

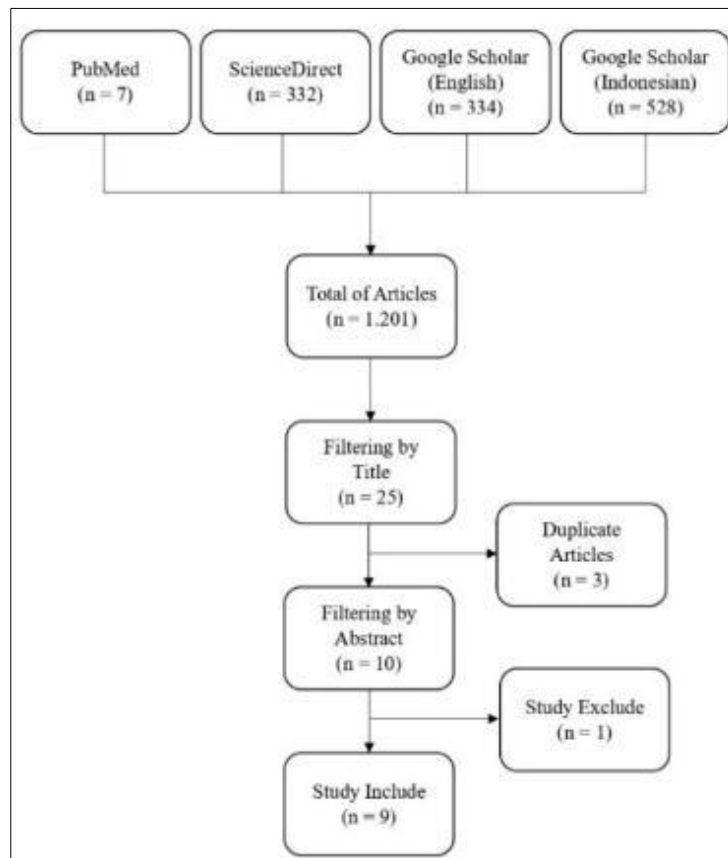
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A patient safety incident can be defined as any accidental event that causes or could cause preventable injury to a patient [5]. Based on a WHO report in 2019, there are millions of patients in the world who are harmed due to unsafe health care every year. That has caused 2,6 million deaths to occur in low-income and middle-income countries [6]. The NaPSIR workbook commentary shows that from April to June 2022, 652.246 patient safety incidents were reported to NRLS from England [7]. Then, the Daud report (2020) showed that 7.465 patient safety incidents occurred in Indonesia in 2019. The incidents consisted of 171 deaths, 80 seriously injured patients, 372 moderately injured patients, 1.183 lightly injured patients, and 5.659 unharmed patients [8].

When patient safety incidents are reviewed in the central surgical unit, it can be found that unsafe surgical procedures cause complications up to 25%. It could result in 1 million deaths during or immediately postoperative operations each year [6]. Based on data from the Provisional Publication of Never Events Reported as Occurring between 1 April and 30 April 2023, never events in the central surgical unit from 1 April 2022 to 30 April 2023 were 9 wrong-site surgery incidents. In addition, there were several incidents of surgical instruments being left in the patient’s body after the procedure, such as 1 case of missing vein tester, 1 case of the left surgical needle, and 7 cases of the left surgical swab [9].

This problem shows that there are inhibiting factors in the use of surgical safety checklists in hospitals. The suboptimal use of surgical safety checklists in hospitals’ central surgical units makes researchers interested in knowing the factors that inhibit this use. Knowing these inhibiting factors is expected to help hospitals around the world suppress cases of surgical errors, increase patient safety, and increase the effectiveness and efficiency of surgical services.

## 2. Material and methods



**Figure 1** Article selection process flowchart

The method used in writing this article is a literature review. Data is collected through 3 databases: PubMed, ScienceDirect, and Google Scholar. The types of articles used are national and international journal articles. Articles can be written in English or Indonesian. The keywords used in article searches are “patient safety incident” OR “adverse event” AND “surgical safety checklist” AND “barriers” AND “hospital.” Article search through Google Scholar uses keywords in English and Indonesian. The article search is limited to recent articles with a range of 2019–2023 issues.

The article used in this writing is in the form of an original article and full text. The selection of articles is adjusted to determine the inhibiting factors or factors that influence the use of surgical safety checklists in hospitals. The study used was an article that discussed the inhibiting factors in the use of surgical safety checklists in the central surgical unit of the hospital. The study is not restricted to any region or country. However, the research design is limited to quantitative and qualitative research.

The search results yielded 7 articles from Pubmed, 332 articles from ScienceDirect, 334 articles from Google Scholar with keywords in English, and 528 articles from Google Scholar with keywords in Indonesian. The total number of articles found is 1.201 articles. Furthermore, researchers filter article titles that are relevant to the topic of discussion. Researchers obtained 28 titles. However, 3 articles were excluded due to duplicates, so there were 25 left. Then, researchers search through abstracts to find out each subject of the article. Based on the search results, 10 articles were found that were considered following the topic of discussion. Then, the search continues with the feasibility study assessment of the article by reading the content of the article. After doing this, researchers found 9 articles that were considered worthy and met the inclusion criteria, namely in the form of original articles and full text, published in 2019–2023, and following the topics discussed. One article issued did not meet the inclusion criteria. Some articles are not analyzed because they use narrative review methods and literature review, and the discussion is less specific. The extraction and identification of data on article search using the PRISMA diagram are described in Figure 1.

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### 3. Results and discussion

The results showed that there were studies related to inhibiting factors in the use of surgical safety checklists in 93 hospitals located in 9 countries, including Zambia (n = 1), Thailand (n = 1), Pakistan (n = 1), Saudi Arabia (n = 1), China (n = 1), Brazil (n = 1), Turkey (n = 1), Canada (n = 1), and Indonesia (n = 1). The most published articles in 2022 are 3 articles. In addition, there is 1 article published in 2023, 2 articles published in 2021, 1 article published in 2020, and 2 articles published in 2019. Of the 9 articles reviewed, 4 used quantitative research methods with descriptive (n = 1) and cross-sectional (n = 3) study designs. On the other hand, 3 articles use qualitative methods, while the other 2 use a mixture of qualitative and quantitative methods. Kasatpibal et al. (2021) conducted the study with the most samples in 61 tertiary care hospitals and universities in all parts of Thailand. The study involved 2.024 surgical personnel [10]. Most articles are published in international journals and can be found through the Google Scholar database. Researchers only found a few articles on PubMed, ScienceDirect, and Google Scholar with Indonesian keywords. English articles are more common than Indonesian articles. That shows that research related to inhibiting factors in using surgical safety checklists has yet to be widely conducted. A summary of the research results of the articles reviewed can be seen in Table 1.

**Table 1** Summary of research results

<b>Author Name (Year)</b>	<b>Titles</b>	<b>Research Methods</b>	<b>Research Sample/Population</b>	<b>Research Location</b>	<b>Results</b>
Munthali et al. (2022) [12]	Barriers and Enablers to Utilisation of the WHO Surgical Safety Checklist at the University Teaching Hospital in Lusaka, Zambia: A Qualitative Study	Exploratory qualitative method with semi-structured interviews and reported according to the Consolidated Criteria for Reporting Qualitative Research (COREQ).	In-depth interviews were conducted with 16 key surgical team members working full-time in the University Teaching Hospital's operating room department, comprised of doctors, anesthesia providers, nurses, and theatre support staff.	University Teaching Hospital is in the capital city of Lusaka, Zambia.	The barriers that cause surgical safety checklists not to be used consistently in the University Teaching Hospital are: Organization-level barriers Training inconsistencies, poor management and supervision structures, and a lack of sense of ownership. System-level barriers Unavailability of resources needed in the operating room, as well as high workload and level of staff fatigue due to lack of human resources. Team-level barriers The surgical team's hierarchy, the individuals' negative attitude towards using the surgical safety checklist, and poor work ethic.
Kasatpibal et al. (2021) [10]	Satisfaction and Barriers of Surgical Safety Checklist Implementation in a Nonmandatory Adoption Resource-Limited Country	Quantitative methods with descriptive studies and questionnaires.	A total of 2,024 surgical personnel from 61 tertiary care hospitals and universities across Thailand included operating room nurses (55,0%), nurse anesthetists (23,4%), and surgeons (12,9%). As many as 10,1% of them are hospital administrators.	There are 61 tertiary care hospitals and universities in Thailand, including 46 government hospitals and 15 private hospitals.	Barriers to surgical safety checklist implementation are considered moderate. Based on the 3 phases of the surgical safety checklist, the obstacles found are: Sign-in barriers Barriers to marking at the surgical site and assessing the risk of blood loss greater than 500 mL in children. Time-out barriers Surgeons have not been optimal in anticipating critical events, and not all team members have introduced themselves by name and role in the operation. Sign-out barriers

Author Name (Year)	Titles	Research Methods	Research Sample/Population	Research Location	Results
					<p>Surgeons, anesthesiologists, and nurses struggle to anticipate key concerns for patient recovery and management, and nurses have not been optimal in verbally confirming the procedure's name.</p> <p>Other barriers include poor collaboration with multiple surgical teams, unclear organizational or departmental policies regarding the use of surgical safety checklists, inadequate organizational or departmental support, lack of surgical team awareness, shortage of personnel tasked with documenting surgical safety checklists, and unavailability of time to document surgical safety checklists.</p>
Gul et al. (2022) [13]	Surgical Safety Checklist Compliance: The Clinical Audit	A qualitative method in the form of an observational clinical audit with the guidelines of The Revised Standards for Quality Improvement Reporting Excellence (SQIRE 2.0). The data collection tools used were structured questionnaires in the first-cycle and second-cycle audits and interview sheets in addition to the second-cycle audit.	Observations were made on 23 operations in the first cycle audit and 16 operations in the second cycle audit. After a second cycle audit, operating room staff, such as surgeons, nurses, anesthesiologists, and other operating theatre staff, were openly interviewed.	Surgical Unit I at Benazir Bhutto Hospital, Rawalpindi.	The impediment to surgical safety checklist implementation is that operations staff need to be made aware and trained in following the use of surgical safety checklists. A total of 81,1% of respondents believe that no one has started using the surgical safety checklist process. On the other hand, as many as 62,5% of respondents felt no need to take the surgical safety checklist because the nurse had confirmed the details needed before coming to the operating room.
Manamela et al. (2022) [14]	Factors Contributing to Non-Adherence of the Peri-operative Surgical Team to WHO Surgical Safety	Qualitative method using semi-structured interviews face-to-face.	The population comprises 12 people from the peri-operative surgical team with an average experience of 12 years in their respective medical fields.	The selected hospitals in Saudi Arabia.	Barriers to the use of surgical safety checklists in the form of non-compliance are caused by: Surgical safety checklist use factors Security-related measures and uncertainties in the use of surgical safety checklists.

Author Name (Year)	Titles	Research Methods	Research Sample/Population	Research Location	Results
	Checklist in the Kingdom of Saudi Arabia				<p>Team factors</p> <p>Obstacles stem from the poor individual attitude of surgical staff and uncertainty regarding who is responsible for leading the implementation of the surgical safety checklist.</p> <p>Surgical safety checklist item factors</p> <p>Most items are duplicates of existing checks, and the completion of the surgical safety checklist is repeated during periods with a high workload.</p> <p>Procedural factors</p> <p>Obstacles related to time constraints for surgical safety checklist implementation.</p>
Gong et al. (2021) [3]	A Survey of Surgical Team Members' Awareness and Perceptions Toward the Implementation of the Surgical Safety Checklist in Gynecological and Obstetrical Operations	A quantitative method with a cross-sectional research design and online-based questionnaire surveys were used.	The survey was conducted on 267 staff from the central surgical unit.	West China Second University Hospital, Sichuan University.	There are 3 obstacles found in using a surgical safety checklist. First, the lack of adequate training for implementing surgical safety checklists on some surgical team members made them less aware of their importance. Second, surgical safety checklist protocols are not applied accurately during emergencies, and many nurses complain that surgeons are always in a hurry and unwilling to answer questions on the surgical safety checklist. Most surgeons consider that filling out the surgical safety checklist wastes time when the phase is time-out. Third, completing the surgical safety checklist charging takes a long time because the contents could be more straightforward.
Tostes & Galvão (2019) [4]	Surgical Safety Checklist: Benefits, Facilitators, and Barriers in the Nurses' Perspective	Quantitative methods with cross-sectional studies.	The cross-sectional study was conducted on 91 nurses in 25 hospitals in 2 cities of Paraná, namely coordinators or unit heads and nursing assistants or persons in charge.	Twenty-five hospitals in the National Registry of Health Establishments (CNES) of the Ministry of Health are	Barriers to the implementation of the surgical safety checklist in group 1 are a lack of support from the heads of surgery, anesthesia, and nursing; a lack of monitoring regarding surgical safety checklist usage practices; and members of the surgical team do not believe in the benefits of using surgical safety checklists. On the other hand, barriers to implementing the surgical safety checklist in group 2 are a lack of support

Author Name (Year)	Titles	Research Methods	Research Sample/Population	Research Location	Results
				located in 2 cities of Paraná, namely Londrina (n = 16) and Maringa (n = 9).	from the heads of surgery, anesthesia, and nursing; the absence of educational programs related to the use of surgical safety checklists; and resistance among surgeons.
Akbuga et al. (2023) [15]	Compliance With and Barriers to Implementing the Surgical Safety Checklist: A Mixed-Methods Study	A mixed method with 2 phases: descriptive quantitative data collection with forms and qualitative data collection through a phenomenological approach with in-depth interviews.	The sample involved in phase 1 was 126 nurses (55 RN circulators and 71 nurses in the surgical nursing unit). The sample involved in phase 2 was as many as 20 BSN RN nurse circulators.	A hospital in Turkey.	The obstacles to implementing surgical safety checklists are nurses' highly intensive workload and the need for more collaboration among surgical team members.
Mahmood et al. (2019) [11]	A Mixed Methods Study of Challenges in the Implementation and Use of the Surgical Safety Checklist	A sequential mixed method with direct observation of operating cases and semi-structured interviews with operating room staff.	Direct observation was made of 51 operations. Interviews were conducted with 18 operating room staff consisting of 6 nurses, 6 anesthesiologists, and 6 surgeons.	Tertiary Care Children Hospital in Ontario, Canada.	Obstacles to implementing a surgical safety checklist include non-compliance of surgical staff due to 5 factors. First, the surgical staff felt that the surgical safety checklist was just a procedure mandated by the superior when the surgical safety checklist was not essential and unnecessary. Second, surgical safety checklists are thought to reduce efficiency in the operating room. Third, there needs to be more redundancy and irrelevance in using surgical safety checklists in some operating procedures. Fourth, the lower hierarchy of nurses' posts limits their power to involve surgical team members in completing the surgical safety checklist. Fifth, the team's responsibility to complete the surgical safety checklist has yet to be carried out jointly.
Samson et al. (2020) [16]	Hubungan Beban Kerja dengan Kepatuhan Perawat dalam Penerapan	Quantitative method with a cross-sectional approach.	The research sample involved was as many as 30 operating room nurses and was taken	The operating room of Awal Bros Hospital,	The high workload is an inhibiting factor related to the level of nurse compliance in implementing surgical safety checklists.

Author Name (Year)	Titles	Research Methods	Research Sample/Population	Research Location	Results
	Surgical Safety Checklist di Kamar Operasi Rumah Sakit Awal Bros Batam Tahun 2020		through total sampling techniques.	Batam, Indonesia.	

**Table 2** Classification of inhibiting factors in the use of surgical safety checklists in hospitals

SSC Factors	Individual Factors	Team Factors	Organizational Factors
<p>Most items on surgical safety checklists are duplicates of existing checks, so filling becomes repetitive and a waste of time [14].</p> <p>The items in the surgical safety checklist are similar to those in the hospital's existing checklist, so there is redundancy. The checklist is considered irrelevant for some surgical procedures because it lacks detail [11].</p> <p>Completing the surgical safety checklist takes a long time because many items need to be answered, and some are considered strange and complicated [3].</p>	<p>An individual's negative attitude toward using a surgical safety checklist is like thinking that it is wasting time, inefficient, and unnecessary [3, 11, 12, 14].</p> <p>Some surgical staff have not received education and training on the use of surgical safety checklists, so they are not well aware of and understand the importance of implementing them [3, 4].</p> <p>The surgical staff needs a better work ethic [12].</p> <p>Individual surgical staff members perceive that there is no time available to perform and document surgical safety checklists [10].</p> <p>Surgeons are resistant to the use of surgical safety checklists [4].</p> <p>No individuals initiate using the surgical safety checklists in the operating room [13].</p>	<p>There was poor collaboration among surgical team members in implementing the surgical safety checklist [10, 15].</p> <p>Lack of awareness from the surgical team [10].</p> <p>The hierarchy of positions is still upheld in the operating room, so when surgical staff with lower positions, such as nurses, want to lead the surgical safety checklist protocol, they do not get good attention and response from other surgical team members [11, 12].</p> <p>Not all surgical team members are responsible for carrying out and completing the surgical safety checklist protocol together [11].</p> <p>There is no certainty regarding the person in charge and leader of surgical safety checklist implementation in the operating room [14].</p>	<p>Hospitals have not consistently provided education and training related to surgical safety checklist implementation for surgical staff [3, 4, 12].</p> <p>Poor management and supervision structures, monitoring, and evaluation of surgical safety checklist use in central surgical units [4, 12].</p> <p>There is no sense of ownership of the surgical safety checklist [12].</p> <p>Hospital failure to resource management implementation resulted in high levels of workload and fatigue of surgical staff [10, 12, 15, 16].</p> <p>There is no clear hospital policy regarding surgical safety checklists [10].</p> <p>The support provided by hospital leadership and the central surgical unit has not been adequate [4, 10].</p>



The literature review results show that every hospital in Indonesia and abroad has factors that inhibit the implementation of the surgical safety checklist. Based on Table 1, the most common obstacles come from individual factors of surgical staff and hospital organization factors. In addition, barriers to surgical safety checklist use can also come from the surgical team and the surgical communication protocol itself. The research of Mahmood et al. (2019) shows that a surgical safety checklist is not necessarily suitable to be applied to all types of operations such as in ophthalmology. Therefore, the hospital compiled its surgical checklist. For example, Tertiary Care Children Hospital in Ontario already has a more specific surgical checklist [11]. Then, the further review provides clues that the inhibiting factors in using surgical safety checklists can be classified into 4 categories: surgical safety checklist factors, individual factors, team factors, and organizational factors. The results of classifying inhibiting factors in surgical safety checklist implementation can be seen in Table 2.

### 3.1. SSC factors

Based on a review conducted by researchers, surgical staff at several hospitals revealed that the surgical safety checklist items themselves hindered their implementation. Peri-operative surgical teams at hospitals in Saudi Arabia complained that most surgical safety checklist items were duplicates of standard operating procedures and examinations. That makes them decide not to ask the same thing in the time-out phase. In addition, the workload of each surgical staff in the operating room is high. This condition makes compliance with filling surgical safety checklist items still lacking, especially in the sign-in and time-out phases. Moreover, the ward and reception departments have confirmed some surgical safety checklist items. So, most surgical staff are reluctant to answer previously confirmed things [14].

The surgical safety checklist is considered to be the same as the surgical checklist already owned by the Tertiary Care Children Hospital in Ontario. That caused the surgical team to decide to use their checklist. Moreover, surgical safety checklist items are less relevant in some surgical procedures because they are too familiar and unable to meet the specific needs of surgical examinations [11]. Based on this statement, we know that specific surgical procedures also require a particular checklist to guarantee the operation. If the surgical safety checklist is still used, then some essential things in the surgical procedure will be ignored.

For some surgical staff at West China Second University Hospital, surgical safety checklist items were strange and complicated to fill [3]. Such procedural problems can certainly hinder surgery during emergencies. The risk can be life-threatening to the patient [14]. Therefore, some surgical staff suggest that the surgical safety checklist be modified with language that is easier to understand and simplified so that it can be implemented at any time, including during emergencies [3].

### 3.2. Individual factors

Individual factors are also referred to as personal factors. This factor comes from within a person and plays a role in influencing an individual's attitude and behavior [17]. Individual factors are the most common inhibiting factors found in the studies reviewed. Senior surgeons often show negative attitudes because they are resistant and consider surgical safety checklists a waste of time or inefficient [3, 4, 11, 12, 14]. They did not want to fill in the surgical safety checklist anymore because they were sure that the nurse had confirmed the details of the surgery needs before coming to the operating room [13]. Moreover, if junior staff suggest using a surgical safety checklist, senior staff will intimidate them. This condition triggered an estrangement within the surgical team. In addition, the implementation of the surgical safety checklist is usually missed when surgical team members arrive late to compensate for lost time due to poor work ethics [12].

The surgical safety checklist implementation can also be hampered if surgical staff are still not aware and understand the importance of the implementation and are not trained [13]. These problems show that low knowledge of surgical staff can lead to non-compliance with surgical safety checklists. This condition can be triggered because they have not received effective education and training on the use of surgical safety checklists, as happened at West China Second University Hospital and 25 hospitals in Paraná [3, 4]. Education and training are very important in deepening the knowledge of surgical staff related to the use of surgical safety checklists in the operating room. Based on Muara & Yustiani's (2021) research, the level of knowledge of the surgical staff is related to the level of compliance with surgical safety checklist filling [18]. This condition causes them to only consider the implementation of the surgical safety checklist as a formality, not their need and responsibility. Another impact is that no one is moved to start the surgical safety checklist process [13].

Compliance with all surgical staff in the sign-in, time-out, and sign-out phases is essential in ensuring patient safety in the operating room. Based on research conducted by Katimenta, Ibrahim, & Yudistira (2023) shows that surgical staff compliance during the sign-in phase has a significant and meaningful relationship with the accuracy of pre-operative

patient identification at Primaya Betang Pabelum Hospital [19]. The study showed that patient misidentification during pre-operative can be prevented if surgical staff comply with the surgical safety checklist at the sign-in phase. That way, the level of patient safety can increase.

Many variables affect the level of compliance of surgical staff in implementing the surgical safety checklist. Research conducted by Chotimah and Wijaya (2022) at Musi Medika Cendikia Hospital shows that nurses' variable length of work is also closely related to their compliance in filling surgical safety checklists [20]. In addition, the variable level of nurses' work stress is also related to the use of surgical safety checklists in the operating room. The higher the nurses' work stress level, the lower their compliance with the surgical safety checklist implementation. This aligns with research conducted at Ngudi Waluyo Wlingi Regional Public Hospital and Mardi Waluyo Blitar Regional Public Hospital [21, 22]. Then, the motivation variable nurses possess is also related to compliance with surgical safety checklist documentation in the central surgical room of Ibnu Sina Islamic Hospital, West Sumatra [23]. The large number of variables that affect the individual adherence of surgical staff to the surgical safety checklist implementation shows the importance of increasing surgical staff awareness regarding the importance of using surgical safety checklists in improving patient safety before, during, and after surgery.

### 3.3. Team factors

Team factors are closely related to the relationship between members and the awareness of each surgical team member in applying surgical safety checklists together. That suggests that individual factors can trigger obstacles in team factors. Team bottlenecks can be demonstrated by poor collaboration between surgical team members. This condition is triggered by differences in perception of the surgical safety checklist [10, 15]. Some staff feel that a surgical safety checklist is essential. On the other hand, surgical staff, especially seniors, think a surgical safety checklist is not crucial. That difference makes it difficult for them to collaborate and carry out responsibilities in using surgical safety checklists together [11].

Then, the surgical team highly upheld the hierarchy of positions. Suppose a surgical staff, such as a junior nurse, leads the surgical safety checklist implementation in a low position. In that case, the staff will be ignored because it is considered to hinder efficient operating procedures. That is because the junior staff does not have great power [11, 12]. Therefore, the surgical safety checklist is challenging to implement if surgical team members are reluctant to participate and cannot appreciate their teammates. That resulted in a 'gray' situation because there was no clarity on who should be responsible for leading the surgical safety checklist [14].

### 3.4. Organizational factors

Organizational factors originate from within the organization concerned, including management. This factor influences the implementation of individual and teamwork in the organization. Organizational factors include organizational structure, policies, management, and others [17]. Research by Munthali et al. (2022) shows that the University Teaching Hospital has not provided surgical safety checklist training consistently, even if there is a rotation of staff from other departments or newly hired staff [12]. Moreover, training is one factor closely related to patient safety in surgery [24]. That resulted in the new staff not knowing the purpose and benefits of the surgical safety checklist and not running the surgical safety checklist in the operating room. Senior surgical staff who have undergone training rarely share information about surgical safety checklists with them. Furthermore, senior surgical staff as role models for junior surgical staff do not show any sense of ownership of the surgical safety checklist. That made the junior surgical staff feel that the surgical safety checklist was a coercion that was not needed [12]. If the active role of senior surgical staff is involved, it will undoubtedly improve the optimization of surgical safety checklists.

However, even though training will be held consistently in the future, it will still be in vain if the hospital management does not improve the management structure and does not conduct monitoring and evaluation regularly. Monitoring and evaluation are essential in ensuring the continued use of surgical safety checklists in the operating room. Research at the University Teaching Hospital and 25 hospitals in Paraná shows that monitoring and evaluation implementation is still not optimal [4, 12]. Then, organizational factors that need to be considered are the ability and implementation of resource management. Research by Munthali et al. (2022) and Kasatpibal et al. (2021) shows that there is still a shortage of healthy human resources in the operating room, causing the level of workload and fatigue of surgical staff to be higher [10, 12]. High workload levels can have implications for surgical staff non-compliance in the use of surgical safety checklists [10, 12, 15, 16]. That is in line with research at Mardi Waluyo Blitar Regional Public Hospital, which states that there is a relationship between nurse workload and compliance with surgical safety checklists [25].

Although the implementation of surgical safety checklists has been encouraged since 2008, it turns out that there are still hospitals or surgical departments that do not have precise regulations regarding the use of surgical safety checklists

[10]. Moreover, the support of hospital leaders, department leaders, surgical chiefs, anesthesiologists, and heads of nursing is still weak [4, 10]. The above inhibiting factors show the urgency of improvement to the hospital management system, especially in the central surgical unit.

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#### 4. Conclusion

Based on the results of the literature review that researchers have conducted, obstacles to the use of surgical safety checklists can be divided into 4 factors: surgical safety checklist factors, individual factors, team factors, and organizational factors. The surgical safety checklist factors are related to the similarity between surgical safety checklist items and existing checklists; surgical safety checklist items are general, so they cannot be used in every type of operation; and surgical safety checklist items need to be filled in too much so that it takes a long time and is in a strange language. Then, individual factors are related to the negative attitude and individual resistance of surgical staff to the surgical safety checklist; there are some surgical staff who have not received training and have poor work ethic; and no individual has been moved to lead the use of surgical safety checklist in the operating room. Then, team factors are related to poor collaboration between team members; lack of awareness of the surgical team in the use of the surgical safety checklist; position hierarchy is highly respected; not all surgical team members have a sense of responsibility for the surgical safety checklist; and there is no clarity regarding the party in charge of leading surgical safety checklist in the operating room. Furthermore, organizational factors are related to the inconsistency of the hospital in providing surgical safety checklist training for its surgical staff, poor management structure, poor monitoring, and poor evaluation, lack of hospital ownership of surgical safety checklist, no hospital policy about surgical safety checklist, and weak support from various levels of hospital management. Therefore, education, training, monitoring, and evaluation of surgical safety checklist implementation must be carried out at all levels. Thus, the awareness and commitment of surgical staff and hospital organizations to using surgical safety checklists can be increased.

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#### Compliance with ethical standards

*Disclosure of conflict of interest.*

No conflict of interest is to be disclosed.

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