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Compliance and attitude of operating rooms staff toward WHO Surgical Safety Checklist at Hebron Hospitals

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Dedication

This thesis is dedicated to all the Nurses who are giving all of their efforts for their patients and their profession, to my parents who supported and encouraged me all the time, to my husband, my rock for his endless support throughout the years especially in times of stress, and to my kids, who are the best children a mother could hope for: happy, loving, and fun to be with.

Declaration

I certify that this thesis which is submitted for the degree of master, is the result of my own research, except where otherwise acknowledged, and that this study (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed : 

Missada K. Abu Zwayed

Date: 05/01/2022

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Abstract

Background Surgery continues to be an important treatment for a wide variety of conditions with an estimated 3129 million operations performed per year across the globe. Consequently, surgical outcomes are influenced by multiple team members, and the systems of care in which they work. As a result, various measures to improve surgical team performance and, thus, mitigate against surgical complications or adverse events have been advocated, one of them is the WHO Surgical Safety Checklist (SSC), a measure that has been implemented internationally. This checklist was launched in 2008 and has since become an integral part of the surgical process across the globe. Its aim is to make surgical procedures safer, by ensuring adherence to established practices and creating a culture of communication and teamwork that supports patient safety. The checklist is used by the entire operative team at three key points during any intervention in which harm could ensue. The aim of its implementation in Palestine was to improve safety of surgical procedures, thereby improving patient outcomes and mortality rates.

The aim of this study was to evaluate the compliance rate and attitude of operation room (OR) staff toward WHO Surgical Safety checklist in the operating rooms at Hebron Hospitals – Palestine.

Methodology: Descriptive study conducted to achieve study aims, the study applied two steps the first was observation of participants that include 80 elective surgical procedures followed by self-administrative questionnaire. Study was conducted in 3 hospitals in Hebron district – Palestine. Convenience sampling of Operation room (OR) team members including Nurses, surgeons, anesthesiologists, and anesthesia technicians (number 80) who are enrolled in fulfilling the SSC before, during and after conducting the surgical procedures and

operations in the OR. Data analyzed by a statistical software statistical package for social sciences (SPSS).

Results: The findings of this study show that the WHO SSC has a very high level of acceptance by theater staff (surgeons, anesthesiologists, and nurses). It appears that OR professionals that have previously utilized the WHO SSC are generally pleased with the tool. Only 3.8% of the respondents had an unfavorable view of the SSC. The compliance of operating room staff toward each item in the sign-in domain shows the highest applied items were in a site marked and patients confirmed information (56.2%) and (55%) respectively. However, the highest not applied items were checked if a patient was at risk for blood loss and signed the consent form (52.5%) and (51.2%) respectively. In the observation phase Overall, surgeons have checked for the correct patient position as well as the type of surgery and marked site (96.2%). However, surgeons have not checked for essential imaging (e.g. X-Ray) as well as specific equipment (e.g. microscope (66.2%) and (60%) respectively. Overall, all nurses (100%) have checked for equipment and supplies availability. Overall, all the team (100%) have checked for the completion of instrument, sponge, and needle count. Furthermore, (81.2%) of the staff have applied standards of the dressing, drainage

Conclusion: Most of the operating room staff have a positive attitude, the OR staff believed that SCC improved their communication and reduced human mistakes in the operating room, the lowest applied domain was in the sign-out. However, the highest applied domain was in the sign-in. This study suggests that the despite the perceived importance and benefits of most aspects of the SSC, the checklist in its present form is not be fully or universally embraced.

Recommendations: Attention should be paid to substantiate the importance of training, encouraging active leadership and involvement by non-nursing staff, as well as addressing time constraints in effective SSC implementation to improve outcomes

Key words: World Health organization, Checklist, Safety, Surgery, Operating Room.

العنوان: موقف وامتثال طاقم غرف العمليات اتجاه قائمة الجراحة الآمنة من منظمة الصحة العالمية في مستشفيات الخليل.

اعداد: مسعدة خضر عبد ابو زويد.

اشراف: د. مها نحال.

الملخص

تشكل العمليات الجراحية علاجا مهما في العديد من الحالات المختلفة بما نسبته 312.9 مليون عملية سنويا حول العالم، حيث تعتمد نتائج العمليات الجراحية على أعضاء الفريق الجراحي بأكمله والنظام الصحي الذين يعملون ضمنه. وعلى أثر ذلك فقد أتخذت منظمة الصحة العالمية العديد من التدابير لتحسين أداء الفريق الجراحي والتخفيف من تعقيدات العمل الجراحي ومن حدة النتائج المعاكسة، حيث تعتبر قائمة الجراحة الامنة المقترحة من منظمة الصحة العالمية مثالا على احدى الإجراءات التي تم تطبيقها عالميا. وقد أطلقت قائمة الجراحة الامنة عام 2008 وأصبحت جزءا لا يتجزأ من العمليات الجراحية حول العالم، حيث تهدف لجعل العمليات الجراحية أكثر أمنا من خلال ضمان الالتزام بالممارسات المعمول بها وخلق ثقافة التواصل والعمل الجماعي التي تدعم سلامة المرضى. يستخدم هذه القائمة فريق الجراحة بأكمله من خلال ثلاثة نقاط رئيسية خلال أي تدخل يمكن أن يترتب عليه أي ضرر ويهدف تطبيق هذا الاجراء في فلسطين لتحسين سلامة الإجراءات الجراحية، وبالتالي تحسين نتائج المرضى وتقليل معدلات الوفيات. تهدف هذه الدراسة لتقييم معدل الامتثال وموقف أعضاء فريق غرفة العمليات تجاه قائمة فحص السلامة الجراحية لمنظمة الصحة العالمية في غرف العمليات في مستشفيات الخليل -فلسطين.

منهجية البحث:

ساهمت الية البحث المختلطة التي تضمنت الدراسة الوصفية المقطعية والدراسة المبنية على المشاهدة في تحقيق الهدف من الدراسة حيث أجريت الدراسة في ثلاثة مستشفيات في منطقة الخليل-فلسطين.

أجريت الدراسة من خلال أخذ العينات الملائمة لجميع أعضاء فريق غرفة العمليات بما فيهم الممرضين والجراحين واطباء التخدير وفنيي التخدير المسجلين في استيفاء قائمة السلامة الجراحية قبل وأثناء وبعد اجراء العمليات والتدابير الجراحية في غرفة العمليات. استخدم الباحث المراقبة المباشرة تبعها استبيان أدير ذاتيا وتم تحليل البيانات بواسطة حزمة برمجية إحصائية مختصة بالعلوم الاجتماعية (SPSS).

النتائج:

أظهرت الدراسة أن هناك قبول عال لقائمة الجراحة الامنة التي أصدرتها منظمة الصحة العالمية من قبل الكادر بأكمله (الجراحين وأطباء التخدير والممرضين). فاتضح أن المختصين العاملين في غرفة العمليات راضين جدا عن هذا الاجراء.

هناك فقط 5% من المستجيبين غير راضين عنه، ومن الواضح أن امتثال فريق غرفة العمليات اتجاه عملية تسجيل الدخول من أكثر البنود التي تم تطبيقها توثيق مكان الاجراء الجراحي والتأكيد على معلومات المرضى بما نسبته (56.2%) و بما نسبته (55%) على التوالي.

وتم أيضا فحص العناصر الأعلى التي لم يتم تطبيقها إذا كان المريض معرضًا لخطر فقدان الدم ووقع على نموذج الموافقة (52.5٪) و(51.2٪) على التوالي. في مرحلة المراقبة بشكل عام، قام الجراح بفحص الوضع الصحيح للمريض وكذلك نوع الجراحة ووضع علامة (96.2٪) ومع ذلك، لم يتحقق الجراح من التصوير الأساسي (على سبيل المثال، الأشعة السينية) وكذلك المعدات المحددة (مثل المجهر (66.2٪) و (60٪) على التوالي. قام جميع الممرضين والممرضات (100٪) بالتحقق من توفر المعدات والإمدادات وتأكد كامل الفريق (100٪) من اكتمال عدد الأدوات والشاش الجراحي والإبر وظهر أن هناك ما يقارب (81.2٪) من الموظفين يتأكدون من الغيار الجراحي بعد العملية.

الخلاصة:

تشير الدراسة الى أن الأهمية والمزايا الكثيرة لمعظم جوانب قائمة الجراحة الامنة في شكلها الحالي ليست كافية لوحدها لطالما لم يتم تبنيها بشكل كامل أو عالمي ويجب يجب التركيز على اثبات أهمية التدريب، وتشجيع على المشاركة فيها من قبل الموظفين غير الممرضين مثل الاطباء الجراحين واخصائيو التخدير، وكذلك معالجة قيود الوقت في التنفيذ الفعال للتعاون لتحسين النتائج. لذا يجب تعزيز المزيد من البحث في شكل مراجعة وطنية لبروتوكولات قائمة السلامة لتحديد الجوانب من قائمة السلامة التي تحتاج إلى تعديل محلي لتحسين كل من سلامة غرفة العمليات والكفاءة. كان معدل الامتثال أفضل في جزء الملاحظة منه في جزء الإدارة الذاتية، وقد يرجع ذلك إلى اعتقاد بعض المشاركين أنهم يتمتعون بمستوى منخفض من الامتثال ولكن في الواقع يفرض النظام عليهم عن غير قصد أن يكونوا أكثر امتثالًا لقائمة الجراحة الامنة لمنظمة الصحة العالمية، ولأن موظفو غرفة العمليات الخاضعون للمراقبة ليسوا نفس الموظفين الذين أكملوا الاستبيان، حيث تم إجراؤه لطاقم الجراحة بأكمله كعمل جماعي وليس فردي.

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List of Abbreviation

Abbreviation	Explanation
LMICs	low- and middle-income countries
OR	Operation Room
SAQ	Surgical Attitudes Questionnaire
SPSS	Statistical Package for the Social Sciences
SSC	Surgical Safety Checklist
SSIs	Surgical Site Infections
WHO	World Health Organization

Chapter one: The Introduction

1.1 Background

Surgeons all across the world agree that surgical treatment is a critical component of patient care (WHO, 2009). The majority of patients will almost certainly need an invasive operation over their lifetime as the prevalence of severe injuries, cancer, and cardiovascular disease rises (Haynes et al., 2009). According to Vijayasekar and Steele (2009), a total of 233 million surgical procedures are carried out every year. Moreover, about 313 million procedures are estimated to be performed worldwide each year (Haynes et al. 2009).

Surgical care is an important part of healthcare since it may be used to diagnose and treat a wide range of chronic and acute illnesses. Furthermore, surgical services contribute to overall social and economic provision and improve health outcomes globally (Meara et al., 2015). Despite this, it has been reported that approximately 7 million people will experience serious side effects, with one million dying during or shortly after surgery (Weiser et al., 2018). Surgical adverse events were considered the main cause of injury or death and a source of potentially avoidable health care costs (Suliburk et al., 2019). Long hospital stays, high postoperative expenditures, surgical morbidity, and death were all linked to postoperative infections, particularly at the surgical site of infections (SSIs) (Jindal & Swarnkar, 2020). straightforward care in the postoperative period might cost around US $1,733, whereas treatment for patients with severe sepsis was found to cost around US $5,155 on average (Ploegmakers et al., 2017). Even so, the overall cost of SSIs can vary significantly depending on the kind of microbe and the severity of infection, which can impact the hospital stay time

and the degree of treatment received. It is also necessary to incorporate the social costs associated with the productivity and function lost by patients (Perencevich, et al., 2013).

The operating room (OR) is set up as a specialized sector where healthcare workers operate side by side with equipment to keep patients healthy and safe or to save their lives (Styer, et al., 2011). Healthcare professionals' attitudes and the ability to control safety can have a significant impact on a patient's safety (WHO, 2014; Alkorashy, 2013). Ten million patients all over the world are thought to be unnecessarily harmed each year. Most of them had been harmed or died as a result of inappropriate medical or surgical procedures (WHO, 2014). However, patient safety is seen as one of the most important columns in providing quality healthcare and can be closely monitored by healthcare institutions. A growing concern about improving patient safety includes monitoring and ensuring that healthcare providers make no mistakes. Therefore, healthcare institutions must put more effort into building and maintaining a culture of patient safety as well as reducing the dangers that patients might face (Kim, 2016). According to Alkorashy (2013), a culture of patient safety is made up of interactions between values, attitudes, skills, and behaviors that emphasize the dedication of healthcare workers to the management of safety measures in their work place. Managers in various healthcare facilities advocate for the quality of patient safety by following certain measures that are logical and successful in preventing or decreasing patient harm (Al Dhabbari et al., 2015; WHO, 2014). The usage of the surgical safety checklist (SSC) for patients in surgical settings is one of these standard measures.

Patient safety is defined by the WHO as the "absence of preventable injury to a patient during the course of health care and a risk of needless harm connected with health care that is kept to an acceptable level." According to the WHO report in 2019, an acceptable minimum,

referred to the collective ideas of current knowledge, available resources, and the environment in which care was administered, was weighed against the risk of not giving or giving a well-known treatment (WHO, 2019).

Patient safety was also discussed by the Healthcare Improvement Institute, which used the term "field of expertise" to alternate patient safety. The field of expertise was related to system thinking, processes, procedures, and settings that enable the safest conditions and avoid harm. This shows a broader view of patient safety, looking at both what can go right and what may go wrong, and emphasizes a system's potential to succeed in a variety of situations (Institute for Healthcare Improvement, 2019).

Surgical safety checklists were employed as a communication tool for OR specialists such as surgeons and anesthesiologists, to help them discuss crucial facts about each surgical case. The surgical checklist resembles the pre-flight checklist used by an airline pilot in many respects. This check list is done in the last minutes before surgery to ensure that everyone understands all the medical facts they need to know before the operation, as well as if all equipment is present and operating well, and if the surgical team is going through the assigned schedule (WHO, 2013).

It's a tool designed to encourage surgical collaboration for the sake of the patient's safety. The checklist aids in communication and helps keep important tasks fresh in people's minds (Ahlberg et al., 2009). In the initial half of the time out, all members of the squad introduce themselves by name and position (Nilson et al. 2010).

The World Health Organization's SSC is a component of the Safe Surgery Saves Lives challenge, which aims to improve surgical safety by ensuring that verified standards are

followed (WHO Patient Safety). The SSCs include a 19-point checklist that covers the majority of the operation's safety-related components. There are now almost 4,000 hospitals registered worldwide using it, with approximately 1,800 of those using it actively (Ramsay et al., 2019). Many studies have shown that using the SSC reduces complications and mortality in a variety of surgical settings and specialties (Bergs et al. 2014, Haugen et al. 2015, Haynes et al. 2009, Jammer et al. 2015).

Three stages of an operation are identified by the checklist. Each phase corresponds to a certain time in the usual flow of activity. These phases are: sign-in (before induction of anesthesia, while the patient is still conscious); time out ("Anesthesia is administered before the incision of the skin is made")); and sign out ("the patient is ready to be discharged"). To ensure that the surgical team has performed all of the above duties, a checklist coordinator must verify each phase before the operation may begin (WHO, 2017).

Humanist discourse supports human life protection in all areas of daily life. As a result, stakeholders and policymakers are anticipated to be in a position to take the necessary actions to protect the safety of patients, which will benefit patients, healthcare providers, and the entire organization (Souza et al., 2011).

It is recommended that managers conduct regular evaluations of the OR safety procedures to identify strengths and weaknesses in their health care system and to avoid errors from occurring (Wachter, 2013). As a result, some adjustments might be made to ensure that patients receive high-quality care without any risk of harm. With appropriate use of SSC, communication between health care providers and patients might be improved, which could lead to a reduction in post-operative problems for patients (Haynes et al., 2012; Lingard, 2008).

1.2 Statement of problem

Previous studies stated that research on SSC is still lacking in low- and middle-income countries compared to the large number of studies conducted in high-income countries that made it possible to construct a robust body of evidence in relation to use of the tool in practice. Although some of this knowledge can be transferred and applied in low- and middle-income countries, it still need follow up for specific issues regarding the implementation and use of the checklist in the context of these countries (Memtsoudis, et al., 2015). Therefore, this study is important to show the attitudes and compliance rate of the OR team toward the SSC that is currently used in some hospitals in Palestine.

The WHO's recent reports stated that two thirds of the world's population do not have access to safe and affordable surgical procedures (WHO, 2014). According to new research in the Lancet, millions of individuals are dying from curable surgical operations that may have saved their lives (Memtsoudis, et al., 2015). Moreover, countries might spend $100 per person on health care, the majority of which is spent on major surgical operations in a population of 100,000 people, resulting in millions of surgical procedures performed each year (Haynes et al., 2009). To improve the quality of these surgical procedures and to reduce unintended errors, the implementation of surgical safety checklists (SSC) and compliance in an appropriate manner were emphasized by the WHO (WHO, 2008).

A surgical safety checklist (SSC) is a visual tool that informs users of crucial problems before and after an operation. Poor compliance impairs patient safety in the peri-operative phase and leads to adverse outcomes and litigation (O'Conner et al., 2013). The SSC provided by WHO is a systematic method provided to enhance low risk and prevent injury to the peri-

operative patient. However, individuals who work as peri-operative staff and who are hesitant to modify their attitude towards the SSC may hinder the efficacy of this suggested tool. Furthermore, it was noted that some nurses, surgeons, and anesthetists are not excited about the deployment of the SSC in the OR and consider the usage of the SSC time-consuming as many of the SSC items are perceived to be repeated by them. They reported that the usage of the SSC adds to the overall burden and they feel it does not add any value to the patient's safety (Haynes, et al., 2017).

The World Health Organization's 19-item safe surgery checklist aims to reduce surgical errors and adverse events while also increasing teamwork and communication in surgery and demonstrating significant reductions in morbidity and mortality worldwide (Weiser et al., 2018). The top priority in a tertiary care facility is the safety of its patients, and all of its surgical patients can rest assured that they will be safe throughout their procedure. In 2016, many tertiary care hospitals implemented the WHO surgical safety checklist, and the checklist is now being used in all operating rooms before beginning a surgical procedure.

The surgical checklist brings to mind the pre-flight checklist used by airline pilots, as do other checklists. The final check before surgery is to ensure that everyone knows the important medical information they need about the patient and that all equipment is available and in working order. Before beginning surgery, the surgical team must complete three critical phases: Sign-In, Time-Out Phase, and Sign-Out Phase, in which the safety components of each phase are reviewed by the entire team. During each phase, compliance with variables will be examined (debriefing phase). Each step of the SSC suggested by WHO comprises crucial components to keep patients safe and prevent damage to them. Before beginning the surgery, patients can be prepared with briefings and debriefings at each stage. However, a lack

of communication between surgical team members and an unwilling OR staff is a major contributing factor to poor checklist compliance. Noncompliance with SSC may put patients' health and safety at risk during surgery, increasing the likelihood of complications and grievances Particularly when there is a large number of surgeries that done daily. In Palestine, the number of operations that is done annually is very large, it was reported that 53,530 surgical operations were performed in MOH hospitals in West Bank in 2020 (MOH, 2020), but it is not well known whether the surgical staff are implementing the SSC in accurate way and whether their compliance to the check list is confirmed because studies in such topics are lacking (Melekie and Getahun, 2015). Therefore, the primary focus of this study will be on the implementation of the SSC suggested by the WHO, how checklists are actually used, and how items are completed to ensure the utilization and compliance rate of the SSC.

The World Health Organization's Patient Safety Program "Safe Surgery Saves Lives" established a surgical safety checklist to improve surgical care safety worldwide. (The American College of Surgeons' new Surgical Safety Checklist project is discussed in the forum.). In a multi-hospital research study comprising hospitals from all over the world, its use increased standard of care compliance by 65% and reduced post-operative mortality by over 50%. (WHO, 2008).

1.3 Significance of study

The OR staff play a crucial role in the operation rooms. They are the front-line caregivers and they hold a critical responsibility in addressing and identifying the patient’s needs. Operating rooms are a challenging area where human errors can cause a great harm to the patients and to the hospital. Efforts to achieve better surgical performance, reduce errors and increase patient

satisfaction were emphasized and the compliance with SSC was considered as important challenge (WHO,2017)

However, compliance with SSC that promotes safety of patients undergoing surgery is a difficult task, therefore understanding the attitudes of the OR staff toward the SSC and observing their compliance rate with the SSC will allow the hospitals' administrations to recognize the strengths and weaknesses of the OR staff toward the complete implementation of the SSC. Findings of this study might help healthcare sectors and administration of hospitals to increase compliance, increase communications, teamwork, and promote a culture of safety. In addition, this study will serve as a database for future Palestinian research.

1.4 Aim of the study:

To evaluate the compliance rate and attitude of operation room (OR) staff toward WHO Surgical Safety check list in operating rooms at Hebron Hospitals – Palestine.

1.4.1 Objectives of the study:

1. To assess the level of compliance toward SSC among OR staff in the operating rooms at Hebron hospitals.
2. To assess the attitudes of OR staff toward SSC in the operating room at Hebron hospitals.
3. To examine whether the differences in socio-demographic characteristics of OR team members as (age, gender, experience….) will reflect their attitudes and compliance rate toward SSC.

1.5 Research Questions:

- What is the compliance rate of SSC among OR team members in the operating rooms at Hebron hospitals?
- What are the attitudes of OR staff members toward SSC in the operating rooms at Hebron hospitals?
- Is there a relationship between the socio-demographic characteristics of the OR members and their attitudes toward the SSC?

Chapter Two: Literature review

2.1 Introduction

A literature search was conducted on electronic databases such PubMed, Google Scholar. This chapter includes safety cultures, teamwork, SSC, teamwork, communication, compliance, efficacy, barriers, and previous study about compliance and attitude toward SSC.

It was announced by the WHO in 2016 that more than 1,790 organizations throughout the world have implemented the SSC (Woodman, 2016). The WHO SSC has been the subject of several studies over the past decade that have proven its usefulness in decreasing surgical mistakes. In contrast, the WHO has identified various hurdles to effective implementation, which is often described as a difficult procedure. With the WHO SSC's implementation approach demands aggressive leadership, intentional enrolment; extensive discussion; training; interdisciplinary communication; coaching; continual feedback & audits, the WHO SSC will be successful. Patients' safety is dependent on a variety of factors. These qualities may be broken down into three categories: incorrect site surgery, incorrect patient surgery, and incorrect method. Forcing a surgical treatment to be performed in the wrong location would be referred to as "wrong site surgery" (side or site). Incorrect-Patient Surgery occurs when a surgical operation is performed on the wrong person. Wrong Procedure occurs when a patient is given a procedure that is not on the patient's schedule. The WHO SSC's goals stem from situations that jeopardize patient safety. A patient's safety and potential adverse effects are jeopardized if the WHO SSC stages are not followed precisely. It is said to be the most important tool in the operating room since it helps the OR team members deal with difficult situations. The OR team member is aided in recalling crucial information during surgery and

has the option to revisit events and improve work performance. There are certain difficulties in really implementing this method in practice.

What is the WHO Surgical Safety Checklist: The Union for Patient Safety was established by the WHO members in 2004 to promote patient safety and the quality of the conduct of therapy. The Safe Surgery aimed to minimize surgical fatalities and complications by enhancing surgical safety through the use of SSC (WHO,2004). The SSC consists of nineteen points and was broken down into three parts: Sign in, Time out, and sign out. All these parts must be completed before allowing patients to leave the operational area.

The checklist's goal is to improve collaboration and communication while reducing mistakes and negative outcomes. The items on the checklist cover the majority of the most critical processes and elements that influence the most successful outcome of the surgery and the recovery period that follows. Patients' identities and surgical site marks are confirmed during the Sign in process. Wrong-site surgery is uncommon, but it can have serious consequences for both the patient and the surgeon, and it is widely believed to be avoidable (Devine et al. 2010, Hanchanale et al. 2014).

2.2 Safety Culture

Safety culture relates to the attitude and behavior of workers in the workplace, including how they think and act (Haugen et al., 2013). SCC and briefing and debriefing sessions have had a significant impact on military safety practices, according to Mahajan (2008). Pre-operatively, the SSC informed the team of important patient information in order to avoid intraoperative mistakes. It was acknowledged that the SSC is a kind of pre-flight check for the surgical team, like a pilot's checklist.

For example, according to Borchand, et al. (2012), the introduction of team briefing and an SSC requires significant cultural adjustments for surgeons, anesthesiologists, and nursing personnel to conduct their tasks in the manner they now do. In order to increase patient safety, surgical team members must transform their culture from a completely hierarchical surgeon-led system.

Implementing SSCs and team briefings in the operating room is a significant step toward creating a culture of safety (Allard, et al., 2011). Some of the advantages of a strong safety culture include the ability to detect system failures, such as the absence of a patient's identification band, incomplete permission paperwork, and a shortage of equipment before a patient enters the operating room (Allard, et al., 2011).

Because it is vital to all medical activities and acts, a culture of safety for patients should be fostered (Haugen, et al., 2013). Culture of safety was credited with a decrease in morbidity and death rates following implementation of WHO SSC" (Haugen, et al., 2013).

A study of operating room staff safety perceptions at a Norwegian university hospital examined the impact of the SSC on safety culture. Pre- and post-intervention questionnaires were used in the study design, which was a prospective controlled intervention study (Haugen, et al., 2013). Surgeons, anaesthetists, operating room nurses, nurse anaesthetists, and auxiliary staff from two separate hospitals were the primary focus of the study. Groups from the central hospital and the outlying hospitals make up each group. The findings of this study show that the compliance of the WHO SCC in the operating room improved staff perceptions of patient safety (Haugen, et al., 2013). In general, the involvement group scored higher on several fundamental cultural elements, however even taking this into consideration, good results were discovered on two areas of patient safety to begin, there was a noticeable decline in

unfavorable occurrences. Second, with the introduction of the new safety practices, such as increased patient safety awareness and the ability to anticipate mistakes in the operating room, there were noticeable improvements. As stated by Haugen, et al. (2013), a possible explanation for the drop in reported events is the early detection of near misses that averted mistakes following the implementation of the WHO SSC. It was found that this study had two flaws. In the first place, the initial response rate was 10% greater than the subsequent post-intervention response rate, which might have impacted the final sample size calculation. A third factor to consider is that participants and non-participants had varying educational backgrounds. As a final point, the utilization of a controlled technique and individual safety evaluations is a major strength of this study (Haugen, et al., 2013).

Employees' views of safety are linked with teamwork and effective communication. According to Lyons & Popejoy (2014) and Patel, et al (2014), the majority of studies found an improvement in staff perceptions of patient safety through the implementation of the checklist, which is consistent with the documented reductions in patient morbidity and mortality. However, there is still a skepticism about the checklist's impact on safety and its compliance to all theaters among certain staff members (Aveling, et al., 2013, Russ, et al., 2015). The checklist appears to be unnecessary for some employees, who believe that key events will never happen to them. In this case, there is an underlying problem with safety culture and a failure to recognize that without appropriate systems in place, adverse events may and will occur. In the included studies, surgeons' poor attitudes regarding safety were frequently associated to their behavior.

2.3 Team work

Communication, team dynamics, work culture, employee attitudes, and employee perceptions all play a role in teamwork. As a consequence of this, and also because the checklist has an influence on components of collaboration, but it also impacts the usage of the checklist and the amount to which other impacts are detected, the examination of this subject was difficult. It has been shown that both communication and teamwork have improved (O'Connor, et al., 2013, Russ, et al., 2013), and that this progress has been both noticed and appreciated (Lynn and Popejoy 2014). Checklists can serve as reminders to have important conversations, which improves cooperation by bringing everyone up to speed on the patient and their care, which is exactly what the checklist was designed to do (Helliwell, et al., 2017, Rydenfält & Aldrich 2013).

Perioperative surgical care is a team effort, where communication, team cohesiveness, and coordination of care are essential to patient safety (Vetter & Kain, 2017). Aims of the OR team, according to Watson (2009), include improving patient care and enhancing patient safety and practical standards through teamwork.

Perioperative collaboration is critical to patient safety, according to a number of studies. SSC implementation can't be done by a single OR staff member since team performance is critical to providing great care (Haugen, et al., 2013). Ramsay, et al., (2019) has stated that surgical treatment should be taken as a team approach and that patient safety should be promoted by the entire surgical team during pre- and post-operative care. As a result of the SSC, surgical teams are prepared and competent, which in turn fosters a greater sense of responsibility and respect for the duties of team members.

Despite the fact that most studies found favorable results following the adoption of the SSC, certain healthcare organizations were unable to reap the benefits. It wasn't stated that improved perioperative outcomes occurred when operating room staff just ticked boxes and filled out paperwork for auditing purposes (Vijayasekar & Steele, 2009). In addition, the inappropriate use of the SSC may lead to an increase in operating time, which increases the risk of surgical complications (Panesar, Cleary & Sheikh, 2009). It is recommended by WHO (2009) that surgeons do a certain set of assessments in order for SSC to be useful to the patient. In order to employ the SSC effectively, a multi-team strategy is needed to guarantee that the patient's passage through the operating room is as smooth as possible. The SSC's implementation will be a success only if it is implemented as a team effort. Furthermore, Sparkes and Rylah (2010) believe that successful solutions to reduce surgical risks need the cooperation of a diverse team.

However, the SSC's implementation has been poor. Poor management engagement, lack of cooperation, lack of training and feedback were cited as the key contributors to this sluggish adoption by Perry and Kelly in 2014. This is similar to the findings of a research by Vijayasekar and Steel (2009), which found that teams who have not been taught on how to utilize the SSC may not be interested in implementing it. Consequently, they may see the SSC as just another tick-box activity, which might have an influence on its success. Furthermore, O'Conner et al. (2013) found that the implementation phase's laxity might lead to a patient's false sense of security and jeopardize their safety.

Prior to using the SSC, researchers in Spain recognized the necessity of a well-planned training session (Bliss, et al., 2012). It was conducted at a tertiary hospital, analyzed patient

outcomes for 30 days following the introduction of the SSC, and found a good decrease in 30-day morbidity.

It was mentioned by Korkiakangas, (2017) and Haynes, et al. (2009) that the SSC may be used to increase team communication throughout implementation stages by following the WHO guidelines.

Before anesthesia is administered, the surgical team verifies the following facts:

- The patient has verified his or her identity, surgical site, procedure, and consent
- The pulse oximeter is on the patient and functioning
- Team members confirm the allergy status of the patient
- Team members confirm with the anesthetist if he or she anticipates any anaesthesia risk
- Team members confirm with surgeon if he or she anticipates any increased risk blood loss

During timeout, before skin incision, all surgical team members verbally confirm the following elements that:

- All team members have been introduced by name and role
- The patient's identity, surgical site and procedure are identified
- The anticipated critical events are reviewed
- The surgeon reports critical and unanticipated actions, surgical time, and anticipated blood loss
- The anesthetist reports specific concerns related to the patient
- The scrub and circulating nurse report the sterility and availability of equipment

- The prophylactic antibiotic be given 60 minutes before incision
- X-ray images are available

Sign out is performed before the patient leaves the operating room with the following procedures:

- The scrub nurse discusses and reviews the following items with the surgeon
- Operative procedure performed
- Needle, sponge, instruments counts are correct
- Specimen is labelled correctly
- Equipment concerns or malfunction during the procedure
- The surgeon and anesthesiologist confirm the post-operative care of the patient
- Reviewing of the above by the scrub nurse must be clear and audible

2.4 Communication

As communication failures were identified as the primary cause of medical errors, the issue of surgical team communication became a serious problem in healthcare settings (Kleiner, et al., 2014). The Joint Commission on Accreditation of Healthcare Organizations estimates that from 1995 to 2005, about 66% of all sentinel incidents were the consequence of poor communication. One of the top three causes of registered sentinel incidents between 2010 and 2013 was communication breakdowns (Hudson, 2016). As Einav et al. (2010) have shown, poor communication among healthcare practitioners can lead to information being misconstrued, which can have an adverse effect on the quality of treatment provided to

patients. As Rayner (2009) noted, patient care and safety are not just dependent on the substance of the communication, but rather on the method of communication.

Communication and information transfer are critical to patient safety, according to WHO (2009). (Jones, 2011). To be effective, communication must be clear and concise. This study was conducted by Einav et al. (2010) Patient care during the peri-operative period is complicated enough that it requires the participation of a multidisciplinary team. For the OR to be functional, it is critical that everyone communicate and work together as a team. Poor or non-existent communication between health care professionals might result in negative outcomes.

Most adverse occurrences are not connected to clinical performance, but rather communication breakdowns (Bostrom, et al., 2016). As a result, improving OR communication is critical to lowering the incidence of surgical mistakes and enhancing patient safety (Kleiner, et al., 2014). Cooperation, information exchange, and organized planning among healthcare professionals, as well as sound judgment and foresight, will increase OR competency (Einav, et al., 2010).

2.5 Briefing and debriefings

An operating room briefing tool was developed by Nundy, et al. (2008) in an attempt to improve communication among surgical team members. Surgery begins with a pre-procedure meeting, which serves as a way to communicate expectations and avoid any unforeseen events. On completion of the operation, the surgical team conducts a debriefing before the patient is released from the operating room to discuss the team's performance and any unexpected events that occurred during the procedure.

Instead, then replacing the SSC, briefings and debriefings are meant to enhance each other. Improved communication through the use of the briefing tool reduces OR delays (Jones, 2011), whereas the SSC encourages cooperation, facilitates communication, and reduces adverse occurrences in operating rooms (Carney, et al., 2010).

Use of SSC with briefings enhanced communication among surgical team members, eliminated OR delays, and reduced adverse events during surgery, Carney, et al. (2010) concluded. Using the SSC and team briefings, Lingard, et al. (2012) found that communication mistakes decreased. However, surgeons and nurses in the perioperative environment differ in their concept of collaboration and execution of briefings and debriefings (Carney, et al., 2010).

2.6 Compliance with the WHO SSC

In order to appropriately interpret any observed effects, data on compliance is critical, since studies with high compliance are more likely to show a real benefit as the checklist is fully executed, whereas affects found in trials with poor compliance may actually be the product of other causes. In one research alone, compliance rates ranged from zero to 100 percent (Fourcade, et al 2012). Due to the differing definitions of what constitutes compliance, this resulted in a lot of confusion. It is interesting to note that Pickering, et al., (2013) found that administrative audits conducted at the same institutions while their study was ongoing reported much higher levels of compliance of more than 95% in all cases, compared to their findings of 38.5 percent, which is similar to the findings made by Levy, et al (2013). Again, we see different levels of compliance, but also different methods in which it's being defined and assessed, even within a same organization. Increasingly, there is a fear that the checklist may just become a way to cross things off a list rather than serve its intended function.

Introducing complacency and a false sense of security might potentially put patient safety at risk (Sparks, et al 2013, Russ, et al 2015).

There has been a greater emphasis on surgical mortality (Alnaib, et al., 2012) and the SSC's favorable results (Perry & Kelly, 2014) in recent years, and writers have noted successes that have resulted in lower peri-operative mortality and morbidity rates in many settings (Haynes et al., 2011). However, the medical community has been chastised for being slow to adopt the WHO SSC internationally, even if the data could not point to a single explanation for the delay (Alnaib, et al., 2012).

Worldwide, the WHO SSC's approval has been widely acknowledged. The WHO SSC's acceptance across the world was widely applauded. Negative remarks, missing team members, hurried completion, and discomfort during implementation are a few of the possible causes of limited compliance with the SSC (Vats, et al., 2010). There is little data to demonstrate that the age and seniority of the surgeon and anesthesiologist have an impact on patient compliance (Kieffer et al., 2013). Due to the aforementioned literature, it is possible that OR teams are not adhering to the checklist's recommendations. There is no insight into how the SSC is really implemented from compliance outcomes and little correlation with observational data (Perry & Kelly, 2014).

Health care personnel were given a paper by the WHO to underline how important it is for them to recognize and adapt to the SSC in several aspects of their job, including as education and leadership development (Perry & Kelly, 2014). Adverse occurrences can be reduced by following the WHO SSC's five measures (Kieffer et al., 2013). It was found that the SCC's success may be attributed to the leadership's participation, team involvement, feedbacks, and on-the-spot instruction (Perry & Kelly, 2014).

The reported variation in compliance and the possibility for fake compliance raise issues for the assessment of the magnitude and reliability of any impact identified in any research in the context of this literature review. Similarly, Tang et al. (2014) noticed this issue in their review research When evaluating results from other research, it is prudent to assume the same possible variation and inconsistency when they report high levels of compliance themselves, given the variance seen in the other studies and the consequent wisdom in assuming the same variance and inconsistency.

2.7 Efficiency

It is possible that the use of the checklist improves efficiency in the theater, but the staff is unaware of this. According to the limited information available, the implementation of a checklist does not cause delays, but rather, it positively decreases operating time (Papaconstantinou, et al., 2013). Although the checklist is not able to prevent every conceivable time delay, it is easy to understand how this decrease might be achieved. Having equipment readily available in the theater to deal with anticipated incidents, rather than having to acquire it later when an event occurs and incurring a delay, means that staff are more likely to be better prepared for each situation. Items like as site marking, patient identification, allergic reactions and blood loss assist to ensure that patients and personnel are properly prepared for surgery and thereby prevent delays later.

2.8 Barriers

The initial phase of health care facilities to apply the SSC ran into many of the difficulties. There are several obstacles that low and middle-income hospitals confront owing

to a lack of resources, as well as patient safety structures. The WHO is aware of these issues and is taking action (Perry & Kelly, 2014). The new version of the SSC has been implemented by about 4000 hospitals throughout the world, despite the fact that it is acknowledged to be a major difficulty in some nations and healthcare organizations.

The SCC has been shown to have a number of implementation issues in the past. These restrictions were discovered in an observational research at Children's Memorial Hermann Hospital. These obstacles included a lack of awareness of crucial points, the timing of execution, and uncertainty regarding the responsibilities and names of the team members involved in the process. Additionally, they argued that a lack of knowledge that led to a failed implementation process may have contributed to the hurdles (Levy, et al., 2012). The study had a few flaws that needed to be addressed. Firstly, the duties of the observers were not clearly defined, and secondly, outcome measures to correlate the SSC compliance were lacking from the research (Levy, et al., 2012).

According to Mahajan (2011), there are a number of obstacles and hurdles to implementing the SCC: Awkwardness may result from a lack of familiarity and face-to-face introductions of the team members. In addition, it provides a forum for team members to discuss anticipated issues and equipment needs during operation.

When the SSC is led by a nurse rather than a surgeon, hierarchy is commonplace in the operating room. The SSC is more successful when surgeons and anaesthetists assist each other and nurses are confident in their abilities.

When it comes to implementing SSC, there may be logistical and timing issues, as surgeons may not be present at all times. The surgeon's absence might be cited for a variety of reasons, including seeing other patients or drafting operating notes.

Oral and maxillofacial surgeons in France considered employing the SSC to be time-consuming and didn't see any significant benefits. Before the patient entered the operating room, the surgeon, anesthesiologist, and nurses may have performed redundant safety checks. Although these inspections are done on an individual basis, the SSC requires all team members to be present for the SSC's key procedures to be carried out.

Institutions are encouraged to embrace the WHO SSC, but to tailor it to their own requirements. However, the SCC's essential components must be preserved. In a study of eighteen cancer centers in France that implemented the SSC, the most common barrier was duplication with existing procedures that already covered the phases in the SSC. This means that the customized SSC must be compared to the WHO SSC in order to eliminate duplication.

At the Sussex and Queen University Alexandria Hospital in Hampshire, an audit cycle study was carried out as part of another study (Kieffer, et al., 2012). Each area's trauma and orthopaedical trainees gathered data on 30 orthopedic procedures they helped in the first audit cycle. It was not made clear to the operating room staff that their practice was being audited, and doctors in training were not allowed to begin the WHO SSC. The WHO SSC compliance level was lower than expected at one of the audited locations. The team was concerned that the WHO SSC had not been taken up by the personnel. As a solution, they concluded that team briefings needed to be more thorough. As a result, they designated the theater coordinator as the only point of contact for the project. Once an audit was conducted, the

research found that there was a considerable disparity in performance. This study found that when at least one team member is designated to provide team briefings, there was a substantial increase in adherence to the WHO SCC (Kieffer, et al., 2013).

Misuse of the SSC and incorrect execution thereof, may be detrimental to patient safety and actually compromise team work in the operating room. Thus, if not addressed cautiously, interdisciplinary dynamics may cause tension amongst surgical team members.

2.9 Theoretical perspectives

The "Safety-I" and "Safety-II" concepts may be used to better understand and manage patient safety in the healthcare environment.

In the "Safety-I" approach, it is assumed that problems arise due to individual component failures or malfunctions. Technology, processes, human employees and the organizations in which they are enmeshed are all examples of these components, whether operating alone or as part of a team, are therefore considered as the most changeable of these components in a hospital context. Analyzing accidents to find probable causes and contributing variables, and assessing risk to calculate their likelihood, is the primary goal of "Safety-I." Responding when something happens or is classified as an unacceptable risk, generally by eliminating the causes or improving the barriers, or both, is a key idea in safety management (Hollnagel, 2014).

As a result of the "Safety-II" approach, the idea of resilience is included. "The innate capacity of a system to modify its functioning before to, during, or following changes and disturbances, so that it can continue needed operations under both predicted and unforeseen

situations" is the term used to describe this (p. 275) The next year, (Hollnage, 2014). In terms of patient safety, this refers to the capacity of healthcare systems to identify and prevent mishaps and near-misses from developing into adverse events and problems.

Using the "Safety-I" approach to patient safety in surgery involves assessments of injury and system failures, and is primarily retrospective in nature. Measurement and monitoring of safety-II resilience, on the other hand, might be more complex. Perioperative care failures may be well-known and even expected. As a result, the safety of the operating room is aided by operating room staff being aware of and responding quickly to these disturbances. But when they succeed or the system compensates in other ways, their activities become invisible. Then, as the saying goes, "safety is a dynamic non-event" (Vincent and Carthey, 2013).

2.10 Previous studies

Wangoo, et al., (2018) conducted study aimed to compare staff attitudes about reported benefits of and potential barriers to the SSC against observed compliance in 3 multispecialty North Queensland hospitals. It was determined by a staff poll that included a modified version of the Surgical Attitudes Questionnaire (SAQ) for the OR. For SSC compliance and accuracy, the Townsville Hospital in Queensland, Australia, conducted a concurrent observational study of 165 operations. There was a total of 205 replies, according to the survey data (response rate, 70 percent). Respondents from private hospital workers comprised 29.6 percent of the total. An average of 26% of the Sign Outs were either unsatisfactorily begun (26 percent) or verbally completed (18 percent) according to survey responses and observations (P,0.05). Staff introduction was inadequately done and reported as insignificant

(P 14 0.005), according to the results. The largest obstacle to completing the SSC was seen by nurses to be the lack of engagement from other staff members. Compared to nurses, surgeons and anesthesiologists place a lower priority on using a checklist (P, 0.05). In North Queensland hospitals, the SSC in its current version is not widely accepted. To increase compliance, it is recommended to make changes to the checklist and its implementation procedures to better reflect local cultural and social contexts.

Norton, et al., (2018) conducted study aimed to investigate how mandated use of a surgical checklist impacts its operating room clinicians' attitudes about and perceptions of operating room safety, efficiency, teamwork, and prevention of medical errors. Following the checklist's introduction, operating room clinicians at a pediatric hospital were polled to determine their attitudes and perceptions about the checklist's influence on efficiency, collaboration, and the reduction of medical mistakes. Multidisciplinary perioperative clinical personnel analyzed and categorized the survey results. The results indicated that the vast majority of respondents had a favorable outlook on the usage of checklists. Patients' safety, collaboration, and efficiency in the operating room were all improved by the use of the checklist, according to the survey respondents. Checklist usage was credited with averting or preventing errors and complications by a large number of operating room personnel. Disparities in viewpoint might be seen in the perceptions of different perioperative clinical disciplines. While physicians reported more antibiotic timing and equipment problems than the surgeons, nurses reported a greater proportion of consent-related errors and errors in site marking. According to the findings of the study, the Surgical Safety Checklist might improve patient safety by boosting cooperation and communication, reducing mistakes, and increasing

efficiency in operating rooms. Team members' responses differed by discipline, demonstrating that they see the checklist through distinct lenses.

Lepänluoma, et al., (2013) conducted study aimed to assess the impact of the implementation of the checklist on safety-related issues in the operating room and on postoperative adverse events in neurosurgery. Questionnaires were distributed to operating room staff and the answers were examined to assess communication and safety-related concerns during 89 and 73 neurosurgical procedures before to and following the introduction of the checklist, respectively. A retrospective study of electronic patient records was performed on 83 and 67 patients, respectively, from the examined procedures, in order to compare the length of hospital stay, adverse events recorded, and readmissions. The uniformity of operating room paperwork and patient data was also examined. Use of the checklist resulted in improved communication and better coverage of safety-related topics between the surgeon and anesthesiologist. After implementing the checklist, the percentage of unanticipated readmissions dropped from 25% to 10% ($p = 0.02$). Wound complications dropped from 19% to 8% (p 0.04), a significant reduction. The documentation of the diagnosis and the process was more consistent. There were fewer wound complications and readmissions observed as a result of the usage of the checklist, according to a research.

Melekie and Getahun (2015) conducted study aimed to evaluate compliance of checklist completion and its barrier for utilization at University of Gondar Hospital, Northwest Ethiopia. The Methods was prospective observational study was conducted among 282 patients undergoing elective and emergency surgery from January to March 2013. Compliance and completeness with the implementation of Sign-in, Time-out, and Sign-out domains were computed using SPSS 20. Checklists were used in 39.7 percent of the 282 procedures that

were carried out, according to the findings. Checklists were used in the surgical department the most frequently during emergency operations (61.6 percent) requiring general anesthesia (74.9 percent) (58.9 percent). Compliance and completeness rates were 39.7 and 63.4 percent overall. 30.5 percent (273/896), 35.4 percent (436/1,232), and 45.7 percent (307/672) of the participants missed the sign-in, time-out, and sign-out correspondingly. Lack of previous training (45.1%) and a lack of coordination among the OR team members were the most common causes for non-users (21.6 percent). There was an acceptable completion percentage, but the total compliance rate was below par, according to the findings of the research. A simple introduction to an instrument, which is played 40% of the time, was given without much reinforcement training. The usage of a checklist in the event of an emergency has also been shown to be of benefit by doctors.

White, et al., (2018) conducted longitudinal evaluation aimed to determine the sustainability of WHO checklist use in Madagascar 12–18 months after nationwide implementation. Self-reported use of checklists was the primary outcome of the mixed-methods study. Additionally, secondary goals included assessing team behavior and predicting checklist utilization as well as identifying potential impediments to checklist use. Descriptive and multivariate linear regression and thematic analysis were used to examine data obtained during one-day hospital visits using validated questionnaires, the WHO Behaviorally Adjusted Rating Scale (WHOBARS) and focus groups. A total of 175 people from 14 hospitals took part, as evidenced by the findings. After 15 months, 74% of respondents reported continuing to utilize the checklist. According to the WHOBARS results, there was a high level of team involvement. The use of a patient safety checklist was connected with a better overall grasp of patient safety, but not with WHOBARS, the size of the institution, or the volume of surgeries.

97% of those surveyed indicated an increase in their awareness of patient safety, and 83% reported an increase in their overall sense of well-being. There has been a considerable improvement in the culture and practice of the hospital as a result of thematic analysis (teamwork and communication, preparation and organization, trust, and confidence) (pulse oximetry, timing of antibiotic prophylaxis, introduction of a surgical count). The major obstacles to execution were a lack of time in an emergency and uncooperative leadership. Results from a research in Madagascar found that 74 percent of participants continued to utilize checklists 12–18 months after they were implemented across the country, with positive effects on job satisfaction, workplace culture, and safety procedures. This implementation methodology needs to be tested in other countries.

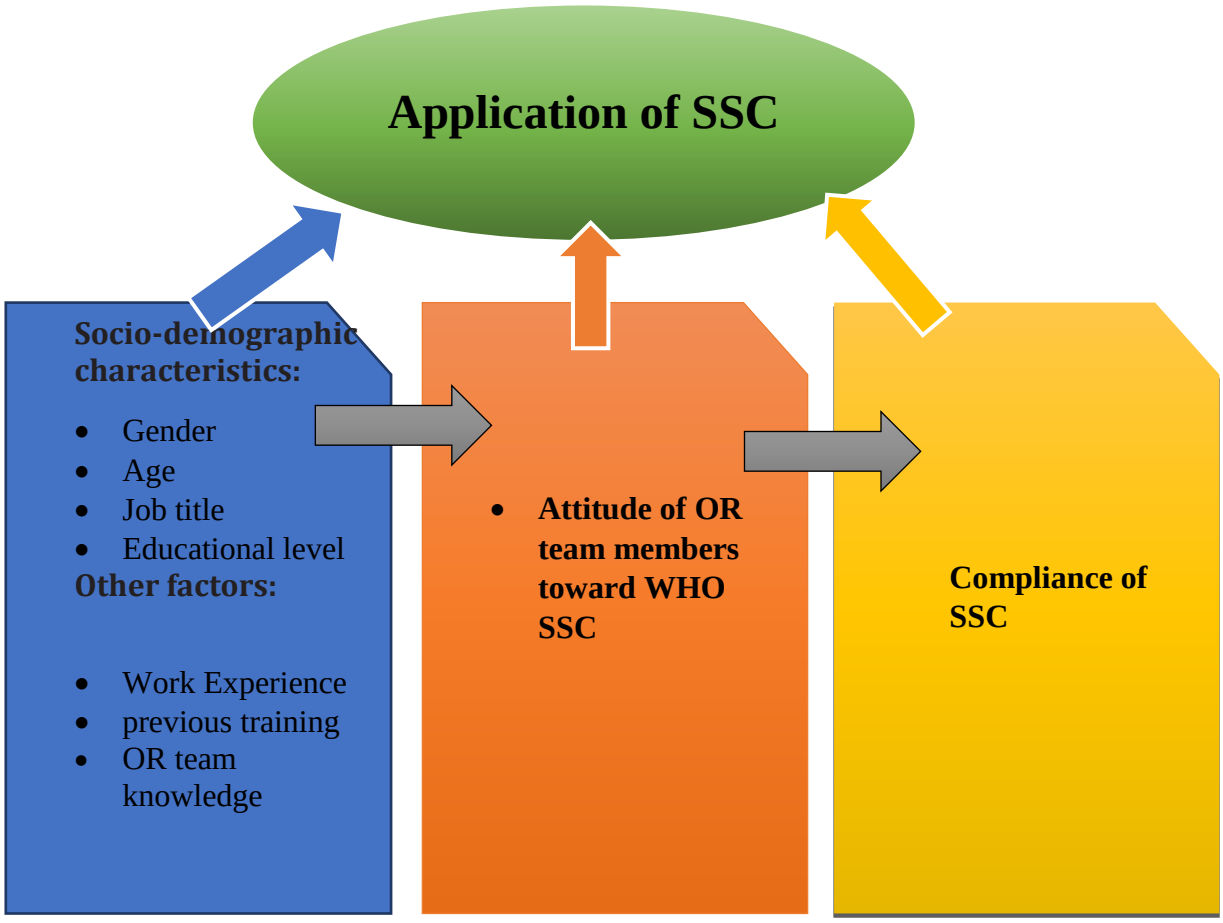
Vohra, et al., (2015) conducted study aimed to investigate attitudes and factors associated with use of WHO SSC in frontline medical professionals across the globe using a survey distributed through social networks. For a month, a not-for-profit surgical news website launched an online poll on the use and opinions of the SSC on its Facebook and Twitter sites (March 2013). According to their country's Gross National Income, respondents were categorized into four groups: high, higher middle, lower middle, and low income. Univariate and multivariate statistical studies were conducted to see how various parameters were linked to the SSC. Only 3.0 percent of respondents were from low-income nations, while 47.4 percent were from middle-income countries, followed by high (35.0 percent), upper-middle (14.6 percent), and low (3.7 percent). According to the WHO SSC perioperatively, 57.5 percent of respondents stated that they have done so. Only 43.5 percent of respondents in upper medium, lower middle-, and low-income countries (LMICs) compared to 83.5 percent of respondents in high-income countries utilized the WHO SSC. There was a statistically

significant difference in the usage of the SSC by females (61.3 percent) and males (56.4 percent), as well as those who worked at university hospitals (61.4 percent vs 53.7 percent). Respondents reported using the SSC if they thought it was beneficial, if it didn't function, or if it created delays (OR 1.22 95 percent CI 1.07e1.39; OR 0.47 95 percent CI 0.36e0.60; OR 0.64 95 percent CI 0.53e0.77, respectively). According to the findings, the WHO SSC is used differently in different countries, particularly in low- and middle-income countries (LMICs), where it has the most potential to enhance patient safety. The WHO SSC may be more widely adopted if its documented benefits are examined critically.

Chapter three: Conceptual framework:

3.1 Introduction

This chapter includes conceptual and operational definitions of dependent and independent variables, also definition of terms in addition to figure that conceptualize relationships between dependent and independent variables.



3.2 Conceptual definitions

Compliance: Is the state of being in accordance with established guidelines or specifications, or the process of becoming, for this study is toward SSC (Business Dictionary, 2015).

Attitude: a feeling or opinion about something or someone, or a way of behaving that is caused, for this study is toward SSC (Business Dictionary, 2015).

OR team members: are all operating room staff directly involved in care for operative patient and is responsible for the well-being of a patient throughout the operation (RNpedia, 2016)

Demographic Factors: - are socioeconomic characteristics of a population expressed statistically, such as age, sex, education level, marital status, occupation, religion, birth & death rate, average size of a family, average age at marriage (Business Dictionary, 2015).

Sign-in: before induction of anesthesia, while the patient is still conscious (WHO, 2009)

Time-out: with the surgeon present, before skin incision (WHO, 2009).

Sign-out: Before patient leaves operating room, when patient resume consciousness (WHO, 2009).

3.3 Operational definitions

Compliance: Is the state of being in accordance with established guidelines of SSC and its specifications. This includes in both self-administrative questionnaire part three and in observational check list and include 3 phases of SSC (Sign in, time out, sign out).

Attitude: a feeling or opinion about something or someone, or a way of behaving that is caused, for this study is toward SSC. That included in Part two of questionnaire (21 item) response to it in 5-point Liker scale (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree).

OR team members: are all operating room staff directly involved in peri-operative patient care and who are involved in the checklist process. Including nurses, anesthesiologists, anesthesia technicians, and surgeons.

Demographic Factors: the independent variables including age, gender, level of education, job title, years of experience at included Hospitals. Statement in part one of the questionnaire.

Sign-in: before induction of anesthesia, while the patient is still conscious including 8 items in part three (compliance toward SSC) from 1 – 8.

Time-out: with the surgeon present, before skin incision including 10 items in part three (compliance toward SSC) from 9 – 19.

Sign-out: Before patient leaves operating room, when patient resume consciousness including 6 items in part three (compliance toward SSC) from 20 – 25.

3.4 Definition of terms

An adverse event: is an unintended physical injury or complication caused by medical intervention rather than the underlying disease process of the patient, and may cause prolonged hospital stay, disability or death (Brennan, et al., 2004).

A medical error: is defined as an act of omission or commission that results in deviation from the optimum and may cause or causes harm to the patient (Grober, et al., 2005); for example, errors in medication or error in diagnosis.

A surgical error is an error or a mistake committed by the surgeon pre- or intraoperatively, for instance error in technique like wrong-site incision, or an intraoperative nerve or vessel injury. or error in judgement when choosing the operative plan (Bosma, et al. 2011).

A surgical complication has been defined as any deviation from the normal postoperative course (Dindo, et al., 2004), or as in the latest version of Clavien and Dindo "any deviation from the ideal postoperative course that is not inherent in the procedure and does not comprise a failure to cure" (Dindo, et al., 2004). Complications from surgery might be categorized on the basis of their seriousness or the extent to which therapeutic measures are required to remedy them. Some of the most common complications following surgery include bleeding and surgical site infection; others include urinary tract infections and pneumonia; and still others include complications arising from any other intervention that takes place during a patient's stay in the hospital (such as intravenous catheterization) (Dindo, et al., 2004).

Adverse events are harm, although errors may cause harm if they occur (Rolston, et al. 2015). Without mistakes, bad things may happen.

There are two types of adverse events: those that can be prevented and those that cannot be prevented. A preventable adverse event is one that can be avoided by following a plan or following existing standards of care. surgical site infection and wrong-site surgery are examples of undesirable events.

World Health Organization (WHO) surgical safety checklist (SSC): A tool developed by WHO to help reduce surgical morbidity and sentinel events through simple exercises such as verifying the patient's identity, surgical site, procedure (including allergies), consent (including blood loss risk), and allergies (including airway/aspiration risk), blood loss risk (including sponge counts).

Chapter Four: Research Methodology

Introduction

This chapter includes the method that have been used for this study including design, setting, sample, tool, validity, reliability, procedure, pilot study, ethical considerations, and data analysis.

4.1 Research design

In this study the researcher used a Quantitative, descriptive study design that was applied using 2 separated tools (observational checklist and Questionnaires). First tool was direct observation of 80 elective surgeries. The observational process was performed by the researcher to assess the OR staff compliance with and accuracy of implementing the SSC at selected Hospitals. Observation studies can avoid the selective perception of participants and enable researchers to notice things that the participants might not be aware of it. Because participants could reoccur in the observations, it was not deemed suitable to complement the observed data with surveys or interviews as this doubtlessly would have affected the activities that were observed.

The Second tool was descriptive, cross-sectional study design was used to assess SSC compliance, attitudes, and socio-demographic characteristics of the participants. In addition, the participants were asked to rank their perception about the level of their knowledge about the SSC.

4.2 Study setting

- This study was conducted in three hospitals (Hebron Governmental hospital, Mohammad Ali AL-Muhtaseb governmental hospital, and Al-Ahli Hospital), located in Hebron district, West Bank/ Palestine. These hospitals are found to be the only hospitals in Hebron that adopted the WHO SSC protocol in the operation rooms.
- The surgical procedures performed in the selected hospitals range from complex to minor surgery, namely orthopedic, neurosurgery, cardiac, thoracic, vascular, general, plastic, urology, ear nose and throat, gynecology, ophthalmology, and obstetrics. The OR in selected hospitals therefore provides elective and emergency surgical services. Most of the elective surgeries are done in the morning shift, therefore this study will only assess the OR team through conducting the elective surgeries while the emergency surgeries will be excluded. The reason for excluding the emergency surgeries is because the compliance of SSC is not required in emergency situations.

4.3 Population and sampling

In this study, for observation, the target population was team members (Nurses, surgeons, anesthesiologists, and anesthesia technicians) of elective surgical procedure in which observation was made to the whole procedure (80 elective surgery was included).

The target population for quantitative, descriptive part was OR staff including Nurses, surgeons, anesthesiologists, and anesthesia technicians) who are enrolled in fulfilling the SSC before, during and after conducting the surgical procedures and operations in the OR.

- The sample size was 80 participants.

- Observation for 80 elective surgeries.
- Non-randomized, convenient sample method was used.

4.3.1 Inclusion criteria

For the observation part, elective surgical procedures were included in observation.

For survey part, OR staff who are working in OR for at least 1 year and are responsible about filling the SSC.

4.3.2 Exclusion criteria

Nurses who are working in the recovery rooms.

New employees who were still in an orientation program over the data collection period.

4.4 Sampling

Convenience, nonprobability sampling method was used for both parts of this study

OR team members (number 80), who met the inclusion criteria were included in this study and who are therefore involved in the checklist.

4.4.1 Sample size:

The following formula used for calculation of sample size

$n = N*X / (X + N – 1)$,

were,

$X = Z\alpha/22 -*p*(1-p) / MOE2,$

and $Z\alpha/2$ is the critical value of the Normal distribution at $\alpha/2$

MOE is the margin of error, p is the sample proportion, and N is the population size. Note that a Finite Population Correction has been applied to the sample size formula.

for a confidence level of 95%, α is 0.05 and the critical value is 1.96, confidence interval 8.2

The total population of surgical team and OR team in selected hospital was 169.

the sample size was calculated on above formula and was 78 participants to be included.

4.5 Instruments

Two instruments were used:

The researcher used an observational method and was presented in the operation room and observed the OR staff compliance of SSC during the 3 phases of fulfilling the SSC. The researcher informed the nursing manager and the OR head nurse in each hospital about the aim of the observation, but the OR staff know that the researcher is doing observation about phenomena but didn't know the specific target of observation.

Further, the researcher used a cross-sectional survey, that consisted of a modified operating room version of the Surgical Attitudes Questionnaire (SAQ) used by Haynes, et al., (2011), and the SSC specific items as introduced by the WHO in 2017. The SAQ is a well-established validated tool, previously used by the researchers to explore staff opinions and attitudes to safety in surgical environments. The SAQ was modified and developed

specifically to be used for assessing the attitudes of the OR staff (Wangoo, et al., 2018; Schwendimann, et al., 2019; Cullati, et al., 2012). The SAQ questionnaire is a 5-point Likert Scale ranging from "strongly disagree" to "strongly agree" to measure the respondents' compliance and attitudes toward of the SSC, the second questionnaire about the compliance of OR staff toward the SSC, this questionnaire consist of the items of the SSC itself, and the participants tick applied or not applied for each item (WHO, 2009). In addition, questions were added about the participants sociodemographic characteristics as (age, gender, years of experience, etc.) as well the participants were asked to rank their perception about the level of their knowledge about the SSC.

4.6 Pilot study

The pilot study was conducted in OR in one of the governmental hospitals (Bethlehem Governmental hospital) include one day observation for commitment check list and 10 questionnaires was distributed. The purpose of the pilot study was ensuring that the questions in the measuring tool were clear and understandable to the participants. The data obtained from the pilot study will be excluded from the main study.

Some modifications were made on statements to be more understandable.

4.7 Validity and Reliability

4.7.1 Validity of the instruments

Content validity of compliance observational checklist and questionnaire was through use the all the items included in SSC (WHO, 2009). Content validity of attitude questionnaire ensured

through valid previous studies (Wangoo, et al., 2018; Schwendimann, et al., 2019; Cullati, et al., 2012). The SAQ is a well-established validated tool, previously used in studies to explore staff opinions and attitudes to safety in surgical environments (Haynes, et al., 2011). A modified SAQ has been developed specifically for use in OR. Existing aspects of SAQ relevant to the checklist were selected and modified for use in the staff survey. The applicability of attitude questionnaire was ensured through the OR team experts in implementation of SSC who were consulted with respect to the validity of the questionnaire and ensured that items were relevant and valid to the proposed study setting. (Mouath Abd Rabo – OR head nurse in a governmental hospital, has 22 years' experience in the operating room and one of the supervisors for SSC in Palestine). Furthermore, validity was ensured through the pilot study.

4.7.2 Reliability

LoBiondo-Wood and Haber, (2010) refers to reliability as the aptitude of an evaluation tool to produce consistent results each time it is applied in similar scenarios. For the present study, the pilot phase was analyzed for the questionnaire of study. The instrument was tested for the Cronbach alpha coefficient test to test the internal consistency of each subscale of the instrument and the alpha score was

Variable	No. of item	Cronbach's Alpha
Overall attitude scale (SAQ)	21	0.803
Compliance	22	0.955

4.8 Data collection procedure

Ethical approval was obtained from the Ethical Committee at Al-Quds University in Palestine, then approval letter was requested from Palestinian Ministry of Health for governmental hospitals and permission was taken from AL Ahli Hospital to conduct this study in their institution. Then introduction of the study's aim and objectives was done and were explained to the nursing director and OR head nurse in each hospital. Data collection of this study took 6 weeks from 1/1/2021 – 20/2/2021.

To evaluate compliance rate of OR staff toward the SSC: The data was collected through observation, OR staff knew that the researcher did observational study but they didn't not know what the researcher was looking for. The observation data was conducted through 2 weeks, the observation data collected by the researcher herself. In the observation method the researcher watched interactions of the participants in a natural situation. The aim of observing the participant is to create a complete and specific description of social interaction in a natural situation (Astin and Long, 2009). Further, the researcher might have more control on the participants especially about credibility issues and be more aware about the less tangible aspects for example apathy and good will. However, participants' observation might have complexity especially if done in a busy working situation such as hospital. The research might lose the accuracy of observation if the participants might see the researcher make spying or threats on them (Lanoe, 2007).

To assess the attitudes of the OR staff toward SSC. a self-administration questionnaire known as SAQ was used. The researcher distributed the questionnaire to the study participants and collected the documents as soon as they were fulfilled. The researcher was contacted by the

head of the OR departments in the selected hospitals and was informed that the questionnaires were fulfilled. All of the distributed questionnaires returned to the researcher within four weeks.

4.9 Data analysis

Data analyzed by a statistical software statistical package for social sciences (SPSS). The alpha level for significance was set at 0.05. The descriptive statistics analysis used to describe the sample characteristics and enumerate the attitude and compliance with independent factors, Frequencies to present the distribution of study variables, Means and standard deviation computed for continuous numeric variables, The Mann-Whitney U test is used to compare differences and Kruskal Wallis test.

4.10 Ethical considerations

Ethical approval for this study was obtained from the Ethical Committee at Al-Quds University in Palestine. An approval letter was obtained from the MOH and administration of the selected hospitals to facilitate data collection procedures at the selected Hospitals. An Informed consent related to the purpose and objectives of the study was signed by the Participants to get their voluntary agreement to participate. The researcher assured them about anonymity, and confidentiality and explained to them that their feedback will not affect their work evaluation, work status, or their salary.

Chapter Five: Results

5.1 Introduction

This chapter presents the results of analyzed data. SPSS software was used to manage and analyze these data. Data analyses included descriptive statistics and inferential statistics. Data arranged in tables as below.

5.2 Demographic data

Table 1 presents the socio-demographic characteristics of the operating room staff toward the WHO surgical safety checklist including their rank of their knowledge toward the SSC. Out of 80 staff, (83.8%) were male and (16.3%) female. (38.8%) of staff were nurses, (27.5%) surgeon, (17.5%) anesthesia technician and (16.3%) anesthesiologist. (40%) of the staff have one to five years of experience, while the rest have more than five years. Closely, half of the staff held a Bachelor's Degree. Approximately, two-thirds of staff have been trained to WHO Safety Checklist. Regarding the OR staff knowledge toward WHO safety checklist the researcher used analog scale (1-10) to assess the knowledge, which considered median as a cutoff point and median for the knowledge score was (median =5). This scale considered a Score ≥ 5 as a good knowledge, and a score < 5 as poor knowledge). In this study (87.5%) of the OR staff rated their knowledge above the median (Median=5) and were considered as having good knowledge toward SSC, while the rest were rated below the median.

Table 1: *Socio-demographic characteristic of the operating room staff (n=80)*

Demographic characteristics		**N**	**(%)**
Gender	Male	67	(83.8)
	Female	13	(16.3)
Age Group	< 25 years	0	(0)
	25-29 years	25	(31.3)
	30-34 years	23	(28.7)
	35-39 years	16	(20.0)
	≥ 40 years	16	(20.0)
Job Title	Surgeon	22	(27.5)
	Nurse	31	(38.8)
	Anesthesia Technician	14	(17.5)
	Anesthesiologist	13	(16.3)
Years of Experience in operating room	1-5 years	32	(40.0)
	6-10 years	21	(26.3)
	11-15 years	13	(16.3)
	≥16	14	(17.5)
Academic Degree	Diploma	28	(35.0)
	Bachelor's Degree	41	(51.2)
	Master Degree or high diploma	9	(11.3)
	PhD	2	(2.5)
Previous Training Regarding WHO Safety Checklist?	Yes	52	(65.0)
	No	28	(35.0)
Knowledge Regarding WHO Safety Checklist	Poor knowledge	10	(12.5)
	Good knowledge	70	(87.5)

5.3 Attitude toward SSC

Table 2 illustrates the attitude of the operating room staff toward the WHO surgical safety checklist. Most of the operating room staff showed a positive attitude (96.3%), while the rest showed a negative attitude. According to the SAQ of the attitude tool results were divided to positive and negative attitudes based on median which was considered as a cut off point (median = 63). Score ≥ 63 positive attitude, score <63 negative attitude).

Table 2: *Attitude of operation room staff toward WHO surgical safety checklist (n=80)*

Variable	**N**	**(%)**
Positive Attitude	77	(96.3)
Negative Attitude	3	(3.8)

Table 3 shows the attitude of the operating room staff for each item of the WHO surgical safety checklist. Overall, the mean score of the total items was 3.75, SD=0.414. "I believe using the checklist improves teamwork in theatre" was the highest mean score M=4.24, SD=0.750. However, the lowest mean score was "the checklist is a waste of time" M=2.51, SD=1.263.

Table 3: *Attitude mean score of operating room staff toward each item of WHO surgical safety checklist (n=80)*

Statement		**Mean**	**SD**
1.	I believe using the checklist improves teamwork in theatre.	4.24	0.75
2.	Adherence to the check list is often supported by the surgeons.	4.21	0.83
3.	The use of the checklist should be mandatory for every case.	4.16	0.92
4.	I believe using the checklist improves patient safety.	4.11	0.85
5.	I intend to initiate the use of the checklist in the future.	4.06	0.89
6.	The use of the checklist should be mandatory for every case.	4.06	0.89
7.	Facilitates teamwork	4.04	0.75
8.	It's improves the safety of procedures (anesthetic and surgical)	4.03	0.92
9.	Helps to develop a safety culture in surgical teams	3.98	0.72
10.	Eliminates (during the controls) the hierarchy between healthcare professionals (doctors, nurses, etc.)	3.91	0.75
11.	Improves team communication (related to safety)	3.85	1.08
12.	I believe using the checklist reduces the likelihood of human error.	3.78	1.03
13.	I believe that failing to use the checklist is poor professional practice.	3.74	0.75
14.	There is little difference between the previous checklist and the WHO surgical checklist.	3.70	0.72
15.	When the checklist is being carried out, everyone in theatre stops what they are doing and listens until it is completed.	3.54	1.02
16.	I have initiated the use of the checklist in the past.	3.54	0.87
17.	Sometimes, I can accept if unnecessary sections of the surgical safety checklist are not completed.	3.45	1.05
18.	The individual who signs the checklist personally ensures that the relevant steps have been completed.	3.35	0.96
19.	Brings no extra value to existing safety procedures already in place in my hospital/clinic before its implementation	3.28	1.10
20.	Has not demonstrated its efficacy in the scientific literature	3.25	1.01
21.	Is a waste of time	2.51	1.26
	Total Mean Score (21 items)	**3.75**	**0.41**

Table 4 presents the differences between dichotomous characteristics (gender, previous training, and Knowledge) in terms of the attitude of operating rooms staff toward the WHO surgical safety checklist. No significant differences were found between gender (p=0. .509) in term of staff attitude, no significant differences were found between previous training of the staff regarding the SSC and in term of their attitude (p=.492) and there are no significant differences were found between knowledge of the staff about the SSC in term of their attitude (p= .072).

Table 4: *Differences between dichotomous characteristics in terms of attitude of operating room staff toward WHO surgical safety checklist.*

Demographic characteristics		**n**	**Mean Rank**	**Sum of Ranks**	**U value (Z)**	**P-value**
Gender	Male	67	41.25	2764.00	385 (-.660)	.509
	Female	13	36.62	476.00		
Previous Training Regarding WHO Safety Checklist?	Yes	52	41.81	2174.00	.492 (-.687)	.492
	No	28	38.07	1066.00		
Knowledge Regarding WHO Safety Checklist	Poor knowledge	10	28.15	281.50	226.5 (-1.800)	.072
	Good knowledge	70	42.26	2958.50		

Mann-Whitney U test
Significant at the p<0.05.

Table 5 shows the Kruskal Wallis test that used to assess the difference between socio-demographic characteristics in terms of the attitude of operating room staff toward the WHO

surgical safety checklist. No significant differences were found between demographic characteristics (age-group (p=.461), job title (p=.086), years of experience (p=.460) and academic degree (p= .521)). This means that the staff with different demographic characteristics have the same attitude toward the WHO surgical safety checklist.

Table 5: *Differences between demographic characteristics in terms of attitude of operation room staff toward WHO surgical safety checklist*

Demographic characteristics		**n**	**Mean Rank**	**H value (df)**	**P-value**
Age-group	< 25 years	-	-	2.57 (3)	.461
	25-29 years	25	35.66		
	30-34 years	23	40.04		
	35-39 years	16	41.78		
	≥ 40 years	16	47.44		
Job Title	Surgeon	22	31.09	6.582 (3)	.086
	Nurse	31	46.58		
	Anesthesia Technician	14	37.32		
	Anesthesiologist	13	45.35		
Years of Experience	1-5 years	32	40.16	2.588 (3)	.460
	6-10 years	21	35.62		
	11-15 years	13	40.65		
	≥16	14	48.46		
Academic Degree	Diploma	28	40.59	2.257 (3)	.521
	Bachelor's Degree	41	39.71		
	Master Degree or high diploma	9	38.50		
	PhD	2	64.50		

Kruskal Wallis Test
**Significant at the p<0.05.*

5.4 WHO Surgical Safety Self-administered Checklist Questionnaire

Table 6 shows the application of operating room staff toward the WHO surgical safety checklist. The lowest applied domain was in the sign-out (27.5%). However, the highest applied domain was in the sign-in (40%).

Table 6: *Application of operating room staff toward WHO surgical safety checklist domains (n=80)*

Variable	**Not Apply**		**Apply**	
	N	**(%)**	**n**	**(%)**
Sign In	48	(60.0)	32	(40.0)
Time Out	51	(63.7)	29	(36.3)
Sign Out	58	(72.5)	22	(27.5)

Table 7 shows the application of operating rooms staff toward each item in the sign-in domain. The highest applied items were in a site marked and patients confirmed information (56.2%) and (55%) respectively. However, the lowest applied items were checked if a patient at risk for blood loss and signed the consent form (47.5%) and (48.5%) respectively.

Table 7: *compliance of operating room staff toward each item in* sign in domain *(n=80)*

Sign In	Not Apply		Apply	
	N	(%)	n	(%)
Patient identity was confirmed, as well as the site of the operation, the procedure, and the signed consent.	36	(45.0)	44	(55.0)
The site was marked.	35	(43.8)	45	(56.2)
Anesthesia equipment and medication were checked completely.	39	(48.8)	41	(51.2)
Patient risk for blood loss >500 ml and patient requirement for blood was checked.	42	(52.5)	38	(47.5)
The assigned person put his/her name and signature on the check list.	41	(51.2)	39	(48.8)

Table 8 shows the application of operating room staff toward each item in the time out domain. The highest applied item was in "Patient's name, procedure and site of incision was confirmed" (42.5%). However, the lowest applied items were "The team member introduced him/herself by name and role" (27.5) as well as "Prophylaxis antibiotics have been given within the last 60 min" (31.2).

Table 8: *compliance of operating room staff toward each item in time out domain (n=80)*

Time out Variable	Not Apply		Apply	
	N	(%)	n	(%)
The team member introduced self by name and role.	58	(72.5)	22	(27.5)
Patient's name, procedure and site of incision was confirmed.	46	(57.5)	34	(42.5)
Prophylaxis antibiotics have been given within the last 60 min.	55	(68.8)	25	(31.2)

Table 9 presents the compliance of operating room staff toward each item in anticipated critical events to surgeon variable. The highest applied item was "The staff

member records the anticipated blood loss when it is > 500" (33.8%). However, the lowest applied items were "The critical or non-routine steps were reported" (26.3%), and "The need to extend time of the operation was recorded" (30.0%).

Table 9: *Application of operational room staff toward each item in anticipated critical events to surgeon variable (n=80)*

Anticipated Critical events to Surgeon	**Not Apply**		**Apply**	
	N	**(%)**	**n**	**(%)**
The critical or non-routine steps were reported.	59	(73.8)	21	(26.3)
The need to extend time of the operation was recorded.	56	(70.0)	24	(30.0)
The staff member records the anticipated blood loss when it is > 500.	53	(66.3)	27	(33.8)

Table 10 presents the compliance of operating room staff toward the anticipated critical events to the anesthetist variable. Closely, two-thirds of staff not applied the patient-specific concerns item (62.5%), while the rest applied.

Table 10: *Application of operational room staff toward anticipated critical events to anesthetist variable (n=80)*

Anticipated Critical events to Anesthetist Variable	**Not Apply**		**Apply**	
	N	**(%)**	**n**	**(%)**
Anesthetist was able to assess the patients for any specific concerns.	50	(62.5)	30	(37.5)

Table 11 illustrates the compliance of operating room staff toward each item in anticipated critical events to nursing team variable. The highest applied items were "Confirm

the sterility of the area and procedure" (48.8%) and "Equipment issue and any concerns of sterility were checked" (48.8%). However, the lowest applied items were "Essential imaging was displayed" and "Name and signature of the assigned person was verified" (38.8%) and (41.3%) respectively.

Table 11: *Compliance of operational room staff toward each item in anticipated critical events to nursing team variable (n=80)*

Anticipated Critical events to Nursing Team Variable	**Not Apply**		**Apply**	
	N	**(%)**	**N**	**(%)**
Confirm the sterility of the area and procedure.	41	(51.2)	39	(48.8)
Equipment issue and any concerns of sterility were checked.	41	(51.2)	39	(48.8)
Essential imaging was displayed.	49	(61.3)	31	(38.8)
Name and signature of the assigned person was verified.	47	(58.8)	33	(41.3)

Table 12 shows the compliance of operating room staff toward each item in the sign-out domain. The highest applied items were in "All instrument, sponge, needle and suture

were counted" as well as "specimen labeled correctly" (50%). However, the lowest applied item was "Name of procedure was confirmed verbally by the assigned nurse" (33.8%).

Table 12: *Compliance of operational room staff toward each item in sign out domain (n=80)*

Sign Out Variable	**Not Apply**		**Apply**	
	N	**(%)**	**N**	**(%)**
Name of procedure was confirmed verbally by the assigned nurse.	53	(66.3)	27	(33.8)
All instrument, sponge, needle, and suture were counted.	40	(50.0)	40	(50.0)
The assigned person addressed Problems of equipment as equipment loss.	44	(55.0)	36	(45.0)
key concerns for recovery and management of patient were reported.	43	(53.8)	37	(46.3)
Specimen labeled correctly.	40	(50.0)	40	(50.0)
The assigned person put his/her Name and signature.	42	(52.5)	38	(47.5)

5.5 Regarding WHO Surgical Safety Observational Checklist

Table 13 shows the WHO surgical safety observational checklist among operating room staff in different settings. Overall, (61.2%) of operating room staff have not introduced themselves by name and role, while the rest were introduced during 80 surgeries.

Table 13: *WHO surgical safety* observational checklist among operating room staff in different settings (n=80 surgeries).

Operating Room Staff		Total	
		n	%
All team members have introduced themselves by name and role.	Apply	31	(38.8)
	Not apply	49	(61.2)

Table 14 shows the WHO surgical safety observational checklist among anesthetists in different settings. Overall, anesthetists have checked a patient identification, family, and first name as well as the type of anesthetic procedure (100%) and (98.8%) respectively. Furthermore, (63.7%) of anesthetists have given antibiotic prophylaxis.

Table 14: *WHO surgical safety observational checklist among anesthetist in different settings (n=80 surgeries)*

Anesthetist		Total	
		n	(%)
Patient identification: Family name, first name, birth date.	Apply	80	(100)
	Not apply	0	(0)
Type of anesthetic procedure.	Apply	79	(98.8)
	Not apply	1	(1.2)
Allergies.	Apply	73	(91.2)
	Not apply	7	(8.8)
Antibiotic prophylaxis.	Apply	51	(63.7)
	Not apply	29	(36.3)
Specific perioperative risks.	Apply	63	(78.8)
	Not apply	17	(21.2)
Any patient-specific concerns and precautions.	Apply	63	(78.8)
	Not apply	17	(21.2)

Table 15 shows the WHO surgical safety observational checklist among operating surgeons in different settings. Overall, surgeons have checked for correct patient position as well as the type of surgery and marked site (96.2%). However, surgeons have not checked for essential imaging (e.g., X-Ray) as well as specific equipment (e.g., microscope (66.2%) and (60%) respectively.

Table 15: *WHO surgical safety observational checklist among operating surgeons in different settings (n=80 surgeries).*

Operating Surgeon		Total Apply and Not Apply	
		N	%
Type of surgery and marked site.	Apply	75	(93.8)
	Not apply	5	(6.2)
Specific risks	Apply	61	(76.3)
	Not apply	19	(23.7)
Intraoperative medications.	Apply	42	(52.5)
	Not apply	38	(47.5)
Duration of surgery.	Apply	50	(62.5)
	Not apply	30	(37.5)
Anticipated blood loss.	Apply	45	(56.2)
	Not apply	35	(43.8)
Correct patient positioning.	Apply	77	(96.2)
	Not apply	3	(3.8)
Specific equipment (e.g., microscope).	Apply	32	(40.0)
	Not apply	48	(60.0)
Essential imaging (X-ray, echo, coronary etc.).	Apply	27	(33.8)
	Not apply	53	(66.2)

Table 16 shows the WHO surgical safety observational checklist among OR-nurses in different settings. All nurses (100%) have checked for equipment and supplies availability.

Table 16: *WHO surgical safety observational checklist among OR-nurse in different settings.*

OR-Nurse		Total Apply and Not Apply	
		n	%
Equipment available	Apply	80	(100)

	Not apply	0	(0)
Supplies available	Apply	80	(100)
	Not apply	0	(0)

Table 17 shows the WHO surgical safety observational checklist toward team sign-out before patient leaves OR- item confirmed in different settings. Overall, all the team (100%) have checked for the completion of instrument, sponge, and needle count. Furthermore, (81.2%) of the staff have applied the dressing, drainage, and specials.

Table 17: *WHO surgical safety observational checklist toward team sign-out before patient leaves OR- item confirmed in different settings (n=80)*

Team Sign Out before patient leaves OR- Item confirmed		**Total Apply and Not Apply**	
		n	**%**
Name of the procedure.	Apply	62	(77.5)
	Not apply	18	(22.5)
Dressing, Drainage, Specials.	Apply	65	(81.2)
	Not apply	15	(18.8)
Prescriptions.	Apply	63	(78.8)
	Not apply	17	(21.2)
Correct specimen labelling, forms, and laboratory containers (Patient's name and birth date).	Apply	49	(61.3)
	Not apply	31	(38.8)
Completion of instrument, sponge, and needle count.	Apply	80	(100)
	Not apply	0	(0)
Image intensifier images transmitted to PACSa.	Apply	8	(10)
	Not apply	72	(90)

4.5 Summary of the results

The findings of this study show that the WHO SSC has a very high level of acceptance by theater staff (surgeons, anesthesiologists, and nurses). It appears that OR professionals that have previously utilized the WHO SSC are generally pleased with the tool. Only (3.8%) of the

respondents had an unfavorable view of the SSC. The compliance of operating room staff toward each item in the sign-in domain shows the highest applied items were in a site marked and patients confirmed information (56.2%) and (55%) respectively. However, the lowest applied items were checked if a patient was at risk for blood loss and signed the consent form (47.5%) and (48.5%) respectively. In the observation phase Overall, surgeons have checked for the correct patient position as well as the type of surgery and marked site (96.2%). However, surgeons have not checked for essential imaging (e.g., X-Ray) as well as specific equipment (e.g., microscope (66.2%) and (60%) respectively. Overall, all nurses (100%) have checked for equipment and supplies availability. Overall, all the team (100%) have checked for the completion of instrument, sponge, and needle count. Furthermore, (81.2%) of the staff have applied standards of the dressing, drainage.

Chapter Six: The discussion

6.1 Introduction

In this chapter, the findings from chapter four are addressed in accordance with the study's goals and backed by the literature review in chapter two. Limitations of this study and recommendations for future studies will be also presented in this chapter.

Many studies have found that the WHO SSC has a positive influence on postoperative mortality and morbidity and on operating room team effectiveness. As defined by the Agency for Healthcare Research and Quality, institutions with better scores on safety climate surveys

had lower incidence of unfavorable patient safety indicators (Zhang, et al., 2011). This means that the OR team must adjust their behavior in order for checklists to be successful. The WHO SSC recommends actions that are clearly supported by scientific data (Huang, et al., 2015).

Implementation of a WHO Safe Surgery Saves Lives checklist-based quality improvement project was associated with a small but significant increase in mean teamwork and safety climate score among operating personnel (Gabrani, et al., 2015). Positive changes in perception of teamwork and safety climate by these clinicians correlated with the degree of improvement in postoperative morbidity and mortality (Gabrani, et al., 2015).

In recent years and in line with the WHO Implementation Manual's plan, the SSC of the WHO has become an essential part of OR safety. All of the hospitals in this research study have been using the SSC for more than three years. But there is an ongoing discussion in the surgical community about the factors that impact compliance and if its usage is directly linked to a change in outcomes. (Saturno, et al., 2014). The aim of the study was to evaluate the compliance rate and attitude of operation room (OR) team members toward WHO Surgical Safety checklist in the operating room at Hebron Hospitals – Palestine.

6.2 Attitudes of the staff towards the implementation of the checklist

To assess attitudes regarding the implementation of the SSC, participants in this study completed 21 questions. Findings revealed that most of the operating room staff (96.3%) have a positive attitude toward SSC while negative attitudes were only seen by (3.8%) of the staff. This indicates that Participants in this study including (surgeons, anesthesiologists, and nurses) were accepting the use of SCC and having a positive attitude toward its use. These results might be attributed to the culture of safety among the staff working in the hospitals

under study due to their knowledge about the important use of SCC for patient safety. According to Haugen, et al., (2013), the safety culture organization is largely influenced by the attitudes and behaviors of its employees. However, if the attitudes of personnel were negative toward SSC implementation, and if they expressed unpleasant comments and showed embarrassment during its implementation, then the use of SSC will be hindered and this will retain a low culture of safety in the organization (Vats, et al., 2010). In a study that was conducted in two large hospitals in Sweden, findings revealed that 84.8%, and 78.6% respectively of the staff believe that the checklist improves safety, communication, and avoids mistakes in the operating room accordingly (Nilsson, et al., 2010). At another survey that was done in 238 UK institutions, 97% of healthcare workers believed that the checklist might help them avoid mistakes (Sivathasan, et al., 2010).

Although 3.8% of the respondents had an unfavorable view of the SSC, the rest of OR professionals who have previously utilized the WHO SSC are generally pleased with the tool. The majority of the OR staff at Hebron hospitals believed that SCC improved their communication and reduced human mistakes in the operating room. It was unanimously agreed that the SSC increased patient safety, and that surgical workers should utilize the checklist if they were ever in the operating room.

6.3 WHO Surgical Safety Self-administered Checklist Compliance

6.3.1 Sign in domain

Regarding the compliance of operating room staff toward each item in the sign-in domain, findings showed that the highest applied items were in a site marked and patients confirmed information. However, the lowest applied items were checked if a patient at risk for

blood loss and signed the consent form by only. This indicates that the SSC appears to have a low compliance rate among study samples of the surgical community.

These results are found to be consistent with studies from developing countries such as in Uganda's study by Msosa, et al., (2020) in which compliance rate for SSC was only 10% of the study participants. Also, this is similar to van Klei, et al., (2012) study that demonstrated low compliance rates of the OR toward WHO SSC. Also, in Europe according to a retrospective research done across 28 European nations, the average usage of the checklist was about 1.5 times greater (65.7%) than that in our study, with a variance of 0% –99.6% across participating institutions (Jammer, et al., 2015).

In the sign-in phase patients' risk, allergies, breathing problems, and danger of blood loss are confirmed by coordinators with anesthesiologists. In this study the major items that were seen to be applied with the compliance from the OR staff were patients' wristband ID, surgical location, informed consent surgery as well as anesthetic protocols. This might be explained in a way that the surgeons were aware of the importance of patient preparation for surgery and believed it to be a routine component. However, it is vital to understand these aspects and follow compliance with them to provide safety to the surgical patients and to prevent making mistakes concerning the site of the surgery and the distribution of the medication to patients.

The lowest compliance rate during "signs in" phase in this study was in the confirmation of all team members who should have introduced themselves by name and role. The rate of compliance for this step was (27.5%) of the participants.

Findings in this study showed that Compliance was better with the “sign in” and “time out” phases but worse with the “sign out” phase. From experience, priorities at the end of surgery differ for the different team members. This study's findings are similar to those of van Klei et al. (2012), who conducted a pre- and post-study of a similar case mix. Team may not adhere to the "sign out" domain since it is not tied to a specific moment in the patient's treatment, as other domains are, Vogts and colleagues (2013) suggested.

According to results of this study the checklist is generally not well received by OR staff, in my opinion may be due to a lack of rigor in its compliance. The majority of respondents found that it improves teamwork, communication, and OR safety and prevents errors, even though this was not as pertinent in the attitudes of OR staff.

Staff introducing themselves are deemed to be not important and observed to be poorly conducted. Staff found the verbalization and introduction of members to be a tedious, laborious task, contributing very little to the safety of the OR, especially that in all hospitals team included full-time staff.

6.4 Knowledge of the staff towards the implementation of the checklist

Regarding the knowledge of the OR staff in Hebron hospitals, findings revealed a highly knowledgeable staff of the SSC in which about (87.5%) of the participants have good knowledge. These findings are congruent with the previous study of Hurtado, et al., (2012) in which 93.8% have good awareness of the SSC and that, in both private and public facilities.

Also study results contradict with study Mascherek, et al., (2013) that was conducted in German, French, and Italian in which knowledge toward WHO-checklist was moderate. A

study of Patil and Mythreyee (2018) that was conducted in India in which the overall Mean percentage levels of knowledge of Operation Theatre staff nurses were 64.98 with mean and SD was 32.49 ±4.75.

6.5 Observational Checklist: Regarding WHO Surgical Safety

Overall, in included hospitals surgeons were able to check for correct patient position to a high level, However, surgeons have not checked for essential imaging (e.g., X-Ray) as well as specific equipment (e.g., microscope (66.2%) and (60%) respectively.

Overall, in included hospitals all nurses (100%) have checked for equipment and supplies availability.

Overall, all the team (100%) have checked for the completion of instrument, sponge, and needle count. Furthermore, (81.2%) of the staff have applied the dressing, drainage, and specials.

These results might be attributed to the value of adopting and using checklists at the OR as the majority of health systems enforce the use of checklists. More than half of those who participated in the study said that if they will need a surgery themselves or if a close family member will need a surgery, the Checklist would be their first choice for ensuring patient safety. The process of observation at the OR was not easy, although it reflects How much the OR team are working well with the checklist and the sign in and time out were conductance for more than 90% in both observed and self-reported surveys which gave an optimistic feeling for the researcher that patient safety is well maintained. However, a weak complaint of the OR team was seen with the "Sign Out" process. This might be related to the personnel who conduct the sign out as they leave everything upon the nurses and look to be

busy with other tasks or they might leave the room. According to the study of Kwok et al., (2013), sign Out was commonly conducted amongst nursing personnel, with surgeons and anesthetists not being vocally engaged. This may be due to the fact that each discipline is naturally more concerned with the checklist stages that apply to their own obligations. As a result, surgeons are occupied with paperwork, while anesthesiologists are occupied with removing the patient's tube. Some surgeons were surprised to learn that they did not complete the Sign Out section of the checklist and it was not recorded on their radar.

6.6 Study strengths and Limitations

This study shed the light on the question of what is real compliance? Is it where the staff believe they have completed the checklist well, or is it how well we actually observe them completing it? Strengths of this study is that it is the first study in Palestine; it might add valuable information to the presented data of the WHO SSC. This study involved the majority of staff through repeated reminders and door-to-door distribution of the checklists, thus achieving a high response rate of >70%. High response rate from all members of staff would somewhat mitigate selection bias. Furthermore, this study examined most of the issues discussed in literature while also assessing completion of each item in the checklist. The observational audit was a single regional site that assessed completion of a task and not accuracy or proper technique.

However, the Hawthorne effect, when participants' conduct is changed by the presence of an observer, may have affected some of the observation data and can be considered as a limitation in this study. The researcher tried to minimize this effect by having observers keep a low-profile presence. If ethical approval is granted, a future study design could include

video recording of SSC completion from across the operating room. Additionally, favorable staff impressions may have been influenced by respondents' eagerness to submit comments that reflected the effectiveness of the checklist implementation in our study. As a result, only subsets of surgical teams were included in the checklist, making it anonymous and optional. Participation was not rewarded.

6.7 Conclusion

Findings revealed that OR staff have a positive attitude toward SSC. They believed that SCC improved their communication and reduced human mistakes in the operating room. The lowest applied domain was in the sign-out. However, the highest applied domain was in the sign-in. The compliance rate was better in the observational part than in the self-administration part as some participants considered themselves as having low level of compliance but in fact the system unintentionally forced them to be more compliant to WHO SSC. This study suggests that despite the perceived importance and benefits of most aspects of the SSC, the checklist in its present form is not to be fully or universally embraced.

6.8 Recommendations

1.Attention should be paid to the important need for training of the OR staff toward the use of SSC, to enhance their compliance rate and their attitudes toward SSC.

2. Addressing time constraints in effective SSC implementation to improve outcomes. Further research in the form of a national audit of SSC protocols has the potential to identify those aspects of the SSC that need local modification to improve both OR safety and efficiency.

4. The OR staff need to be reminded frequently by the supervisor to fill out the checklist appropriately and correctly.

5. Encourage the use of suitable monitoring systems to ensure full compliance rate of SSC and to be agreed by all the staff in the operating room.

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Annex 1: Self-administration questionnaire

Dear colleges:

I am a graduate student from Al-Quds University, inviting you to participate in study about **Compliance and attitude of operating room staff toward WHO Surgical Safety Checklist at Hebron Hospitals**

This study is about the safety checklist developed by WHO for operating theaters ("WHO Surgical Safety Checklist"). The safety checklist comprises a list of controls to be carried out in the operating theater before (Sign In, Time Out) and after (Sign Out) a surgical intervention (e.g., patient identity, site marking, side, type of intervention, postoperative management issues, etc.). The goal of this checklist is to improve the quality and safety of patient care.
Your participation in responding to the questionnaire contributes to the development of the scientific research, information will be confidential and used for scientific research purposes only. You can withdraw from this study at any time.

Data collected will be treated as **strictly confidential** and results **anonymized** (i.e., they will be presented as groups and not individually)

Thank you very much about your participation

Prepared By:

Missada khader Abed Abu Zwayed

Supervised by: **Dr. Maha Nahal**

<u>Part one : Demographical data</u>:

Please circle the number that best matches your choice in the following

1. **Job Title**

   a. ☐ Surgeon. b. ☐ Nurse c. ☐ Anesthesia Technician

   d. ☐ Anesthesiologist

2. **Age:**

   a. Less than 25 b. 25-29 c. 30-34

   d. 35-39 e. 40 and above.

3. **Gender:**

   a. ☐ Male. b. ☐ Female

4. **Years of Experience at operating room:**

A. 1-5 years B. 6-10 years.

C. 11-15 years. D. 16 and above

5. **Academic degree :**

…….

6. **Did you take training regarding WHO safety checklist?**

a. ☐ Yes. b. ☐ No

7. **how you rate your knowledge regarding WHO safety checklist?**

0 1 2 3 4 5 6 7 8 9 10

Part two: Attitude part

In this part please sign ☑ or ☒ on one of choices

Statement	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
1. There is little difference between the previous checklist and the WHO surgical checklist.					
2. The complete surgical safety checklist is used for every procedure in which I am involved in theatre.					
3. When the checklist is being carried out, everyone in theatre stops what they are doing and					

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
listens until it is completed.					
4. Sometimes, I can accept if unnecessary sections of the surgical safety checklist are not completed.					
5. The individual who signs the checklist personally ensures that the relevant steps have been completed.					
6. I believe that failing to use the checklist is poor professional practice.					
7. I believe using the checklist reduces the likelihood of human error.					
8. The use of the checklist should be mandatory for every case.					
9. I have initiated the use of the checklist in the past.					
10. I intend to initiate the use of the checklist in the future.					
11. It's improves the safety of procedures (anaesthetic and surgical)					
12. is a waste of time					
13. improves team communication (related to safety)					
14. brings no extra value to existing safety procedures already in place in my hospital/clinic before its implementation					
15. helps to develop a safety culture in surgical teams					
16. has not demonstrated its efficacy in the scientific literature					
17. facilitates teamwork					
18. eliminates (during the controls)					

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
the hierarchy between healthcare professionals (doctors, nurses, etc.)					
19. I believe using the checklist improves patient safety.					
20. I believe using the checklist improves teamwork in theatre.					
21. The use of the checklist should be mandatory for every case.					

Tool two: The Compliance

For each box ticked ☑ or ☒ please indicate if these checklist sections are applied or not

	Not applied	Applied
Sign In		
Time Out		
Sign Out		

Sign in			
Item no.	**Checklist items**	**Not applied**	**Applied**
1	Patient identity was confirmed, as well as the site of the operation, the procedure and the signed consent.		
2	The site was marked.		
3	Anesthesia equipment and medication were checked completely.		
7	Patient risk for blood loss >500 ml and patient requirement for blood was checked.		
8	The assigned person put his/her name and signature on the check list.		
Time out			
9	The team member introduced self by name and role.		
10	Patient's name, procedure and site of incision was confirmed.		
11	Prophylaxis antibiotics have been given		

	within the last 60 min		
Anticipated critical events to surgeon:			
12	The critical or non-routine steps were reported.		
13	The need to extend time of the operation was recorded		
14	The staff member record the anticipated blood loss when it is > 500 .		
Anticipated critical events to anesthetist:			
15	Anesthetist was able to assess the patients for any specific concerns		
Anticipated critical events to nursing team:			
16	Confirm the sterility of the area and procedure		
17	Equipment issue and any concerns of sterility were checked		
18	Essential imaging was displayed		
19	Name and signature of the assigned person		

	was verified		
Sign out			
20	Name of procedure was confirmed verbally by the assigned nurse.		
21	All instrument, sponge, needle and suture were counted		
22	The assigned person addressed Problems of equipment as equipment loss		
23	key concerns for recovery and management of patient were reported		
24	Specimen labeled correctly		
25	The assigned person put his/her Name and signature.		

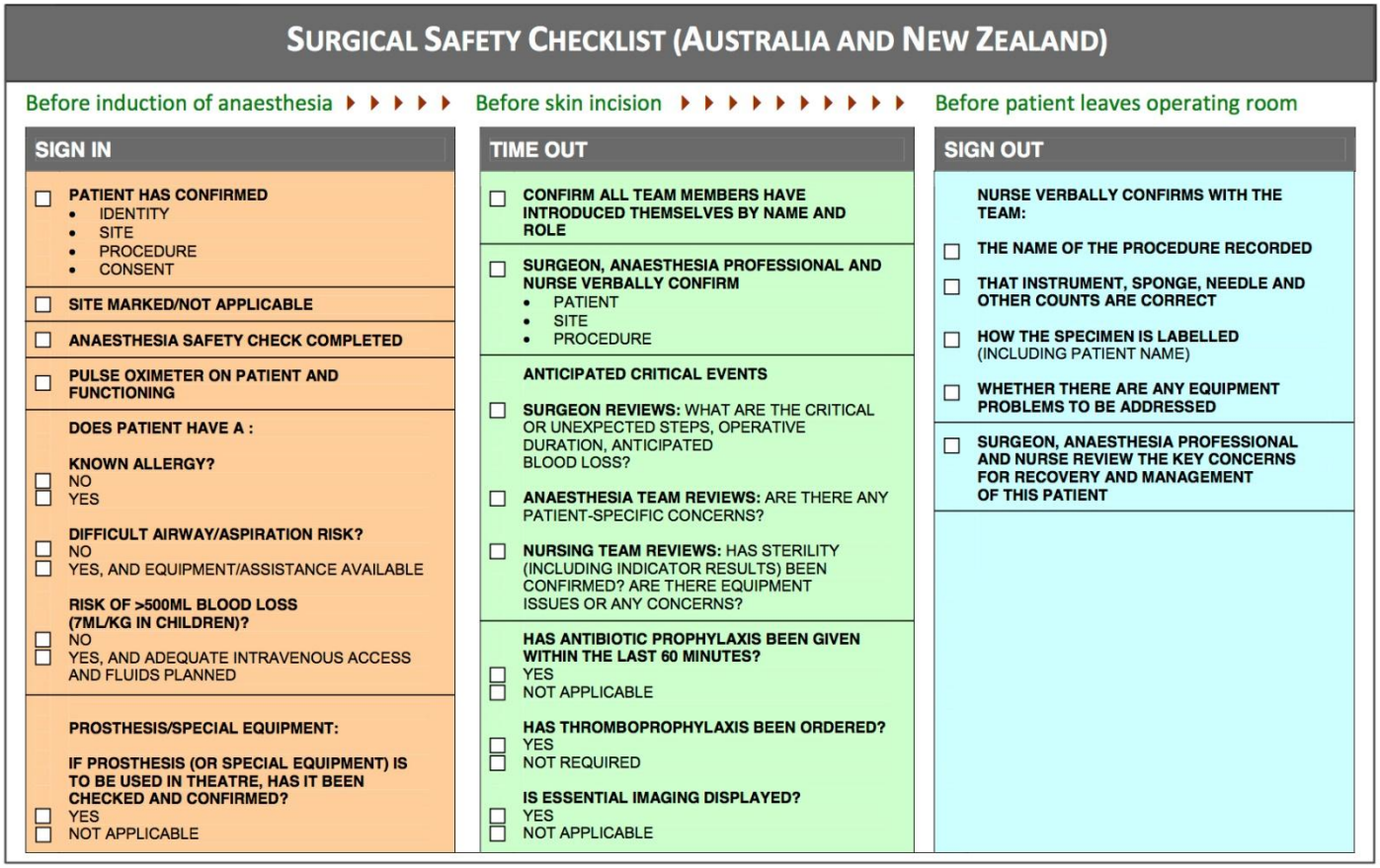
Annex 2: Observation Check list

The second tool: Observation part

	Yes ☑	**No ☑**
All team members have introduced themselves by name and role		
Anesthetist		
Patient identification: Family name, first name, birth		

date		
Type of anesthetic procedure		
Allergies		
Antibiotic prophylaxis		
Specific perioperative risks		
Any patient-specific concerns and precautions		
Operating surgeon		
Type of surgery and marked site		
Specific risks		
Intraoperative medications		
Duration of surgery		
Anticipated blood loss		
Correct patient positioning		
Specific equipment (e.g. microscope)		
Essential imaging (X-ray, echo, coronary etc.)		
OR-Nurse		
Equipment available		
Supplies available		
Team Sign Out before patient leaves OR Item confirmed % (n)		
Name of the procedure		
Dressing, Drainage, Specials		
Prescriptions		
Correct specimen labelling, forms and laboratory containers (Patients name and birth date)		
Completion of instrument, sponge and needle count		
Image intensifier images transmitted to PACSa		

Annex 3: World Health Organizations Surgical Safety Checklist



SURGICAL SAFETY CHECKLIST (AUSTRALIA AND NEW ZEALAND)

Before induction of anaesthesia ▸▸▸▸▸ Before skin incision ▸▸▸▸▸▸▸▸▸▸ Before patient leaves operating room

SIGN IN

☐ **PATIENT HAS CONFIRMED**
- IDENTITY
- SITE
- PROCEDURE
- CONSENT

☐ **SITE MARKED/NOT APPLICABLE**

☐ **ANAESTHESIA SAFETY CHECK COMPLETED**

☐ **PULSE OXIMETER ON PATIENT AND FUNCTIONING**

DOES PATIENT HAVE A :

KNOWN ALLERGY?
☐ NO
☐ YES

DIFFICULT AIRWAY/ASPIRATION RISK?
☐ NO
☐ YES, AND EQUIPMENT/ASSISTANCE AVAILABLE

RISK OF >500ML BLOOD LOSS (7ML/KG IN CHILDREN)?
☐ NO
☐ YES, AND ADEQUATE INTRAVENOUS ACCESS AND FLUIDS PLANNED

PROSTHESIS/SPECIAL EQUIPMENT:

IF PROSTHESIS (OR SPECIAL EQUIPMENT) IS TO BE USED IN THEATRE, HAS IT BEEN CHECKED AND CONFIRMED?
☐ YES
☐ NOT APPLICABLE

TIME OUT

☐ **CONFIRM ALL TEAM MEMBERS HAVE INTRODUCED THEMSELVES BY NAME AND ROLE**

☐ **SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE VERBALLY CONFIRM**
- PATIENT
- SITE
- PROCEDURE

ANTICIPATED CRITICAL EVENTS

☐ **SURGEON REVIEWS:** WHAT ARE THE CRITICAL OR UNEXPECTED STEPS, OPERATIVE DURATION, ANTICIPATED BLOOD LOSS?

☐ **ANAESTHESIA TEAM REVIEWS:** ARE THERE ANY PATIENT-SPECIFIC CONCERNS?

☐ **NURSING TEAM REVIEWS:** HAS STERILITY (INCLUDING INDICATOR RESULTS) BEEN CONFIRMED? ARE THERE EQUIPMENT ISSUES OR ANY CONCERNS?

HAS ANTIBIOTIC PROPHYLAXIS BEEN GIVEN WITHIN THE LAST 60 MINUTES?
☐ YES
☐ NOT APPLICABLE

HAS THROMBOPROPHYLAXIS BEEN ORDERED?
☐ YES
☐ NOT REQUIRED

IS ESSENTIAL IMAGING DISPLAYED?
☐ YES
☐ NOT APPLICABLE

SIGN OUT

NURSE VERBALLY CONFIRMS WITH THE TEAM:

☐ **THE NAME OF THE PROCEDURE RECORDED**

☐ **THAT INSTRUMENT, SPONGE, NEEDLE AND OTHER COUNTS ARE CORRECT**

☐ **HOW THE SPECIMEN IS LABELLED** (INCLUDING PATIENT NAME)

☐ **WHETHER THERE ARE ANY EQUIPMENT PROBLEMS TO BE ADDRESSED**

☐ **SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE REVIEW THE KEY CONCERNS FOR RECOVERY AND MANAGEMENT OF THIS PATIENT**

This checklist has been adapted from the World Health Organization Surgical Safety Checklist by the Royal Australasian College of Surgeons in consultation with the Australian and New Zealand College of Anaesthetists, the Royal Australian and New Zealand College of Ophthalmologists, the Royal Australian and New Zealand College of Obstetricians and Gynaecologists, the Australian College of Operating Room Nurses and the Perioperative Nurses College of the New Zealand Nurses Organisation; it is not intended to be comprehensive, additions and modifications to fit local practice are encouraged (Oct 09)

Annex 4: Facilitating litter- Private hospital

Al- Quds University

Faculty of Health professions

Nursing Department

Jerusalem-Abu Dies

بسم الله الرحمن الرحيم

جامعة القدس

كلية المهن الصحية

دائرة التمريض والقبالة

القدس-أبوديس

2020/11/22

حضرة الدكتور يوسف التكروري المحترم

مدير عام مستشفى الاهلي/ الخليل

الموضوع " الموافقة على تسهيل مهمة الطالب مسعدة طرايرة"

تحية طيبة وبعد،،،

تقوم الطالبة مسعدة طرايرة ورقمها الجامعي 21811960، وهي طالبة ماجستير إدارة التمريض/ كلية المهن الصحية/ جامعة القدس، بعمل رسالة ماجستير بعنوان

"Compliance and attitude of operational room staff toward WHO Surgical Safety Checklist at Hebron Hospitals"

ارجو من حضرتكم تسهيل مهمة الطالبة للحصول على المعلومات اللازمة ابتداء من 2020/12/10 – 2021/2/20

وتفضلوا بقبول فائق الاحترام والتقدير،،،،

منسق برامج الدراسات العليا

د. فريد اغريب

Tel : + 02 2799753

Fax : + 02 2791243

تلفون : 2799753

فاكس : 2791243

Annex 5: Facilitating litter- Governmental hospital

State of Palestine
Ministry of Health - Nablus
General Directorate of Education in Health

دولة فلسطين
وزارة الصحة– نابلس
الإدارة العامة للتعليم الصحي

الرقم: ع.ت/ ١٠٩١/ ٢٠٢٠
التاريخ: ١٥/ ١٠/ ٢٠٢٠

Ref.: .....
Date:.....

مدير عام الادارة العامة للمستشفيات المحترم,،،

تحية واحترام،،،

الموضـــوع: تسهيل مهمة بحث

لاحقاً لموافقة معالي وزيرة الصحة، يرجى تسهيل مهمة الطالبة: **مسعدة طرايرة، ماجستير ادارة التمريض، جامعة القدس**، لاجراء بحث التخرج بعنوان:

" Compliance and attitude of operational room staff toward WHO Surgical Safety Checklist at Hebron Hospitals "

حيث ستقوم الطالبة بجمع معلومات حول البحث عن طريق تعبئة استبانة من الكادر الصحي، مع العلم ان مشرف الدراسة: د. مها نحال، وذلك في:

- مستشفى الخليل – مستشفى المحتسب

على ان يتم الالتزام بجميع تعليمات واجراءات الوقاية والسلامة الصادرة عن وزارة الصحة بخصوص جائحة كورونا، وتحت طائلة المسؤولية.

مع الاحترام،،،

د. عبد الله القواسمي
رئيس وحدة التعليم الصحي
والبحث العلمي

دولة فلسطين وزارة الصحة الإدارة العامة للتعليم الصحي

P.O .Box: 14
Tel.:09-2333901

ص.ب. 14
تلفون: 09-2333901

Annex 6: Research ethics committee decision letter

Al-Quds University
Jerusalem

Deanship of Scientific Research

بسم الله الرحمن الرحيم

جامعة القدس
القدس
عمادة البحث العلمي

Research Ethics Committee
Committee's Decision Letter

Date: November 29, 2020
Ref No: 157/REC/2020

Dear Dr. Maha Nahal, Ms. Missada Abu Zwayed

Thank you for submitting your application for research ethics approval. After reviewing your application entitled **"Compliance and attitude of operational room staff toward WHO Surgical Safety Checklist at Hebron Hospitals",** the Research Ethics Committee confirms that your application is in accordance with the research ethics guidelines at Al-Quds University.
We would appreciate receiving a copy of your final research report/ publication.
Thank you again and wish you a productive research that serves the best interests of your subjects.

PS: This letter will be valid for two years.

Sincerely,

Suheir Ereqat, PhD
Associate Professor of Molecular Biology

Research Ethics Committee Chair

Cc. Prof. Imad Abu Kishek - President
Cc. Members of the committee
Cc. file

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