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Original Research Article

Knowledge, Attitudes, and Practices of the WHO Surgical Safety Checklist in a Tertiary Care Hospital

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Abstract:

The World Health Organization (WHO) Surgical Safety Checklist is a globally accepted tool aimed at reducing surgical errors and enhancing patient safety. Its success relies on the awareness and compliance of surgical team members. Aim of the study was to assess the knowledge, attitudes, and practices (KAP) related to the WHO Surgical Checklist among consultants and residents in a tertiary care hospital. **Materials and Methods:** A cross-sectional survey was conducted among 288 participants (144 consultants and 144 residents) across nine surgical specialties. A structured 10-question questionnaire was distributed. Responses were analyzed using descriptive statistics. **Results:** Out of 288 respondents, 267 (93%) were aware of the WHO checklist, and 253 (88%) reported its regular use in their institute. However, only 187 (65%) were satisfied with its current implementation. 121 (42%) felt a separate team should oversee its use. Responsibility was attributed to all team members (surgeon, anesthesiologist, and nurse) by 187 (65%). Only 55 (19%) believed it was a waste of time. In emergency surgeries, 150 (52%) felt the checklist could still be completed, while 56 (20%) were unsure. Awareness began during postgraduate years for 144 (50%), and 225 (78%) supported clearly defined roles within the checklist. 176 (61%) favoured a country-specific adaptation. **Conclusion:** The WHO Surgical Checklist is well known and practiced, but gaps exist in satisfaction, role clarity, and emergency application. Improved training, team-based responsibility, and localized customization may enhance compliance and patient safety outcomes.

Key words: Anaesthesiologist, Operation theatre, Patient safety, surgeons, WHO surgical check list

Introduction:

Patient safety is a fundamental component of healthcare delivery, especially in the operating theatre where the complexity and intensity of procedures pose significant risks. Surgical errors, including wrong-site surgeries, retained surgical items, and anesthesia-related complications, continue to contribute to avoidable morbidity and mortality worldwide.[1] In response to these preventable errors, the World Health Organization (WHO) introduced the Surgical Safety Checklist in 2008 as part of its Safe Surgery Saves Lives initiative. This simple yet powerful tool was designed to enhance communication, foster teamwork, and ensure that essential safety steps are followed at critical points before, during, and after surgery.[2]

The WHO Surgical Checklist is structured into three phases: sign-in (before anesthesia induction), time-out (before skin incision), and sign-out (before the patient leaves the operating room). Each phase contains items that must be confirmed by the surgical team, such as patient identity, surgical site, availability of necessary equipment, and anticipated complications. The checklist has been associated with a significant reduction in perioperative complications and

deaths, especially in resource-limited settings where communication failures are more common.[3] Despite its global acceptance, the actual implementation, adherence, and perception of the checklist vary widely across institutions and among healthcare providers.

Several studies have shown that although awareness of the checklist is generally high among surgical staff, there are substantial gaps in its consistent application. Factors such as lack of time, resistance to change, unclear role responsibilities, and emergencies have been cited as barriers. Moreover, in high-pressure situations like emergency surgeries, teams often bypass the checklist, prioritizing rapid intervention over standardized safety protocols. This highlights a persistent tension between the ideal safety practice and the realities of surgical urgency and institutional culture.[4]

The success of the checklist not only depends on its availability but also on the commitment of the entire surgical team—surgeons, anesthesiologists, and nurses—to treat it as an integral part of patient care. Understanding the knowledge, attitudes, and practices (KAP) related to the checklist is therefore crucial in identifying bottlenecks in implementation and opportunities for improvement. In particular, assessing whether team members feel the checklist is a shared responsibility, whether they have received adequate training, and how they perceive its relevance in emergencies can help refine strategies to enhance its use.

Furthermore, there is ongoing debate about whether the WHO checklist, being globally standardized, should be adapted to better reflect local or national healthcare contexts. Country-specific modifications may improve compliance by making the checklist more relevant to local clinical workflows, language, and team dynamics, especially in diverse healthcare systems like India. The present study aims to evaluate the knowledge, attitudes, and practices concerning the WHO Surgical Safety Checklist among consultants and residents in a tertiary care hospital. By exploring how surgical professionals from various specialties perceive and use the checklist, the study seeks to uncover critical insights that could guide policy, training, and institutional practices aimed at improving surgical safety.

Materials and Methodology:

This descriptive, cross-sectional study was conducted at a tertiary care teaching hospital to evaluate the knowledge, attitudes, and practices related to the WHO Surgical Safety Checklist among surgical professionals. The study population consisted of a total of 288 participants. These participants represented nine different surgical specialties, which included both consultants and the postgraduate residents: general surgery, anesthesiology, obstetrics and gynecology, orthopedics, otorhinolaryngology (ENT), pediatric surgery, cardiac surgery, neurosurgery, and ophthalmology.

Participants were selected through purposive sampling, and only those actively working in operating theatres and involved in perioperative care were included. Exclusion criteria included healthcare professionals not directly involved in surgery, administrative staff, and those unwilling to provide informed consent. Incomplete or duplicate responses were excluded from the final analysis. The online consent was taken from each participant involved in this study.

Data were collected using a structured and pre-validated questionnaire specifically designed to assess key domains of knowledge, attitudes, and practices concerning the WHO checklist. The questionnaire comprised 10 close-ended questions, covering areas such as awareness, satisfaction, implementation, perceived responsibility, and feasibility in emergency settings as shown in **Table 1**. The tool was reviewed by experts for content validity and was pilot-tested on a small group of surgeons to ensure clarity and reliability.

Participants were approached in person, and the questionnaire was administered either as a via a secure digital platform, depending on participant preference. Participation was entirely voluntary, and all responses were anonymized to maintain confidentiality. Informed consent was obtained from all participants prior to data collection. All collected data were entered into Microsoft Excel and analyzed using descriptive statistics. Frequencies and percentages were calculated for each response item. Key questions were also visually represented using bar graphs to highlight major trends and comparisons among groups.

Table 1: Questionnaire Used in the Study

S.No	Question
1	Are you aware of the WHO Surgical Safety Checklist? (Yes/No)
2	Does your institute currently practice the WHO Surgical Safety Checklist? (Yes/No)
3	Are you satisfied with the way it is practiced in your operation theatre? (Yes/No)
4	Do you feel there should be a separate team responsible for implementing the checklist? (Yes/No)
5	Who do you believe is responsible for ensuring the checklist is completed? (Nurse/Anesthesiologist/Surgeon/All of the above)
6	Do you think the checklist is a waste of time, since patient safety is already ensured at an individual level? (Yes/No)
7	Do you think the checklist can be completed during emergency surgeries (e.g., limb hemorrhage, LSCS for fetal distress)? (Yes/No/Can't comment)
8	When did you first become aware of the WHO checklist? (During MBBS/During PG/After becoming a consultant or faculty)
9	Do you believe the checklist should assign individual responsibilities (for anesthesiologist, nurse, and surgeon) rather than collective roles? (Yes/No)
10	Do you think there should be a country-specific version of the checklist rather than a generic international one? (Yes/No)

Results:

Out of 288 participants, 267 (93%) were aware of the WHO Surgical Safety Checklist, and 253 (88%) stated that it is practiced in their institution. Satisfaction with current implementation was reported by 187 (65%) participants. When asked whether a separate team should oversee the checklist, 121 (42%) agreed. Regarding responsibility, 187 (65%) believed it should be a shared responsibility among surgeon, anesthesiologist, and nurse, while others attributed it to a single role: 43 (15%) to surgeons, 35 (12%) to nurses, and 23 (8%) to anesthesiologists. Only 55 (19%) considered the checklist a waste of time. Concerning emergency surgeries, 150 (52%) felt the checklist could still be completed, while 82 (28%) disagreed, and 56 (20%) were unsure. Most participants, 144 (50%), became aware of the checklist during postgraduate training, while 86 (30%) learned during MBBS, and 58 (20%) after becoming consultants. Role-specific allocation within the checklist was supported by 225 (78%) participants, and 176 (61%) believed a country-specific adaptation of the checklist would be beneficial.

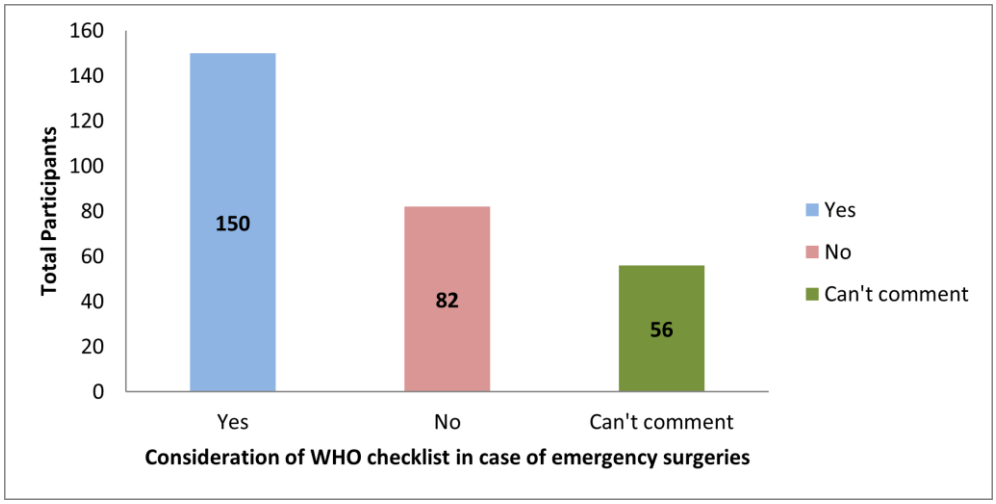

Fig 1: Views on the applicability of the WHO Surgical Safety Checklist in emergency cases

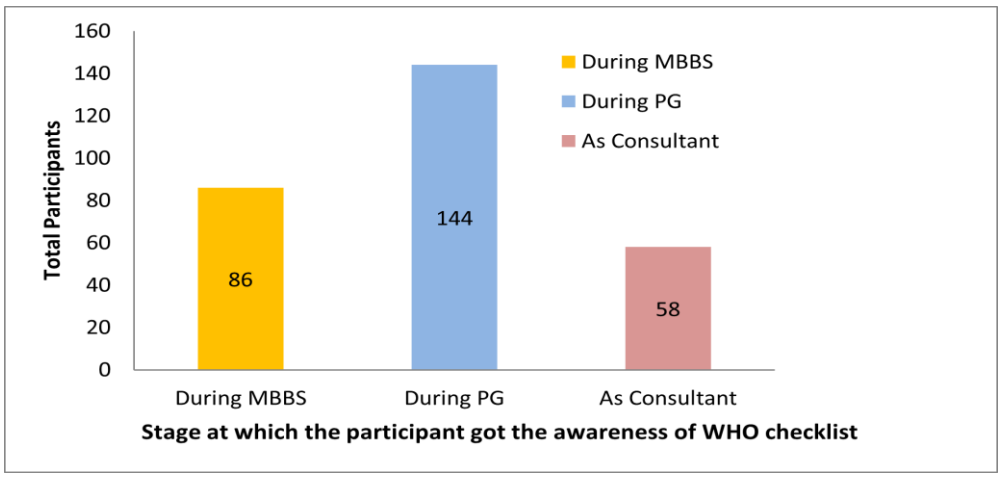

Fig 2: Career stage at which participants first became aware of the WHO Surgical Safety Checklist

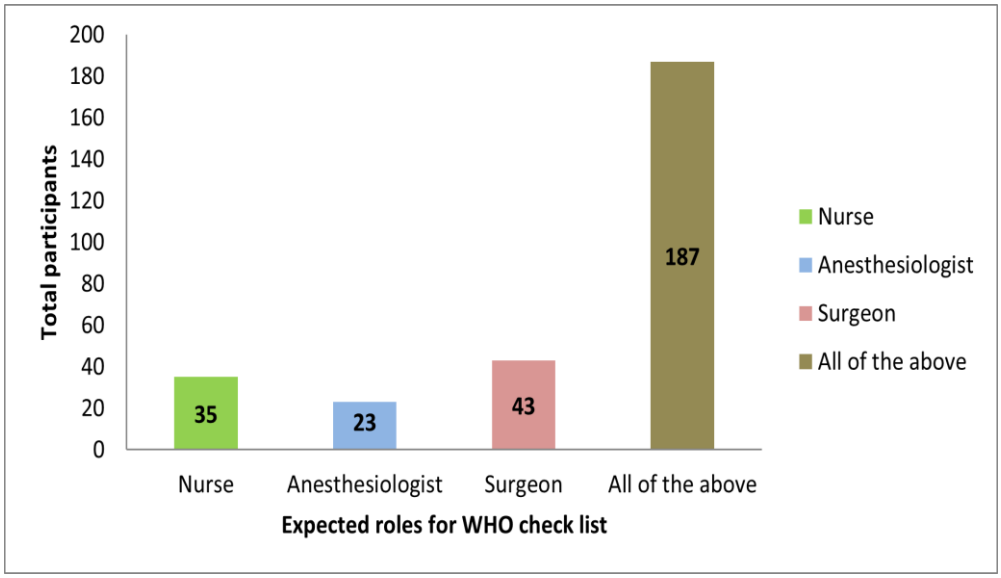

Fig 3: Perspectives on the expected roles and responsibilities in implementing the WHO Surgical Safety Checklist

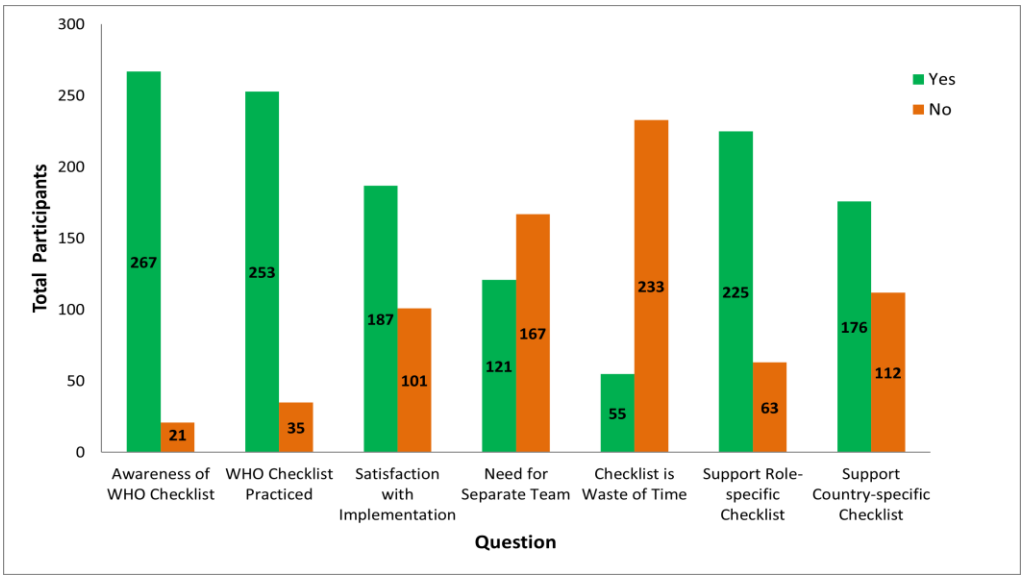

Fig 4: various questions related to WHO surgical safety checklist

Discussion:

This study involving 288 surgical professionals in a tertiary care hospital offers meaningful insight into how the WHO Surgical Safety Checklist (SSC) is perceived and practiced across diverse specialties. While awareness is impressively high—267 participants (93%) were aware of the SSC—only 187 (65%) expressed satisfaction with its implementation. Such divergence between awareness and satisfaction mirrors findings from studies in Thailand, where satisfaction was generally positive but barriers persisted that hindered seamless integration.[5] Barriers to optimal checklist utilization are well-established in the literature. A systematic integrative review highlighted that while SSCs improve team communication and patient

safety, their effective implementation is often undermined by hierarchical culture, lack of training, staff resistance, and insufficient staff involvement.[6] Similarly, a cross-sectional study in Iran revealed that unclear role definitions and poor team communication were notable impediments, and recommended that successful implementation relies on involving OR staff, leadership support, and ongoing audits.[7]

Our findings that only 42% of respondents supported a separate checklist team, whereas 65% believed responsibility should lie collectively with surgeons, anesthesiologists, and nurses, correspond with the concept of team-centered ownership noted in a Swiss academic center, where shared goals and full team participation increased adherence—while resistance from senior members and absence of full participation diminished it.[8]

A recurring challenge is the checklist's applicability in emergency settings. In our study, 52% felt it could be completed even during emergencies, but hesitancy remained prevalent. A large multicountry pooled analysis found that SSC use in emergency laparotomies significantly reduced perioperative mortality (OR 0.60), with the greatest absolute benefit observed in low- and middle-HDI countries. This underscores the life-saving potential of maintaining checklist adherence even in urgent situations.

Barriers such as staff complacency, duplication of processes, communication breakdowns, and checklist ambiguity have been noted in observational studies: common challenges include time constraints, redundant safety steps, and unclear responsibilities—compromising efficacy, especially in emergencies.[9] This mirrors our own participants tempered satisfaction and suggest that systemic, cultural, and procedural factors critically influence SSC outcomes.

Multiple studies also point to critical enablers. Sustained training, good leadership, and local champions are vital to embedding the checklist into routine workflows. Education, consistent feedback, and visible leadership engagement—particularly from senior surgeons—have been repeatedly shown to boost adherence. [10,11] A Swiss study emphasized the need for structured sign-out adaptations that fit team dynamics and workflow timing.[12] Our finding that 78% favored role-specific delineation and 61% supported country-specific adaptations resonates with evidence that local customization fosters ownership and compliance. [13, 14]

Training is significant too. A Washington State study demonstrated that clear communication of both “why” and “how” to implement the SSC—through education and leadership—was pivotal to achieving buy-in and sustained use.[15] Given that 50% of our respondents first learned about the checklist during postgraduate training, there may be value in introducing the checklist earlier in undergraduate curricula to enhance long-term adoption.

Conclusion:

The current study illustrates that although awareness of the WHO Surgical Safety Checklist among surgeons in our tertiary hospital is virtually complete, its regular and adequate application is still less than optimal. Areas of shortfall in satisfaction, role clarity, and emergency use signal the necessity for strategic interventions beyond the mere availability of the checklist. Findings from prior work support that long-term leadership backing, formalized training, concise role definition, and setting-specific modifications are foundational for attaining high levels of compliance and substantial integration into surgical practice. Incorporating the checklist into perioperative culture—starting with early medical education and supported by multidisciplinary collaboration—is likely to make it more than a procedural mandate, but a deeply embedded patient safety practice, which should enhance surgical results and minimize preventable injury.

References:

1. Dhingra-Kumar N, Brusaferro S, Arnoldo L. Patient Safety in the World. 2020 Dec 15. In: Donaldson L, Ricciardi W, Sheridan S, Tartaglia R, editors. Textbook of Patient Safety and Clinical Risk Management [Internet]. Cham (CH): Springer; 2021. Chapter 8.
2. Emanuel L, Berwick D, Conway J, et al. What Exactly Is Patient Safety? In: Henriksen K, Battles JB, Keyes MA, et al., editors. Advances in Patient Safety: New Directions and Alternative Approaches (Vol. 1: Assessment). Rockville (MD): Agency for Healthcare Research and Quality; 2008 Aug. Available from: https://www.ncbi.nlm.nih.gov/books/NBK43629
3. Mistri IU, Badge A, Shahu S. Enhancing Patient Safety Culture in Hospitals. Cureus. 2023 Dec 27;15(12):e51159.
4. Lark ME, Kirkpatrick K, Chung KC. Patient Safety Movement: History and Future Directions. J Hand Surg Am. 2018 Feb;43(2):174-178
5. Kasatpibal N, Sirakamon S, Punjasawadwong Y, Chitreecheur J, Chotirosniramit N, Pakvipas P, et al. Satisfaction and Barriers of Surgical Safety Checklist Implementation in a Nonmandatory Adoption Resource-Limited Country. J Patient Saf. 2021 Dec 1;17(8):e1255-e1260
6. Sheridan S, Sherman H, Kooijman A, et al. Patients for Patient Safety. 2020 Dec 15. In: Donaldson L, Ricciardi W, Sheridan S, et al., editors. Textbook of Patient Safety and Clinical Risk Management [Internet]. Cham (CH): Springer; 2021. Chapter 6. Available from: https://www.ncbi.nlm.nih.gov/books/NBK585604/
7. Khodavandi M, Kakemam E, Ghasemyani S, Khodayari-Zarnaq R. Barriers and Facilitators of Implementing WHO Safe Surgery Checklist: A Cross-sectional Study in Public Hospitals of Iran.Shiraz E-Med J.2021;23(5):e118111
8. Schwendimann, R., Blatter, C., Lüthy, M. et al. Adherence to the WHO surgical safety checklist: an observational study in a Swiss academic center. Patient Saf Surg 13, 14 (2019)
9. GlobalSurg Collaborative. Pooled analysis of WHO Surgical Safety Checklist use and mortality after emergency laparotomy. Br J Surg. 2019 Jan;106(2):e103-e112
10. Lim PJH, Chen L, Siow S, Lim SH. Facilitators and barriers to the implementation of surgical safety checklist: an integrative review. Int J Qual Health Care. 2023 Oct 31;35(4):mzad086
11. Paterson C, Mckie A, Turner M, Kaak V. Barriers and facilitators associated with the implementation of surgical safety checklists: A qualitative systematic review. J Adv Nurs. 2024 Feb;80(2):465-483
12. Mitchell R, Faris M, Lystad R, Fajardo Pulido D, Norton G, Baysari M, Clay-Williams R, Hibbert P, Carson-Stevens A, Hughes C. Using the WHO International Classification of patient safety framework to identify incident characteristics and contributing factors for medical or surgical complication deaths. Appl Ergon. 2020 Jan;82:102920.
13. Munthali, J., Pittalis, C., Bijlmakers, L. et al. Barriers and enablers to utilisation of the WHO surgical safety checklist at the university teaching hospital in Lusaka, Zambia: a qualitative study. BMC Health Serv Res 22, 894 (2022)
14. Habtie, T.E., Feleke, S.F., Terefe, A.B. et al. Beyond compliance: examining the completeness and determinants of WHO surgical safety checklist - a systematic review and meta-analysis. BMC Health Serv Res 25, 504 (2025)

15. Conley DM, Singer SJ, Edmondson L, Berry WR, Gawande AA. Effective surgical safety checklist implementation. J Am Coll Surg. 2011 May;212(5):873-9

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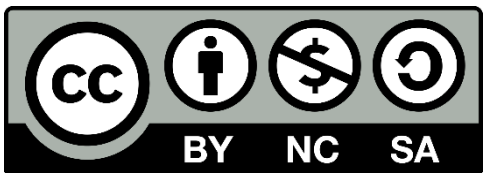

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