

STRATEGIES FOR IMPLEMENTING THE SAFE SURGERY CHECKLIST: AN INTEGRATIVE REVIEW

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Abstract: Goal: to analyze evidence available in the literature on the strategies used to implement the safe surgery checklist proposed by the World Health Organization (WHO) in the surgical practice of health services. **Method:** integrative literature review with search for results in four databases and a digital library, establishing criteria for inclusion and exclusion; critical evaluation; interpretation and discussion. **Results:** We found 1,037 articles, applying inclusion and exclusion criteria and removing duplicate articles, comprising a sample of 26 publications. The central axes were evidenced by a bibliographic survey: article, authors, journals and theme related to the checklist tool that appears in different contexts of publications, which allows inferring its use in different scenarios and perspectives. **Conclusion and implications for practice:** The lack of adherence to the checklist has been one of the main challenges encountered in the practice of its implementation, a situation that is affected by the non-participation of team members in the process of preparing and adapting the list. The studies showed that there is a need to raise the awareness of the team, that the checklist serves as a mediation instrument for the meeting of the sector's actions, developing communication and integration. **Keywords:** Verification list, Patient safety, Surgical Rooms, methodologies.

INTRODUCTION

The operating room is an essential sector for the adoption of safe practices due to the complex nature of the activities carried out by the multidisciplinary team. In 2008, the World Health Organization (WHO) launched the "Safe Surgery Saves Lives" campaign, which aims to reduce the occurrence of harm to patients in a surgical environment and establish safety standards

that can be applied to all member countries.¹ The potential for the occurrence of incidents, adverse events and their magnitude arouse the interest of health establishments in the adoption of quality indicators for data collection and processes that can be improved or even avoided through the use of indicators that can be generated using tools. In this context, the Ministry of Health proposes the implementation of a safe surgery checklist in all surgical centers, aiming at quality and safety in the care of surgical patients.²

The checklist is a tool used to ensure that all the important actions in a surgery are performed. Checklists contain important items for a situation where their absence could lead to failures. They are used in several areas; for example, pilots, before taking off an airplane, use pre-designed checklists to check the operation of the aircraft and ensure the safety of the route.³

The surgical procedure is often one of the only therapies that can alleviate disability and mitigate the risk of death, and annually, millions of people undergo treatment and surgical interventions, which are responsible for about 13% of the total years of life disability-adjusted.¹ Use of the Surgical Safety Checklist has been shown to reduce mortality and morbidity in both developed and developing countries. According to the author⁴, estimates from systematic reviews suggest a relative risk of death of 0.57 (0.42-0.76 95% confidence interval) and of any complication of 0.63 (0.58-0.67 confidence interval 0.67). Trust 95%).

In view of the above, this article aims to analyze evidence available in the literature on the strategies used to implement the safe surgery checklist proposed by the World Health Organization (WHO) in the surgical practice of health services.

METHOD

This is an integrative review consisting of the following phases: elaboration of the guiding question, search for articles in the literature, establishment of criteria for inclusion and exclusion of studies, as well as their critical evaluation, interpretation and discussion of the results.⁵

For the delimitation of the guiding question, the PICO strategy was appropriated, which is summarized in: P - Population (Professionals who work in the operating room), I - Intervention (Use of safe surgery checklist), C - Comparison/Control (Conventional surgical approach without the use of the tool) and O - Outcomes/outcome (Surgical Safety). Given the above, this strategy promoted the formulation of the following guiding question: "What are the strategies that can be used to implement the safe surgery checklist in the operating room?"

To search for articles, use the following databases: *Scientific Electronic Library Online* (SciELO), *National Library Of Medicine* (PUBMED), *Latin American and Caribbean Literature in Health Sciences* (LILACS), *Bibliographic Database specialized in the area of Nursing* (BDENF) and *Medical Literature Analysis and a Retrieval Sistem on-line* (MEDLINE). The composition of the search strategy for the Health Science Descriptors/ Medical Subject Headings (DECS/MeSH) was based on English and Portuguese, separated by the Boolean operator "AND" and "OR", namely: checklist, patient safety, surgeries and methodologies.

The following inclusion criteria were defined: articles in English, Portuguese and Spanish, published between the years 2011 to 2021, which addressed the theme addressed in this study and available in full. The exclusion was based on articles that did not fit the above mentioned criteria.

In order to minimize possible errors or biases, the selection was performed by two reviewers, independently and organized in two stages. In the first stage, the title and abstract were read, and in the second, the full text was read. After a complete reading of the publications included in this review, they were summarized in a Microsoft Word Office document, containing: name(s) of the author(s) and year of publication, publication title, objective and research method, and a brief summary (result, discussion and conclusion) on the content of the article.

RESULTS

A total of 1,037 articles were found through the search. After analysis, 1,010 articles were excluded, including duplicates and those that did not belong to the research line, as shown in Figure 1.

After checking the selection-identification and eligibility criteria, 26 articles presented in table 1 were included, which is the final sample of this study, of which 19 (nineteen) were published in English, 6 (six) in Portuguese and 1 (one) in Spanish.

These articles were published in a regular annual amount of publications, as shown in Table 1. From 2011 to 2021, the number ranged from two to three publications per year. In 2019, there were six publications, which demonstrates the concern of researchers, increasing the number of studies on this topic, especially with regard to patient safety.

The sample of this study was categorized into three segments, namely: Importance of the checklist with 10 scientific articles; Knowledge and adherence to the checklist with 08 and Implementation of the checklist with 08.

DISCUSSION

The total of 26 scientific articles were found that match the study criteria. Among

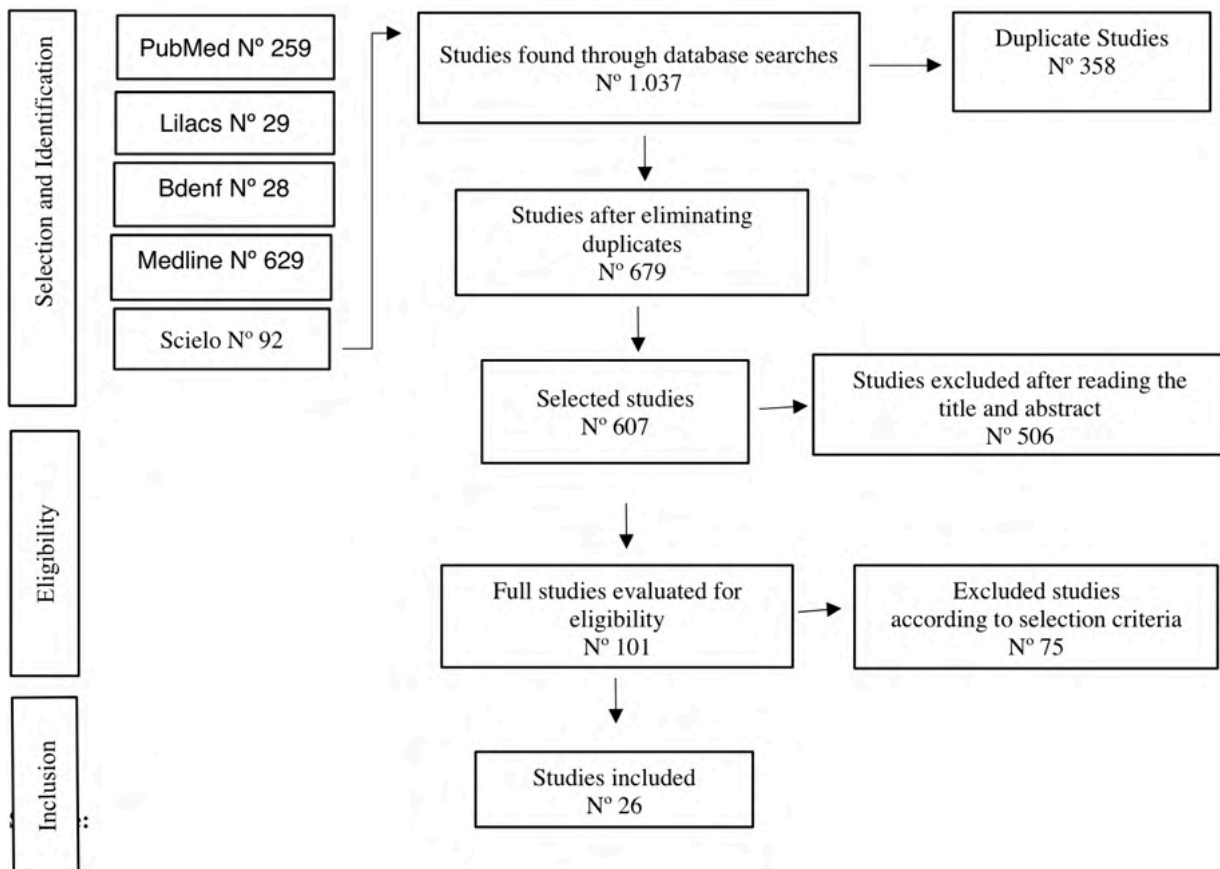


Figure 1 – Article selection flowchart.

Source: Data from the Integrative Review prepared by the author, 2021.

Autores/ Ano/Plataforma	Titles	Goal/ Method	Categories / Level of evidence	Language	Recommendations / conclusions
Santos. <i>et al.</i> , 2020 SCIELO	Surgical safety checklist: knowledge and challenges for the OR team	To identify the knowledge of health professionals about the Surgical Safety Checklist, the challenges and objectives for its implementation in a public hospital institution. This is a quantitative, descriptive, cross-sectional study.	Knowledge and adherence to the checklist 3B	Portuguese	The study hypothesis was confirmed, as it appears that professionals have knowledge about the Checklist and recognize it as a tool that provides quality care during the perioperative period, in addition to listing the main challenges for its implementation, which are: lack of team participation, use of items that are difficult to understand, lack of explanation about the Checklist and lack of time to complete it.

Leon;Ruíz; García, 2016 BVS	Safety knowledge and implementation of surgical patients in a pediatric institution in southeastern Mexico.	To assess the level of knowledge and implementation of surgical patient safety in a pediatric institution. Observational, descriptive and cross-sectional study.	Knowledge and adherence to the checklist2C	Spanish	With the surgical safety check in 3 phases: - before anesthesia, - before the skin incision and - before the patient leaves the room, it helped to identify areas that need improvement, thus reducing avoidable complications and promoting culture of security.
Reich <i>et al.</i> 2019 SCIELO	Surgical safety in the catheterization laboratory	To describe the process of implementing the surgical safety checklist in the catheterization laboratory. Descriptive study of security experience report.	Implementation of checklist 4C	Portuguese	The implementation of the checklist provided the promotion of patient safety, greater team integration, advances in communication between professionals and in the recording of care information in the room.
Anger <i>et al.</i> 2011 SCIELO	A preoperative checklist in aesthetic plastic surgery	The purpose of the checklist is to reduce the possibility of adverse events involving the surgical process, identifying the risk level of each item reviewed. The list of verification is divided into three areas: anaesthesia, psychological aspects and clinical risk factors and sorted by color to identify risk.	Importance of checklist 1C	English	It found that the use of an intraoperative surgical checklist protocol, based on a set of simple checklists for use at various stages of surgery, reduced significantly the rate of complications.
Bohmer <i>et al.</i> 2012 SCIELO	Implementing a perioperative checklist increases patient perioperative safety and staff satisfaction	Assess perioperative safety standards and the quality of interprofessional cooperation before and after the introduction of a safety checklist from the perspective of team members. It was surveyed before and 3 months after the introduction of a form adapted from the Surgical Safety Checklist by a 19-item questionnaire.	Implementation of checklist 2B	English	Research demonstrates that, from the point of view of the OR team, in the perioperative environment, safety-relevant factors can be addressed significantly better and with greater awareness by implementing a safety checklist, as proposed by the World Organization. of health.
Ferreira <i>et al.</i> 2019 BVS	Intervening factors in the implementation of the safe surgery checklist in a university hospital	In order to identify the factors involved in the implementation of the safe surgery checklist in a university hospital. A descriptive, exploratory study with a qualitative approach and content analysis by Bardin.	Implementation of checklist 3B	Portuguese	Cultural change stood out as a hindrance in the process of implementing the safe surgery checklist, on the other hand, the main factor that favors this process is the institution being a teaching unit with the academic body inserted in the care.
Gehlbach, Artino 2018 PUBMED	The research checklist (manifest)	The authors propose a research checklist to serve the same core function as surgical checklists - to reduce error. Using the appropriate corresponding analytical approach.	Importance of checklist 5D	English	A checklist serves as a simple way to remind professionals of what they already know but can easily forget. In the research, the author evaluates several studies that point to surgical checklists as a tool to improve communication and reduce morbidity and mortality.

Guidolin, Yan, Quereshy. 2020 <i>PUBMED</i>	The “teaching timeout”: a new framework for surgical education	The study proposes the use of a detailed and formalized preoperative pause as a means to enable superior and more targeted intraoperative learning for surgical interns.	Importance of checklist 2A	English	The teaching time limit proposed in the study is dedicated to improving the learning of all members of a surgical team, from medical students to team surgeons.
Haynes <i>et al.</i> 2017 <i>SCIELO</i>	Mortality trends following a collaborative-based voluntary surgical safety checklist	To determine whether completion of a voluntary checklist-based surgical quality improvement program is associated with reduced 30-day postoperative mortality. Comparing postoperative mortality rates, based on checklist program completion.	Importance of checklist 2B	English	Hospitals that completed a voluntary checklist-based surgical quality improvement program had a reduction in deaths after inpatient surgery during the first 3 years of collaboration compared to other hospitals in the state. This may indicate that large-scale implementation of a team-based surgical safety checklist is feasible.
Jelacic <i>et al.</i> 2020 <i>SCIELO</i>	Aviation-style computerized surgical safety checklist displayed on large screen and operated by anesthesia provider improves checklist performance	Improve the WHO checklist by implementing the aviation-type computerized checklist with a large screen operated by the anesthesiologist, improving the checklist. A prospective observational study was carried out.	Implementation of checklist 2B	English	The implementation of a computerized surgical safety checklist system resulted in an improvement in checklist performance.
Kasatpibal <i>et al.</i> 2012 <i>SCIELO</i>	Implementation of the List World Health Organization Surgical Safety Check at a University Hospital in Thailand	Examine compliance with the WHO checklist in a hospital Thai university. Descriptive study.	Implementation of checklist 1A	English	The WHO checklist can be implemented in a country in development. However, compliance with some items was extremely low, reflecting different work patterns and cultural norms. Additional education and enforcement of checklist use is required to improve compliance.
Kisacik, Cigerci 2019 <i>SCIELO</i>	Use of the surgical safety checklist in the operating room: perspectives from operating room nurses	To determine the opinions of operating room nurses regarding the surgical safety checklist and to determine applications for use in operating rooms. Descriptive and cross-sectional study	Knowledge and adherence to the checklist 2C	English	The results obtained in the study show that changes focused on the development of a patient safety (PS) culture and team collaboration in the operating room must be made so that the SSCTR is applied consistently and properly.
Low <i>et al.</i> 2013 <i>SCIELO</i>	Striving for an error-free surgical patient journey through the adoption of aviation-style response and challenge flow checklists: a quality improvement project	Create a zero-error system in our pediatric outpatient surgery center, employing effective teamwork and aviation-style challenge and response “flow checklists” at key stages of the patient’s surgical journey. Key posts in the patient’s surgical journey were identified as high risk.	Knowledge and adherence to the checklist 2C	English	They created a reproducible model of care involving multiple checklists at high-risk points in the patient’s surgical journey. The model is reliable and has a high degree of team engagement. It promotes patient safety by ensuring that the patient, staff and equipment are correctly set up at each important transition stage in the surgical journey.

Moccia <i>et al.</i> 2017 PUBMED	An easy, fast and reproducible methodology to manage an unexpected increase in incident reports in operating rooms	Develop a reactive and effective methodology to manage an unexpected increase in AEs in the operating rooms (OR) of a large Academic Hospital that performs around 30,000 surgeries per year. The study includes 3 phases: 1st analysis of adverse events collected, 2nd development of 1 program to improve patient safety and 3rd application and evaluation of program effectiveness.	Importance of checklist 1C	English	The methodology of this study proved to be effective in controlling an unexpected increase in AEs and in improving healthcare professionals' adherence to correct procedures and can be translated into other patient safety settings.
Santos <i>et al.</i> 2017 BVS	Pilot test of safe surgery checklist: experience report	To report the experience of a pilot test of safe surgery checklist use. This is an action carried out by students and professors of Nursing at the Federal University of Recôncavo da Bahia and the nursing team of the Surgical Center of a teaching hospital. The development of the pilot test involved sectorial communication, the construction of a form, the integration of the instrument into practice and a team meeting.	Importance of checklist 2C	Portuguese	This experience added teaching-assistance-research and provided the development of strategies for patient safety..
O'Connor <i>et al.</i> 2013 SCIELO	Surgical checklists: the human factor	Examine attitudes towards an adaptation of the WHO surgical checklist as implemented in an Irish hospital. Using the theory of planned behavior as a framework, 14 semi-structured interviews were conduzidas com o pessoal do teatro sobre their attitudes and levels of compliance with a checklist.	Implementation and adherence to the checklist 2A	English	In order to improve the rigor with which the surgical checklist is applied, it is necessary: the involvement of all members of the theater team in the checklist process, demonstrated support for the checklist from senior staff, education and ongoing training, and barriers to checklist implementation to be addressed.
Oak <i>et al.</i> 2015 PUBMED	Surgical checklist application and its impact on patient safety in pediatric surgery	To assess the acceptance, application and adherence to the WHO Safe Surgery Checklist in the Practice of Pediatric Surgery at a university hospital. In a 2-year prospective study, the checklist was implemented for all patients undergoing surgical procedures under general anesthesia.	Importance of checklist 2C	English	The study supports the use of the checklist as an essential safety and enforcement tool. The checklist can act as a valuable stimulus to focus the team, to ensure that even the simplest things have been taken care of..

Oszvald <i>et al.</i> 2012 <i>PUBMED</i>	“Team timeout” and surgical safety - experiences in 12,390 neurosurgical patients	Improved patient safety in surgical practice with the use of a checklist. Advanced perioperative checklist includes parts for patient identification, preoperative assessments, staff timeout, postoperative treatment, and imaging controls.	Importance of checklist 2C	English	In the authors’ daily experience, the advanced perioperative checklist developed according to team time-out principles improves preoperative assessment and focus of the entire team. The focus is on the procedure, the expected difficulties of surgery, and the special needs in treating a specific patient.
Pancieri, Carvalho, Braga 2014 BVS	Application of the checklist for safe surgery: experience report	Report the experience of applying the checklist of safe surgery proposed by the WHO. Descriptive, narrative, level I research, of the experience report type with the application of the checklist safe surgery in 30 procedures anesthetic-surgical procedures performed in a teaching hospital, located in the interior of the state of São Paulo, following the three steps recommended by the WHO.	Knowledge and adherence to the checklist 4C	Portuguese	It was identified the need to include and change some checklist items and fill in items in the post-anesthetic recovery room.
Papaconstantinou <i>et al.</i> 2013 <i>PUBMED</i>	Implementation of a surgical safety checklist: impact on surgical team perspectives	The purpose of this study was to determine provider perspectives of implementing the surgical safety checklist in an effort to improve initiatives that increase the safety of surgical patients. Using a WHO-adapted surgical safety checklist was implemented in our institution.	Implementation of checklist 3B	English	Implementation of a surgical safety checklist improves the perception of surgical safety. There are barriers to implementation, but staff feedback can be used to improve the sustainability and success of patient safety initiatives.
Ribeiro <i>et al.</i> 2019 <i>SCIELO</i>	Safe surgery checklist: filler adherence, inconsistencies and challenges	Objective to identify adherence to the safe surgery checklist, from its completion, in a general referral hospital in the interior of the State of Minas Gerais, as well as to verify the factors associated with its use. This is a cross-sectional, documentary, retrospective study with a quantitative approach.	Knowledge and adherence to the checklist 2B	Portuguese	Despite the high percentage of medical records with checklist, the presence of incompleteness and inconsistency can compromise the expected results in the safety of surgical patients.

Santana <i>et al.</i> 2016 BVS	WHO surgical safety checklist avaliação de implementação in public hospitals in the Brazilian Federal District	In order to analyze the results of the implementation of the checklist in three public hospitals of the Brazilian federal network. This study is a prospective cross-sectional study comprising a pre and post-intervention assessment from the W.H.O. checklist.	Implementation of checklist 1B	English	Qualitative studies should be performed to improve understanding of reasons for variable adherence to checklist items. The findings may help guide the decision-making process of managers and healthcare staff in implementing the checklist in surgical centers in Brazil. In addition, our results can support decision-making for surgical safety recommendations and regulations by Anvisa.
Schwendimann <i>et al.</i> 2019 PUBMED	Adherence to the WHO surgical safety checklist: an observational study at a Swiss academic center	In order to assess adherence to the protocol. This mixed-method observational study was carried out in the surgical department of the University Hospital of Basel, Switzerland, from April to August 2017, with data collection from individual interviews.	Knowledge and adherence to the checklist 2C	English	The study illustrates factors that favor and hinder the consistent application of the WHO surgical safety checklist, namely individual, procedural and contextual.
Van Schoten <i>et al.</i> 2014 PUBMED	Compliance with a punishment procedure aimed at preventing wrong surgeries in hospitals: results from a national patient safety program in the Netherlands	The purpose of this study is to assess the extent to which hospitals perform the timeout procedure (TOP) before anesthesia in the operating room, whether adherence has changed over time, and to determine the factors that are associated with adherence. Evaluation study involving observations.	Knowledge and adherence to the checklist 3C	English	Large differences in TOP compliance were observed among participating hospitals, which can be attributed, at least in part, to hospital type, surgical specialty, and patient characteristics. Hospitals do not consistently comply with national guidelines to prevent wrong surgery and further implementation is needed as well as more research on non-compliance.
Vivekanantham <i>et al.</i> 2014 PUBMED	Surgical safety checklists in developing countries	Esta revisão irá considerar o papel da cirurgia no tratamento da carga geral da doença no mundo em desenvolvimento e discutir o impacto da Lista de Verificação de Segurança Cirúrgica da Organização Mundial da Saúde (OMS SSC) neste cenário.	Importance of checklist. 3C	English	The direction and future application of these initiatives are valid in many possibilities and remains an excellent opportunity to promote and reduce adverse outcomes within surgery, particularly in developmental settings.
Weingessel <i>et al.</i> 2017 PUBMED	Clinical risk management - a 3-year team timeout experience on 18,081 ophthalmic patients	The purpose of the study is to assess the benefits and demonstrate the value of team timeout. After the team timeout had been in use for 6 months, all near misses that occurred during a 34 month period were assigned to the following groups: wrong side, wrong lens, wrong patient, and miscellaneous.	Importance of checklist. 1C	English	Staff timeout proved valuable as it improved patient safety with minimal effort. Errors can occur despite various preoperative controls and can be detected by timeout the team.

Table 1. Summarization of selected articles on safe surgery checklist. Vitória (ES) - 2021.

Source: Data from the Integrative Review prepared by the author, 2021.

these, it is noted that in ten, categorized as “Importance of the checklist”, the authors emphasized the importance and need to use the list to minimize adverse events and better interaction and communication between the team that works in the Surgical Center.⁷⁻¹⁶

Research indicates that performing a safe surgery checklist is one of the most effective tools to avoid errors and adverse events in hospitals. A study published in 2009 in *The New England Journal of Medicine* showed that the mortality rate and surgical complications were reduced by more than 30% in hospitals that participated in the WHO pilot program to implement the surgical checklist. It is important to point out that, with the implementation of the checklist, the patient also benefits, with the improvement of communication and teamwork, the optimization of the work process, the improvement of quality and the reduction of costs. However, there are some barriers related to the implementation of the safe list that may compromise its effectiveness in clinical practice.¹⁶

At the same time, eight scientific articles categorized as “Knowledge and adherence to the checklist”, mention the knowledge of the multiprofessional team about the safe surgery checklist and the process of adherence to the checklist by this team.^{3-5, 18-22}

Studies show that after strategies were instituted, with extensive training of the multidisciplinary team, the checklist became mandatory, with each item being checked at the entrance of the patient into the room, before the puncture/surgical incision in the presence of the entire team. and before the patient leaves the room. And that training must occur before use in patients, because, during the first use, members of the surgical team need to be sure about the functionality of the checklist, being able to be trained individually, in a group or in a complete

surgical team.²³ The checklist must be adapted considering the characteristics and procedures performed in the unit.¹⁹

Consequently, eight scientific articles, categorized as “Implementation of the checklist”, address the difficulties and strategies for the implementation and implementation of the safe surgery checklist in the operating room.^{19, 24-30}

One of the biggest challenges for adherence to the Safe Surgery Checklist is related to professional resistance, which was observed in a study carried out in English hospitals that showed the difficulty among senior doctors.³¹ Other challenges are related to the deficit and lack of adequate materials to perform the surgeries. However, the use of the checklist helps to correct and identify the lack of adequate products, demonstrating to managers the items that must be in stock to ensure the safety of the surgical patient.^{3,32}

This fact was evidenced in the study, which describes the process of implementing the surgical safety checklist in the catheterization laboratory. In this study, the six international patient safety goals were incorporated, being adapted according to the characteristics of the procedures and the local service.¹⁹ A study also argues that it is necessary to take into account cultural differences and local practices, with regard to adapting the list to the reality of the scenario to be implemented, following the list's compliance in developed countries.¹⁵

There are also authors who believe that individual, procedural and contextual variables directly influenced the application of the safe surgery checklist, considering less collective issues.^{3,33}

CONSIDERATIONS AND IMPLICATIONS FOR PRACTICE

Based on the analyzed studies, it is concluded that the lack of adherence to the

checklist has been one of the main challenges encountered in the practice of implementing the list. Furthermore, it can be said that the lack of participation of team members in the process of preparing and adapting the list has been one of the factors that directly interferes with their adherence. The studies showed that there is a need to raise awareness among the team.

Through the bibliographic survey, it was possible to highlight the central axes of the checklist tool that appears in different contexts of publications, which allows inferring its use in different scenarios and perspectives.

It is believed to be extremely relevant to address the issue in surgical centers for

the development of conducts in line with what is recommended in care policies. The checklist must be used as an instrument to mediate the meeting with the team, we develop communication and integration of the professionals involved, contributing to a professional performance guided by the ethical and scientific principles of qualified assistance.

In this context, the nursing team plays an important role in the organization and actions that take place in the operating rooms, being present in all stages of the surgical period, being able to manage and transform the environment, making it safer through the use of tools such as the safe surgery checklist.

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