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Analysis of Barriers to Implementing the WHO Surgical Safety Checklist in a Tertiary Care Hospital of Peshawar

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ABSTRACT

Background: The WHO (2008) Surgical Safety Checklist (SSC), has been greatly promoted worldwide as an improved tool for standardizing communication, teamwork, and adherence to essential safety practices during surgical procedures to increase patient safety. The objective of this study is to identify and analyze the barriers to the effective implementation of the WHO SSC in many tertiary hospitals of Peshawar, Pakistan. **Methodology:** For this purpose cross sectional descriptive research study at Maqsood Medical complex Peshawar was used. For sample size, Slovin's formula estimates a total of 42 participants, including physicians, nurses, anesthesia staff, OT technologists and OT managers. Structured questionnaires were used to collect the data from individual experiences, interprofessional dynamics and organizational factors that affect SSC implementation. **Results:** Various key barriers to the consistent application of the WHO SSC in the tertiary care hospitals of Peshawar were identified. 23.8% indicated high levels of resource constrains including shortages of materials, staffing and equipment as a major limitation. Furthermore, 26.2% of the participants replied that the compliance reviews were infrequently conducted, suggesting that there was not sufficient oversight and accountability. Even though 76.2% of respondents stated they received incentives for SSC adherence, the degree of inconsistency in this provided incentive structure offers space for improvement. Moreover, only 47.6% of respondents confirmed full integration of the SSC within the emergency surgery protocols and thus a gap in the use of the SSC in high stakes situation. Generally, the supporters of SSC saw hospital culture and leadership support to the initiative in a positive light, with 81% of the respondents agreeing that the administration promoted the use of SSC visibly. The strong opinion was however complemented by a minority dissenting voice (4.8 % disagreeing and 14.3 % neutral), specifically that stronger cultural reinforcement of patient safety values is required. As other barriers, there was lack of staff involvement, improper training, reluctance to change and vague communication about the benefit of the SSC. **Conclusion:** There is a complex interaction of resource constraint, cultural and leadership deficiencies and protocol inadequacy that prevent the implementation of the WHO Surgical Safety Checklist in Peshawar tertiary care hospitals. These barriers need dealing with in various ways, from better use of resources, blanket emergency protocols, greater leadership support and staff training, targeted. These findings emphasize the need for context specific strategies in overcoming unique low resource challenges for transformative innovations to be achieved. Awareness of these barriers can help in achieving sustainable adoption of the SSC in Peshawar and similar areas, leading to an improvement in surgical safety and patient outcomes.

INTRODUCTION

A checklist is an organized tool designed to help users identify, plan, evaluate, or confirm various tasks or items. It serves as a practical visual or verbal guide, assisting individuals in managing the limitations of short-term memory. Among the earliest well-known examples of checklists was its application in the process of central venous catheter insertion. (1)

The World Health Organization (WHO) surgical safety checklist is the most widely used surgical checklist, comprising 19 items in three domains: state

that these, are prior to induction of anesthesia (sign in), prior to surgical incision (time out) and prior to the patient leaving the operating theatre (sign out) (2). Eight hospitals around the world used this surgical safety checklist primarily which reduces major complications from 11% to 7% immediately (3).

The World Health Organization Surgical Safety Checklist is an enrolled in the improvement of patient safety performed in surgical process. Nevertheless, it continues to be implemented worldwide and despite this, there are major challenges of ensuring effective adoption and utilization of the checklist from a resource constrained setting. The key barriers in implementation of WHO Surgical Safety Checklist in tertiary care hospitals of Peshawar, Pakistan are studied here in(4) .

Previously, a number of barriers to implementation of the WHO Surgical Safety Checklist have been recognized, including lack of leader commitment, poor teamwork and communication, inadequate training and education, and resistance to change (4,5,6).

A major barrier is the lack of clinical motivation for healthcare personnel to strictly conform to the checklist. Clinicians often regard the checklist as an administrative burden that gets in the way of surgical workflow, rather than an aid for improving patient safety (6, 7).

Hierarchical culture is yet another main issue as many healthcare settings are hierarchical hinder open communication together with teamwork. If junior staff identify potential safety issues, they may hesitate to speak up or challenge more senior colleagues (8).

Various barriers for implementation of WHO Surgical safety Checklist in tertiary care hospitals of Peshawar, Pakistan exist. Adherence to total completion of the checklist was the major limiting factor. Another key barrier to the implementation of the checklist is a lack of a streamlined and cohesive approach pursued in implementing the checklist, in the complex and dynamic operating theatre environment (9)

Other main barriers are insufficient supervision and accountability, lack of coordination among different health care providers, and the absence of required resources for checklist implementation (e.g., checklists, pens, lighting and noise control) (10, 11).

Personal/individual Barriers

Surgeons are often cited as impediments to the successful implementation of the WHO Surgical Safety Checklist, but personal barriers between theatre staff may be just as important. Individuals' attitudes, beliefs, and perceptions about the checklist, and its potential to increase patient safety often create the barriers to checklist use. A big barrier is a lack of awareness and understanding of what the checklist is for and what it offers. If staff are not trained adequately, they would not understand the rationale behind including every checklist item and how each item contributes to patient safety (12, 13)

Interpersonal Barriers

Lack of coordination between different healthcare providers involved in the surgical process and ineffective communication. Not all the time surgeons, anaesthetists, and nursing staff communicate clearly or work in harmony leading to the difference in implementation of the checklist (14).

Additionally, a deficiency in communication and coordination among various healthcare providers involved in the surgical process can interfere with the implementation of the checklist (15). Surgeons or anaesthetists may not speak fully; or nursing staff may not speak at all; or they work unevenly together, creating gaps in the impact of the checklist and in the joint understanding of the importance of the checklist. Furthermore, in diverse healthcare settings, communication challenges can be compounded by cultural and language barriers. Such barriers can cause misunderstandings, misinterpretations of the checklist items and essentially impair patient safety (16).

Organizational and Systemic Barriers

However, the effective implementation of the WHO Surgical Safety Checklist is effectively hindered by organizational barriers. Checklist adoption and adherence can be severely impeded by a lack of dedicated resources, including funding, personnel, and training materials (17).

The organisational and systemic barriers to checklist implementation underline the necessity of an integrated approach that conditions the use of resources, clarifies policy, and mobilises key players at all stages of implementation. Completion of Surgical Safety Checklist (18, 19).

METHODOLOGY

Study Design

This study employed a **cross-sectional study design** to investigate the barriers to implementing the WHO Surgical Safety Checklist (SSC) in a tertiary care hospital setting. The cross-sectional design was chosen to provide a snapshot of the current state of SSC implementation and to identify the key barriers hindering its effective use.

Hospital Setting

The study was conducted at **Maqsood Medical Complex (MMC)**, a tertiary care hospital located in Peshawar, Pakistan.

Study Sample

The study sample consisted of **42 participants** who were directly involved in the surgical process. The sample size was determined based on the availability of operating room (OR) staff during the study period and

the need to ensure a representative sample of key stakeholders involved in the implementation of the SSC.

Inclusion Criteria

The following inclusion criteria were applied for participant selection:

- **Operating room staff** with more than one year of experience, including:
  - Physicians
  - Staff nurses
  - Anesthesia staff
  - Operation theatre technologists
  - OT managers

Exclusion Criteria

The following individuals were excluded from the study:

- Patients in the operation theatre
- OT attendants
- Pharmacy personnel
- CSSD (Central Sterile Services Department) staff

Data Collection Procedure

Data were collected using a **structured questionnaire** designed to assess the barriers to implementing the WHO Surgical Safety Checklist. The questionnaire was divided into three main sections:

1. **Individual experiences**: Assessing personal attitudes, knowledge, and perceptions of the SSC.
2. **Interprofessional dynamics**: Evaluating communication, teamwork, and hierarchical issues within the OR team.
3. **Organizational factors**: Investigating resource allocation, leadership support, and hospital policies related to SSC implementation.

The questionnaire was administered to participants in person, and responses were collected anonymously to ensure confidentiality.

Ethical Considerations

The study adhered to ethical guidelines, and the following measures were taken:

- **Informed Consent**: Participants were provided with clear information about the study's purpose, benefits, and their right to withdraw at any time. Written consent was obtained from all participants.
- **Confidentiality and Privacy**: All data were anonymized and securely stored to protect participant privacy.
- **Ethical Approval**: Ethical approval was obtained from the **Institutional Review Board (IRB)** of Superior University before commencing the study.

Data Analysis

Data were analyzed using the **Statistical Package for the Social Sciences (IBM® SPSS® Statistics, Version 29)**. Descriptive statistics, including frequencies, percentages, mean, standard deviation (SD), and median, were used to summarize the data.

Duration of Study

The study was conducted over a period of **6 months**, during which data collection, analysis, and interpretation were completed.

Sampling Technique

A **stratified random sampling technique** was used to recruit participants. This approach ensured that all relevant categories of OR staff were represented in the study sample.

RESULTS

Personal Barriers

Table 1

Have you attended any training regarding SSC (Surgical Safety Checklist)?

Answer	Frequency	Percentage	Cumulative Percentage
No	6	14.3	14.3
Yes	36	85.7	100.0
Total	42	100.0	100.0

Timing of Training

Table 2

When did you receive your training regarding SSC after your hiring/changing department?

Answer	Frequency	Percentage	Cumulative Percentage
More than a year after	4	9.5	9.5
Within 1st month	17	40.5	50.0
Within 1st year	1	2.4	52.4
Within 3 months	9	21.4	73.8
Within 6 months	11	26.2	100.0
Total	42	100.0	100.0

Knowledge about purpose of SSC

Table 3

What is the main purpose of the SSC?

Answer	Frequency	Percentage	Cumulative Percentage
To comply with hospital regulations	1	2.4	2.4
To enhance team communication	6	14.3	16.7
To improve patient safety	35	83.3	100.0
Total	42	100.0	100.0

Frequency of attending training sessions

Table 4

Do you attend the training provided by your hospital every time?

Answer	Frequency	Percentage	Cumulative Percentage
Never	3	7.1	7.1
Rarely	1	2.4	9.5

Sometimes	8	19.0	28.6
Yes, always	14	33.3	61.9
Yes, most of the time	16	38.1	100.0
Total	42	100.0	100.0

Perception of OT staff regarding usefulness of WHO SSC

Table 5

Do you think SSC is not useful at all and imposed on you?

Answer	Frequency	Percentage	Cumulative Percentage
Strongly disagree	8	19.0	19.0
Disagree	12	28.6	47.6
Neutral	7	16.7	64.3
Agree	7	16.7	81.0
Strongly agree	8	19.0	100.0
Total	42	100.0	100.0

Reasons for skipping the completion of the WHO SSC

Table 6

What is the reason you often skip filling out the SSC?

Answer	Frequency	Percentage	Cumulative Percentage
Forgetfulness	7	16.7	16.7
Lack of enforcement	3	7.1	23.8
Lack of time	17	40.5	64.3
Other	13	31.0	95.2
Perceived Irrelevance	2	4.8	100.0
Total	42	100.0	100.0

Difficulties faced by OT staff in understanding the points of the WHO SSC

Table 7

Have you encountered any difficulties in understanding the SSC?

Answer	Frequency	Percentage	Cumulative Percentage
No, never	12	28.6	28.6
Yes, frequently	13	31.0	59.5
Yes, occasionally	17	40.5	100.0
Total	42	100.0	100.0

Belief of operation theatre staff regarding the effectiveness of the WHO SSC:

Table 8

Do you believe that the SSC improves patient outcomes?

Answer	Frequency	Percentage	Cumulative Percentage
Agree	12	28.6	28.6
Disagree	1	2.4	31.0
Neutral	5	11.9	42.9
Strongly Agree	24	57.1	100.0
Total	42	100.0	100.0

Energy Level as SSC goes on

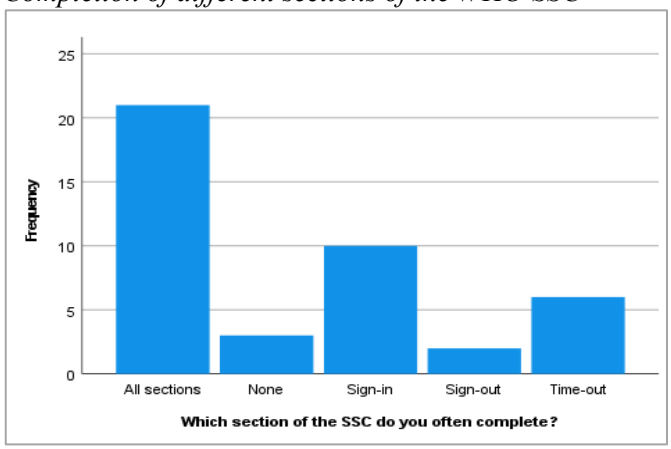
Table 9

Does your energy level decrease as the surgical list goes on?

Answer	Frequency	Percentage	Cumulative Percentage
No, it remains the same	8	19.0	19.0
Not sure	4	9.5	28.6
Yes, significantly	11	26.2	54.8
Yes, somewhat	19	45.2	100.0
Total	42	100.0	100.0

Figure 1

Completion of different sections of the WHO SSC



Interpersonal

Lack of professionalism and work ethics among OT Staff regarding the WHO SSC

The observation of a lack of professionalism and work ethics among operation theatre (OT) staff regarding the WHO Surgical Safety Checklist (SSC) was evaluated, revealing varying levels of concern. Among the respondents, 16 (38.1%) reported frequently observing unprofessional behavior, while an equal number (38.1%) stated they rarely observed such issues. Additionally, 9 respondents (21.4%) noted occasional lapses in professionalism and work ethics. Only 1 respondent (2.4%) reported never observing any lack of professionalism among their colleagues. These findings suggest that while some staff maintain professional conduct, there is a significant proportion frequently or occasionally observing unprofessional behavior. Addressing these concerns through stricter enforcement of standards and enhanced training may improve adherence to the SSC and overall professional conduct in the OT setting.

Table 10

Do you observe any lack of professionalism and work ethics in your colleagues regarding SSC?

Answer	Frequency	Percentage	Cumulative Percentage
Rarely	17	40.5	40.5
Yes,	16	38.1	78.6

frequently			
Yes, occasionally	9	21.4	100.0
Total	42	100.0	100.0

Do you receive any motivation from your colleagues?

Table 11

Do you receive any motivation from your colleagues?

Answer	Frequency	Percentage	Cumulative Percentage
No, never	1	2.4	2.4
Rarely	6	14.3	16.7
Yes, occasionally	24	57.1	73.8
Yes, regularly	11	26.2	54.8

Table 12

Does your team leader provide a learning environment in the OT?

Answer	Frequency	Percentage	Cumulative Percentage
No, never	4	9.5	9.5
Rarely	1	2.4	11.9
Yes, always	23	54.8	66.7
Yes, sometimes	14	33.3	100.0
Total	42	100.0	100.0

Table 13

Do your colleagues share their learning experiences after attending training with you?

Answer	Frequency	Percentage	Cumulative Percentage
No, never	4	9.5	9.5
Rarely	5	11.9	21.4
Yes, always	19	45.2	66.7
Yes, sometimes	14	33.3	100.0
Total	42	100.0	100.0

Do senior surgeons/anesthetists/staff nurses/OT technologists encourage and facilitate you in adhering to the SSC?

In the assessment of the support in encouraging and facilitating the adherence to the Surgical Safety Checklist (SSC) we found that 18/42 (42.9%) of the respondents always get support from the senior surgeons anesthetists, staff nurses and OT technologists. Participants were equally divided (42.9 %) on whether they ever get encouraged for SSC adherence. Nevertheless, 4 participants (9.5 per cent) mentioned that support is seldom provided; and 2 participants (4.8 per cent) claimed that they never at any point received support.

Table 14

Do senior surgeons/staff nurses/OT technologists encourage and facilitate you in adhering to the SSC?

Answer	Frequency	Percentage	Cumulative Percentage
No, never	2	4.8	9.54.8
Rarely	4	9.5	14.3
Yes, always	18	42.9	57.1
Yes, sometimes	18	42.9	100.0
Total	42	100.0	100.0

Do you feel that incomplete SSC is due to your colleague's negative response and attitude?

While assessing whether negative response and attitude of colleagues complete the incomplete Surgical Safety Checklist (SSC), results differed in respect to the respondents. Of these 42 participants, 15 reported that sometimes, inappropriate behaviors of negative attitude cause incomplete SSC adherence, while 10 reported that such behaviors often lead towards incomplete SSC adherence. It was also recognized that the negative responses of colleagues hardly ever contribute to SSC non-compliance by 8 participants (19.0%). On the other hand, 9 (21.4%) of the respondents denied any link between incomplete SSC and the manifestation of negative colleague attitudes.

Figure 2

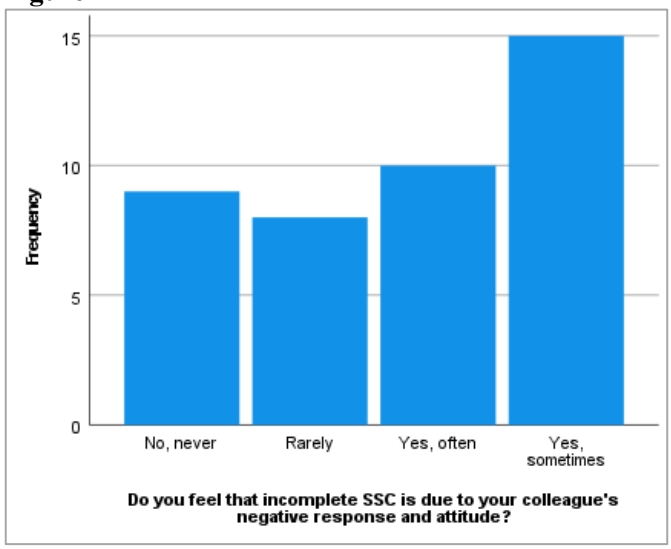


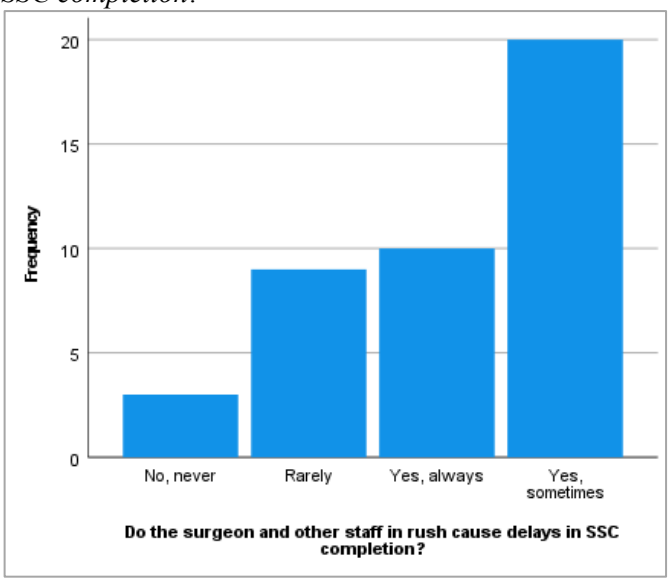
Table 15

Who is the person most often left out or ignored during SSC completion/marking time?

Answer	Frequency	Percentage	Cumulative Percentage
Anesthetist	9	21.4	21.4
Nurse	11	26.2	47.6
OT Technologist	7	16.7	64.3
Surgeon	15	35.7	100.0
Total	42	100.0	100.0

Figure 3

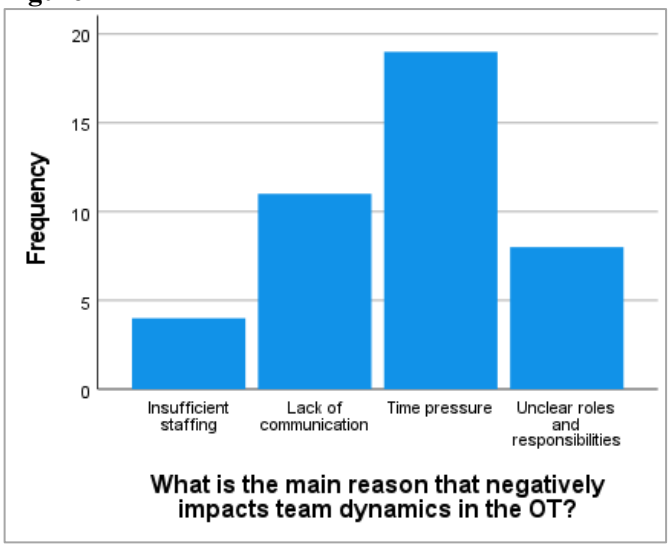
Do the surgeon and other staff in rush cause delays in SSC completion?



What is the main reason that negatively impacts team dynamics in the OT?

Time pressure was found to be the most unfavourable factor in the OT impacting team dynamics, as 45.2% (n = 19) of respondents stated this was so. Yet, lack of communication also stands out as issue among 11 participants (26.2%). Moreover, eight 19.0% respondents state additional problem thanks to unclear roles and responsibilities. Simultaneously, 4 subjects (9.5%) reported the lack of adequate staffing was a negative factor.

Figure 4



Organizational Barriers

Audit done by the hospital regarding SSC?

The results affirm that, of the 23 respondents (54.8%), there is confirmation that audits are carried out regularly which may indicate a structured process to support adherence to SSC. Furthermore, 13 respondents (31.0%) further revealed that audits are done occasionally, indicating that some kind of a frequent audit is done. Yet, 4 (9.5%) of them indicated that there are no audits and 2 (4.8%) of them stated that they are hardly carried out

Table 17

Is there any audit done by the hospital regarding SSC?

Answer	Frequency	Percentage	Cumulative Percentage
No, never	4	9.5	9.5
Rarely	2	4.8	14.3
Yes, occasionally	13	31.0	45.2
Yes, regularly	23	54.8	54.8
Total	42	100.0	100.0

Table 18

What is the gap between the audits?

Answer	Frequency	Percentage	Cumulative Percentage
3-6 months	10	23.8	23.8
6-12 months	12	28.6	52.4
Less than 3 months	12	28.6	81.0
More than a year	2	4.8	85.7
No audits conducted	6	14.3	100.0
Total	42	100.0	100.0

Table 19

Is there any poster/leaflet of SSC exhibited in the OT?

Answer	Frequency	Percentage	Cumulative Percentage
No, never	6	14.3	14.3
Rarely	4	9.5	23.8
Yes, always	17	40.5	64.3
Yes, sometimes	15	35.7	100.0
Total	42	100.0	100.0

Table 20

Is there any training provided by the hospital regarding SSC?

Answer	Frequency	Percentage	Cumulative Percentage
No, never	5	11.9	11.9
Rarely	5	11.9	23.8
Yes, occasionally	17	40.5	64.3
Yes, regularly	15	35.7	100.0
Total	42	100.0	100.0

Table 21

Are all the instruments, equipment, and other supplies available enough in each OR?

Answer	Frequency	Percentage	Cumulative Percentage
Rarely	2	4.8	4.8
Yes, always	28	66.7	71.4
Yes, sometimes	12	28.6	100.0
Total	42	100.0	100.0

Table 22

Are there any penalties for not adhering to the SSC?

Answer	Frequency	Percentage	Cumulative Percentage
No, never	5	11.9	11.9
Rarely	11	26.2	38.1
Yes, always	17	40.5	78.6
Yes, sometimes	9	21.4	100.0
Total	42	100.0	100.0

Table 23

Does the hospital have a dedicated team for monitoring SSC adherence?

Answer	Frequency	Percentage	Cumulative Percentage
No	10	23.8	23.8
Not sure	7	16.7	40.5
Yes	25	59.5	100.0
Total	42	100.0	100.0

Table 24

Is there any feedback mechanism in place for reporting issues with SSC?

Answer	Frequency	Percentage	Cumulative Percentage
No, never	5	11.9	11.9
Rarely	5	11.9	23.8
Yes, always	18	42.9	66.7
Yes, sometimes	14	33.3	100.0
Total	42	100.0	100.0

Table 25

Does the hospital administration support the use of the SSC?

Answer	Frequency	Percentage	Cumulative Percentage
Neutral	7	16.7	16.7
Strongly do not support	1	2.4	19.0
Strongly support	19	45.2	64.3
Support	15	35.7	100.0
Total	42	100.0	100.0

Figure 5

Are resources (Time, Staff) allocated adequately for SSC adherence?

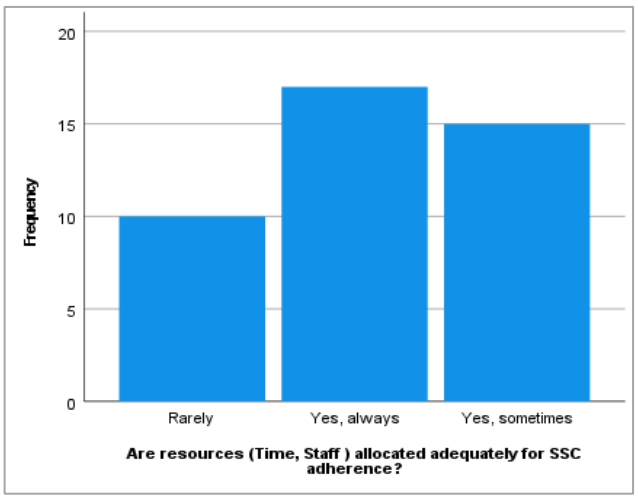


Table 26

Does the hospital conduct regular reviews of SSC compliance?

Answer	Frequency	Percentage	Cumulative Percentage
No, never	3	7.1	7.1
Rarely	8	19.0	26.2
Yes, always	19	45.2	71.4
Yes, sometimes	12	28.6	100.0
Total	42	100.0	100.0

Figure 6

Are there any incentives for teams that consistently adhere to the SSC?

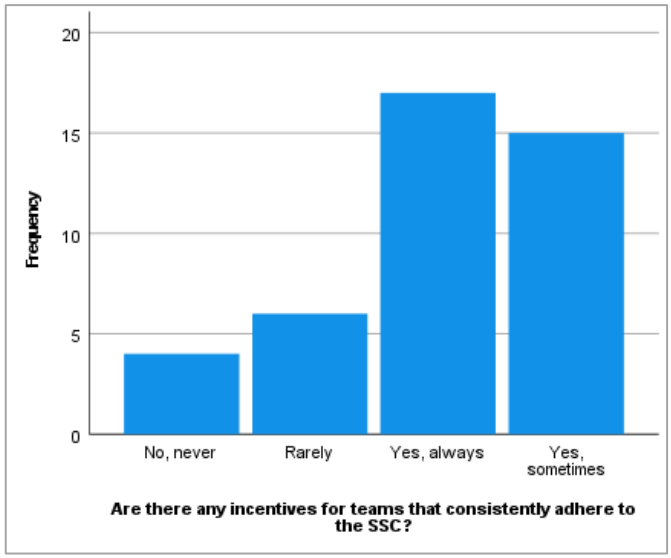


Figure 7

Does the hospital provide sufficient materials and tools (e.g., printed checklists) for SSC use?

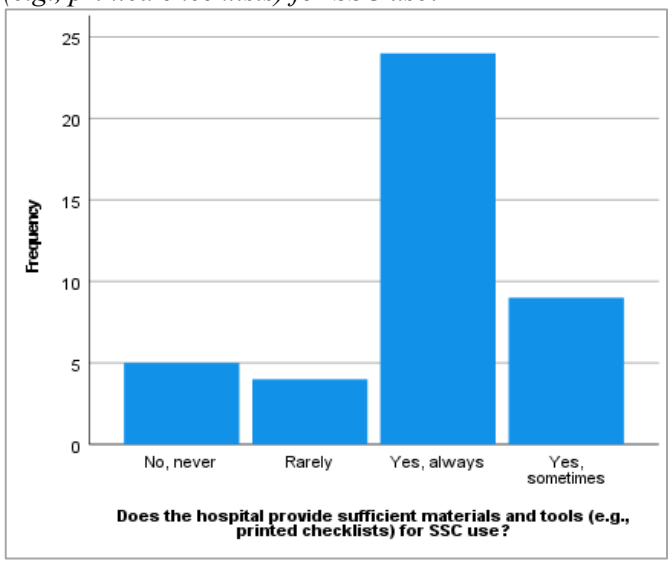


Table 27

Is there an established protocol for emergency surgeries that incorporates the SSC?

Answer	Frequency	Percentage	Cumulative Percentage
No	3	7.1	7.1
Not sure	3	7.1	14.3

Yes, fully	20	47.6	61.9
Yes, partially	16	38.1	100.0
Total	42	100.0	100.0

Table 28

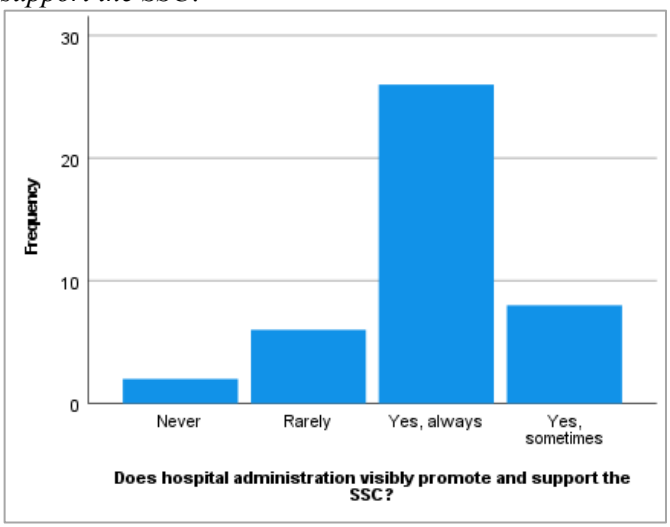
Does the hospital culture prioritize patient safety and the use of the SSC?

Answer	Frequency	Percentage	Cumulative Percentage
Agree	13	31.0	31.0
Disagree	2	4.8	35.7
Neutral	6	14.3	50.0
Strongly Agree	21	50.0	100.0
Total	42	100.0	100.0

The evaluation was carried out to find out whether the hospital culture values patient safety and the use of SSC. Twenty one (50.0%) respondents strongly agreed with this statement and 13 (31.0%) agreed. Nevertheless, 6 respondents (14.3%) were neutral and also 2 respondents (4.8%) disagreed.

Figure 8

Does hospital administration visibly promote and support the SSC?



DISCUSSION

It was found through the study that there were several barriers to the consistent implementation of the WHO Surgical Safety Checklist by the tertiary care hospitals of Peshawar, Pakistan. A major obstacle was identified as lack of resources and proper allocation, 23.8% of the respondents felt that resources were never properly allocated (20). This barrier was due to the insufficient materials, such as checklists, poor staffing, and equipment shortages (20).

Multi factor influences SSC adherence in the observed setting. However, according to 26.2% of those same respondents, the reviews occurred infrequently or not at all, which indicates disparate oversight that may inhibit work improvement. The incentive structures appear uneven with 76.2% of them getting incentives at least sometimes, while 23.8% rarely or never. The availability of resources stands somewhat strong, as 78.6% have confirmed access to the required materials and only 21.4% stated that materials are insufficient, thus defining some weak areas for more fair distribution of resources.

Although 85.7% say that some SSC (single service checklists) have been integrated into emergency protocols, just 47.6% indicate that SSCs are completely incorporated into applicable checklists, which poses a question about the checklist's usefulness in emergency situations. Strong hospital culture and administrative backing are perceived by 81%, however, there remain some neutral (14.3%) and opposing (4.8%) views on the matter. Lastly, SSC adherence will be enhanced and patient safety improved through a multidimensional approach of addressing systemic and cultural, as well as resource driven, barriers.

Results from the present study on hospital culture and administrative support for SSC are consistent with the broader SSC literature. Despite the majority of respondents perceiving a culture that emphasizes patient safety and visible administrative support, the dissenting voices help to demonstrate where further work is required to enhance the core components. In agreement with an associated study on obstacles to staff implementation of surgical safety checklists by Fourcade et al. (21). Efforts should be made to address staff concerns, to offer sufficient training, and to cultivate an environment of collaboration to support utilization of the checklist. Similarly, Munthali et al.'s qualitative study highlights the impact of leadership support, clear communication, and having a safe working culture in making SSCs work. Collectively these findings suggest that further SSC adherence must be addressed via a multi-pronged approach that tackles systemic and cultural factors (22).

The results of this present study to obtain hospital culture and administrative support on SSC implementation, concur with the earlier literature on SSC implementation. On the other hand, most respondents felt a visible administrative support and a culture that emphasizes patient safety; however, contrary voices suggest for the continued strengthening of these fundamental components. According to the work of Fourcade et al. barriers to staff adoption of surgical safety checklists include addressing staff concerns, providing adequate training, and creating an environment of collaboration for adoption of the checklist. Munthali et al. concluded similarly that leadership support, clear communication and a good safety culture all contribute to enabling the implementation of SSC. Taken together, these findings indicate that a comprehensive SSC adherence strategy that addresses both systemic and cultural factors will be

necessary to realize sustainable gains in governance of SSC use (23, 24).

CONCLUSION

In summary, the use of WHO Surgical Safety Checklist in the Peshawar's tertiary care hospitals is plagued with many challenges; limited resources, protocol inadequacies and sub- optimality of hospital culture and leadership. This patient safety tool presents several potential barriers to adoption including improving resource allocation, implementation of comprehensive emergency protocols, increasing leadership support, and targeted training of staffs. Addressing these barriers through a multi-pronged approach may help enable sustainable adoption of the tool.

Existing literature on facilitators and barriers to SSC implementation also confirm the findings (Lim et al., 2023, Tostes & Galvão, 2019, Gordon & Reed, 2012, Fudickar et al., 2012). Appropriate and appropriate tailored strategies to overcome the unique challenges of Peshawar and other low and middle income settings need further research and evaluations (25, 26).

The study has limitations in that the sample size is relatively small, and the data is self-reported, subject to social desirability bias.

REFERENCES

1. Weiser, T. G., Haynes, A. B., Lashoher, A., Dziekan, G., Boorman, D. J., Berry, W. R., & Gawande, A. A. (2010). Perspectives in quality: Designing the WHO surgical safety checklist. *International Journal for Quality in Health Care*, *22*(5), 365-370. https://doi.org/10.1093/intqhc/mzq039
2. Verwey, S., & Gopalan, P. D. (2018). An investigation of barriers to the use of the World Health Organization surgical safety checklist in theatres. *South African Medical Journal*, *108*(4), 336. https://doi.org/10.7196/samj.2017.v108i4.12780
3. Lyons, V. E., & Popejoy, L. L. (2013). Meta-analysis of surgical safety checklist effects on teamwork, communication, morbidity, mortality, and safety. *Western Journal of Nursing Research*, *36*(2), 245-261. https://doi.org/10.1177/0193945913505782
4. Melekie, T. B., & Getahun, G. M. (2015). Compliance with surgical safety checklist completion in the operating room of University of Gondar hospital, northwest Ethiopia. *BMC Research Notes*, *8*(1). https://doi.org/10.1186/s13104-015-1338-y
5. Shrestha, S. K., Thapa, P. B., Lama, T. Y., & Maharjan, D. K. (2017). Compliance and outcome of implementing World Health Organization surgical safety check list in surgical practice in a teaching hospital. *Journal of Kathmandu Medical College*, *4*(4), 126-130. https://doi.org/10.3126/jkmc.v4i4.18253
6. Barimani, B., Ahangar, P., Nandra, R., & Porter, K. (2020). The WHO surgical safety checklist: A review of outcomes and implementation strategies. *Perioperative Care and Operating Room Management*, *21*, 100117. https://doi.org/10.1016/j.pcorm.2020.100117
7. Treadwell, J. R., Lucas, S., & Tsou, A. Y. (2013). Surgical checklists: A systematic review of impacts and implementation. *BMJ Quality & Safety*, *23*(4), 299-318. https://doi.org/10.1136/bmjqs-2012-001797
8. Calland, J. F., Turrentine, F. E., Guerlain, S., Bovbjerg, V., Poole, G. R., Lebeau, K., Peugh, J., & Adams, R. B. (2011). *The surgical safety checklist: Lessons learned during Implementation*. *The American Surgeon™*, *77*(9), 1131-1137. https://doi.org/10.1177/000313481107700923
9. Lim, P. J., Chen, L., Siow, S., & Lim, S. H. (2023). Facilitators and barriers to the implementation of surgical safety checklist: An integrative review. *International Journal for Quality in Health Care*, *35*(4). https://doi.org/10.1093/intqhc/mzad086
10. Gillespie, B. M., Hamilton, K., Ball, D., Lavin, J., Gardiner, T., Withers, T., & Marshall, A. P. (2017). Unlocking the "black box" of practice improvement strategies to implement surgical safety checklists: A process evaluation. *Journal of Multidisciplinary Healthcare*, *10*, 157-166. https://doi.org/10.2147/jmdh.s124298
11. Nugent, E., Hseino, H., Ryan, K., Traynor, O., Neary, P., & Keane, F. B. (2012). The surgical safety checklist survey: A national perspective on patient safety. *Irish Journal of Medical Science*, *182*(2), 171-176. https://doi.org/10.1007/s11845-012-0851-4
12. Papaconstantinou, H. T., Jo, C., Reznik, S. I., Smythe, W. R., & Wehbe-Janek, H. (2013). Implementation of a surgical safety checklist: impact on surgical team perspectives. *Ochsner*

journal, *13*(3), 299-309. https://www.ochsnerjournal.org/content/13/3/299?utm_source=TrendMD&utm_medium=cpc&utm_campaign=Ochsner_Journal_TrendMD_0

13. Spry, C. C. (1990). Perioperative nurses should keep monitoring within their specialty. *AORN Journal*, *51*(4), 1071-1072. https://doi.org/10.1016/s0001-2092(07)66849-5
14. Pugel, A. E., Simianu, V. V., Flum, D. R., & Patchen Dellinger, E. (2015). Use of the surgical safety checklist to improve communication and reduce complications. *Journal of Infection and Public Health*, *8*(3), 219-225. https://doi.org/10.1016/j.jiph.2015.01.001
15. Kurlberg, G. (2019). Implementation of WHO Surgical Safety Checklist and its Outcome in South Asia. *Journal of Institute of Medicine Nepal*, *41*(3), 1-7. https://doi.org/10.59779/jiomnepal.1052
16. Paterson, C., Mckie, A., Turner, M., & Kaak, V. (2023). Barriers and facilitators associated with the implementation of surgical safety checklists: A qualitative systematic review. *Journal of Advanced Nursing*, *80*(2), 465-483. https://doi.org/10.1111/jan.15841
17. Berlinger, N., & Dietz, E. (2016). Time-out: the professional and organizational ethics of speaking up in the OR. *AMA journal of ethics*, *18*(9), 925-932. https://journalofethics.ama-assn.org/article/time-out-professional-and-organizational-ethics-speaking-or/2016-09
18. Mejia, O. A., & Fernandes, P. M. (2022). Checklists as a central part of surgical safety culture. *Sao Paulo Medical Journal*, *140*(4), 515-517. https://doi.org/10.1590/1516-3180.2022.140404052022
19. Do Prado Tostes MF, Galvão CM. Surgical safety checklist: benefits, facilitators, and barriers in the nurses' perspective. Rev Gaucha Enferm. 2019;40(spe).
20. Jain, D., Sharma, R., & Reddy, S. (2018). WHO safe surgery checklist: Barriers to universal acceptance. *Journal of Anaesthesiology Clinical Pharmacology*, *34*(1), 7. https://doi.org/10.4103/joacp.joacp_307_16
21. Walker, I., Reshamwalla, S., & Wilson, I. (2012). Surgical safety checklists: Do they improve outcomes? *British Journal of Anaesthesia*, *109*(1), 47-54. https://doi.org/10.1093/bja/aes175
22. Weiser, T. G., Porter, M. P., & Maier, R. V. (2013). Safety in the operating theatre—a transition to systems-based care. *Nature Reviews Urology*, *10*(3), 161-173. https://doi.org/10.1038/nrurol.2013.13
23. Bashford, T., Reshamwalla, S., McAuley, J., Allen, N. H., McNatt, Z., & Gebremedhen, Y. D. (2014). Implementation of the WHO surgical safety checklist in an ethiopian referral hospital. *Patient Safety in Surgery*, *8*(1), 16. https://doi.org/10.1186/1754-9493-8-16
24. Fourcade, A., Blache, J., Grenier, C., Bourgain, J., & Minvielle, E. (2011). Barriers to staff adoption of a surgical safety checklist. *BMJ Quality & Safety*, *21*(3), 191-197. https://doi.org/10.1136/bmjqs-2011-000094
25. Gordon, P., & Reed, A. (2012). The anaesthetist and the World Health Organization surgical safety checklist. *Southern African Journal of Anaesthesia and Analgesia*, *18*(1), 6-7. https://doi.org/10.1080/22201173.2012.10872815
26. Fudickar, A., Hörle, K., Wiltfang, J., & Bein, B. (2012). The effect of the WHO surgical safety checklist on complication rate and communication. *Deutsches Ärzteblatt international*. https://doi.org/10.3238/arztebl.2012.0695