



www.bioinformation.net
Volume 22(9)



Research Article

Received September 1, 2026; Revised September 30, 2026; Accepted September 30, 2026, Published September 30, 2026

DOI: 10.6026/973206300226148

SJIF 2026 (Scientific Journal Impact Factor for 2026) = 8.478

2022 Impact Factor (2023 Clarivate Inc. release) is 1.9

Declaration on Publication Ethics:

The author's state that they adhere with COPE guidelines on publishing ethics as described elsewhere at <https://publicationethics.org/>. The authors also undertake that they are not associated with any other third party (governmental or non-governmental agencies) linking with any form of unethical issues connecting to this publication. The authors also declare that they are not withholding any information that is misleading to the publisher in regard to this article.

Declaration on official E-mail:

The corresponding author declares that lifetime official e-mail from their institution is not available for all authors

License statement:

This is an Open Access article which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly credited. This is distributed under the terms of the Creative Commons Attribution License

Comments from readers:

Articles published in BIOINFORMATION are open for relevant post publication comments and criticisms, which will be published immediately linking to the original article without open access charges. Comments should be concise, coherent and critical in less than 1000 words.

Disclaimer:

Bioinformation provides a platform for scholarly communication of data and information to create knowledge in the Biological/Biomedical domain after adequate peer/editorial reviews and editing entertaining revisions where required. The views and opinions expressed are those of the author(s) and do not reflect the views or opinions of Bioinformation and (or) its publisher Biomedical Informatics. Biomedical Informatics remains neutral and allows authors to specify their address and affiliation details including territory where required.

Edited by P Kanguane

Citation: Mythili *et al.* Bioinformation 22(9): 6148-6156 (2026)

International patient safety goals in the operation theatre: Awareness, attitudes and practices

K. Mythili¹, V. Sanjeev Uday Srikar ² & P. Vijayalakshmi^{3,*}

¹Department of Anesthesiology, GITAM Institute of Medical Sciences and Research, GITAM Deemed to be University, Rushikonda, Visakhapatnam, Andhra Pradesh, India; ²Department of Otorhinolaryngology, GITAM Institute of Medical Sciences and Research, GITAM Deemed to be University, Rushikonda, Visakhapatnam, Andhra Pradesh, India; ³Department of Microbiology, GITAM Institute of Medical Sciences and Research, GITAM Deemed to be University, Rushikonda, Visakhapatnam, Andhra Pradesh, India;

*Corresponding author

Affiliation URL:

<https://www.gitam.edu/>

Author contact:

K. Mythili - E-mail: doctormythili@gmail.com

V. Sanjeev Uday Srikar - E-mail: svadali@gitam.edu

P. Vijayalakshmi - E-mail: vpayala@gitam.edu; bavisettyvijayalakshmi2@gmail.com

Abstract:

Patient safety in the operating theatre remains a major healthcare priority, with nearly 10% of patients worldwide experiencing preventable harm. Therefore, it is of interest to assess the IPSPG awareness, attitudes and practices among operation theater healthcare professionals and improved patient safety through targeted interventions. Conducted from June 2025 to December 2025 using the Plan-Do-Check-Act (PDCA) model, the project focused on patient identification, effective communication, prevention of wrong-patient/site/procedure events and fall prevention. Data from 249 healthcare professionals guided targeted interventions based on root cause and Pareto analyses. These interventions reduced adverse events, improved checklist compliance, patient transport, handovers and patient satisfaction. Thus, continuous training and standardized processes significantly strengthened patient safety in operating theatres.

Keywords: International patient safety goals, operation theatre (OT), healthcare professionals, knowledge, attitudes and practices (KAP), quality improvement

Background:

Patient safety, defined as "the absence of preventable harm to a patient and reduction of risk of unnecessary harm to an acceptable minimum," is essential in healthcare, particularly in high-stakes areas like the operating theatre [1]. Data indicate that globally, about 10% of patients are harmed during healthcare delivery, with preventable adverse events, such as medication errors, wrong-site surgeries and healthcare-associated infections, significantly impacting patient outcomes and safety. The operating theatre (OT) environment is complex and demands strict adherence to safety protocols [2-4]. High staff turnover, emergency procedures and the need for rapid decision-making contribute to potential lapses in patient safety. Despite awareness of adverse effects, surgical errors continue to occur at a higher rate. Lack of continuous training and education, gaps in communication, unstable systems, poor understanding of patient safety protocols and non-adherence to these protocols are significant challenges faced in the OT setup when it comes to observing IPSPG in OT [5, 6]. Therefore, it is of interest to evaluate the attitudes, awareness and practices regarding patient safety in operating theatres.

Materials and Methods:

Study design:

It is a descriptive cross-sectional study

Study setting:

The study was conducted in the Operating Theatre (OT) complex of a tertiary care teaching hospital

Study period:

The project was carried out between June 2025 and December 2025 in a tertiary care teaching hospital, Visakhapatnam.

Inclusion criteria:

Healthcare personnel actively working in operating theatres, including:

Consultant doctors, residents (including trainees), nurses with a minimum qualification of an undergraduate degree and patients undergoing elective surgery.

Exclusion criteria:

Staff lacking a minimum undergraduate degree, staff not directly involved in patient care within the operating theatre, healthcare professionals who are on long leave (maternity leave) and patients undergoing emergency surgery.

Methodology:

The emphasis of this project was on International Patient Safety Goals.

IPSPG 1- Identification (by checking the ID band of the patient)

IPSPG 2- Proper communication (in the form of consent forms)

IPSPG 4- Prevention of the wrong patient, wrong site, wrong procedure (implementation of WHO surgical safety checklist)

IPSPG 6- Fall prevention (in the form of safe transportation of the patient)

The present quality improvement project used the PDCA (Plan-Do-Check-Act) model depicted in **Figure 1**.

Plan:

In the planning phase, the team met, discussed the problem statement and collected the data using a questionnaire. The data were collected using a structured 15-question questionnaire distributed among OT staff. The first five questions are about the participants' general information. The next 10 questions pertain to IPSPG attitude, awareness and practice in OT (**Table 1**). The following disclaimer was placed at the top of the questionnaire so that participants understand that by participating in the survey, they are consenting to participate in this study. This survey is conducted for research and informational purposes only and is intended to gather insights into patient safety within operating theatres. Participation is voluntary, and all responses will be kept confidential. By completing this survey, you consent to the use of your responses for academic or professional analysis. If you have any questions or concerns about the survey, please contact the researcher before proceeding. The participants in the project include 249 healthcare professionals in operating theatres, comprising 47 nursing officers, 75 licensed doctors and 127 trainee residents. The survey data is collected via Google Forms. **Figure 2** identifies many possible causes of an effect or problem, and it helps sort ideas into functional categories. After

drawing an Ishikawa diagram, a Pareto analysis was done. A Pareto chart was created using the collected data to identify the vital few problems or causes of problems that have the greatest impact.

Pareto chart analysis:

Reviewing the Pareto graph (**Figure 3**) revealed the vital causes (those below the 80% line) that need to be addressed first. The vital few, in descending order of frequency, are additional training needed in implementing checklists and patient safety, insufficient awareness of timeout protocols, inconsistency in shifting patients into OT, staff shortages and inconsistency in completing checklists. Phased training sessions were planned for all healthcare professionals in OT to improve their knowledge of safe patient transport and the implementation of the WHO checklist. The trainee nursing officers and anaesthesia technicians were also trained to perform surgical safety checklists during staff shortages. The inconsistencies in patient transfers and checklist completion were discussed during brainstorming sessions.

Brainstorming:

A team comprising the HOD of the Department of Anaesthesiology, the HCO Clinical Safety Officer, Safety coordinators of the Departments of Anaesthesiology and General Surgery and the Nursing superintendent was formed. In the brainstorming session, two main setbacks were identified. The existing process of shifting the patient from the ward was not standardized (**Figure 4**). There were many instances of shifting the patient to OT with incomplete forms, which could pose a threat to the patient's safety. A lack of structured handovers from the ward to the OT can lead to a potential lapse. An unstable system of shifting patients from the ward to the operating complex was identified as follows (**Figure 5**). To rectify the inconsistencies in the process of shifting the patient from the ward to the operating theatre, an experimental flow process was designed and implemented on a trial basis during the study period (**Figure 5**). A structured handover form was proposed and implemented, as depicted in **Figure 6**.

Check:

In this phase, it was checked whether the small-scale changes and experimental steps implemented had achieved the desired results. Additionally, an investigation was conducted to determine whether the selected processes met the benchmarks for key performance indicators. The following steps were performed to check the processes.

- [1] A re-survey was conducted among the health care professionals in OT using a questionnaire and the results were compared.
- [2] Key performance indicators were monitored (percentage of surgeries in which the WHO checklist was implemented to prevent adverse events)
- [3] Patient satisfaction scores were recorded after the structured process flow chart was implemented.
- [4] Opportunities for improvement were recorded with the help

of patient safety coordinators and the process was corrected wherever necessary.

Patient satisfaction scores:

A monthly survey was conducted among post-operative patients to assess whether they communicated effectively about their surgery. A questionnaire was designed with 5 questions for evaluating patient safety scores (**Table 2**). The questionnaire, used in the initial phase of the project, was again used to assess attitudes, beliefs, and practices regarding international patient safety goals in OT. A monthly survey was conducted among postoperative patients to assess whether they communicated effectively about their surgery. Overall, patient satisfaction with counselling, communication and information about the procedure they underwent has improved. There is a positive (upward) trend in the degree of information the patient received about the surgical procedures. From **Figure 11**, 100% of patients agreed with question 4, *i.e.*, "Were you transported safely into the OT?"

Act:

Based on the data from the re-survey and KPI analysis, the experimental methods and job training sessions helped meet the desired goals. Henceforth, these strategies will be adopted as standard processes across all operating theatres.

Results:

Both surveys indicated an overall positive trend in the attitudes and awareness of health care professionals in OT towards patients. The incidence of accidental adverse events decreased from 5.1% to 0.6%. The percentage of procedures where the surgical checklist was initiated spontaneously increased from 63% to 93%. The challenge of performing timeouts was reduced from 10.40% to 5.10%. The instances of healthcare professionals accompanying patients into the operating theatre improved from 48.8% to 79.7%. A total of 249 participants were included in the demographic analysis. Among them, 134 were females, representing the largest subgroup. Trainee residents accounted for 127 participants, while 115 participants were males. Additionally, 75 participants were doctors, and 47 were nursing officers, which represented the smallest group in the study population. The cumulative percentage increased across categories, indicating that most of the study population was female and trainee residents, while doctors and nursing officers accounted for a smaller proportion of the total sample. Overall, the distribution shows that females constituted a slightly larger proportion of participants than males, and trainee residents comprised a substantial proportion of the study group (**Figure 7**). For question 5, whether any of the health care professionals were trained during their residency on the international patient safety goals, almost all answered NO. The distribution of participants according to professional category and years of experience showed notable differences between groups. Among doctors, the majority had 5–10 years of experience (28 participants), while a smaller number had less than 5 years of experience (7 participants). Only a very small proportion reported more than 10 years of experience. Among nursing

officers, 22 had 5–10 years of experience, while 17 had less than 5 years. A limited number of participants (6) had more than 10 years of experience. In contrast, trainee residents were predominantly in the less than 5 years of experience category (127 participants), while none reported more than 10 years of experience, which is expected given their training status. Overall, the findings indicate that most trainee residents had less than 5 years of experience, whereas doctors and nursing officers were more commonly represented in the 5–10 years of experience category, with relatively few participants having more than 10 years of professional experience (Figure 8). The responses to the Knowledge, Attitude and Practice (KAP) pre-survey among healthcare professionals working in operating theatres (OTs) showed varying levels of agreement across questions Q6–Q15. A high proportion of respondents answered “Yes” for several questions, particularly Q8 (97.1%), Q11 (91.4%) and Q15 (99.4%), indicating strong agreement or awareness regarding those aspects of OT practices. Similarly, Q6 (74.5%), Q9 (63.5%), Q12 (76.3%) and Q14 (58.9%) also demonstrated the most positive responses. In contrast, certain questions had a higher proportion of “No” responses. For example, Q7 received 95.9% “No” responses, indicating that most participants either disagreed with the item or lacked the necessary practice or knowledge. Similarly, Q10 had 88.4% “No” responses, suggesting limited compliance or awareness for that specific aspect. The responses to Q13 were relatively balanced, with 48.8% “Yes” and 50.5% “No”, indicating mixed opinions or practices among participants. The proportion of “Maybe/Not sure” responses was minimal across all questions, ranging from 0% to 4.6%, suggesting that most participants had clear opinions or knowledge regarding the survey items. Overall, the results indicate generally high levels of positive responses to several knowledge- and practice-related questions, while a few areas

showed lower levels of awareness or compliance among healthcare professionals in operating theatres (Figure 9). The post-survey results demonstrated varying levels of knowledge, attitude and practice (KAP) among healthcare professionals working in operating theatres. A very high proportion of participants responded “Yes” to Q6 (99.4%), while only 0.6% responded “No.” For Q7, the majority answered “No” (99.8%), with only 0.6% responding “Yes” and 0.6% reporting “Maybe/Not sure.” All respondents answered “Yes” for Q8 (100%), indicating complete agreement or correct knowledge for this item. Similarly, Q11 also showed 100% “Yes” responses, suggesting universal awareness or positive practice regarding that question. For Q9, 93% responded “Yes,” while 5.1% answered “No” and 1.9% were unsure. In contrast, Q10 showed a predominant “No” response (92.4%), with 5.1% “Yes” and 2.5% “Maybe/Not sure.” Moderate variation was observed for Q12, with 76.3% responding “Yes,” 19.07% “No,” and 4.6% “Uncertain.” A nearly equal distribution was observed in Q13, with 48.8% answering “Yes,” 50.5% “No,” and 0.7% reporting uncertainty, indicating divided opinions among participants. For Q14, 58.9% responded “Yes,” whereas 41.04% responded “No.” No participants selected “Maybe/Not sure.” Finally, Q15 showed a very high positive response (99.4% “Yes”), with 0.6% indicating uncertainty and no “No” responses. Overall, the post-survey findings indicate high levels of correct knowledge and positive practices for several items (Q6, Q8, Q11 and Q15), while some questions (particularly Q12–Q14) showed variability in responses, suggesting areas where further awareness or training may be beneficial (Figure 10). Table 3 depicts KPI monitoring over the past 6 months for one of the quality indicators in the OT, showing that the benchmark is met. It implied that the training programmes and the implementation process were successful.

Table 1: Structured 15- question questionnaire distributed to OT staff

Name of the Participant
Department
Position
Faculty
Resident
Nurse
Number years since you have started working in OT
1-5 yrs
5-10yrs
More than 10 years
Have you ever been trained in patient safety during your training period as resident?
Yes
No
Maybe
Are you aware of minimum standard requirements to identify a patient in operation theater?
Yes
No
Not sure
Have you ever been in a situation of wrong patient, wrong site, wrong procedure?
Yes
No
Not sure
Do you think there is a need for surgical safety checklist before every procedure
Yes
No
Not sure
How regularly are you practicing surgical safety checklist before starting the procedure?

Every time
Occasionally
May be
Are you facing any difficulty in implementing surgical safety checklist in OT?
Yes
No
May be
Are you aware that the surgical site should be marked before shifting the patient to OT?
Yes
No
Maybe
Are you aware of the safe transportation guidelines of the patient?
Yes
No
Maybe
How often do you accompany the patient into OT?
Every time
Occasionally
Not sure
Do you personally involve yourself while taking consent from the patient?
Every time
Occasionally
Not sure
Do you think that there is a need for sensitization on International Patient Safety Goals (IPSG) and WHO surgical safety checklist at regular intervals?
Yes
No
Not sure

Table 2: Questionnaire on patient satisfaction scores

Questionnaire on patient satisfaction scores	Questions
Q1	Did you know the name of the surgeon operated on you
Q2	Has anyone informed about the surgery procedure and the options available
Q3	Has anyone marked the surgery site on you
Q4	Were you transported safely into the OT
Q5	Has anyone asked your name and checked the ID band in the OT

Table 3: Monitoring of KPI

Indicator	Formula	July 2024	August 2024	September 2024	October 2024	November 2024	December 2024
Percentages of cases where the organization procedure to prevent adverse events like wrong site, wrong patient and wrong surgery have to adhered to	Number of cases where the procedure was followed	343	324	374	335	348	373
	Number of surgeries performed	343	324	374	335	348	373
	Total %	100%	100%	100%	100%	100%	100%

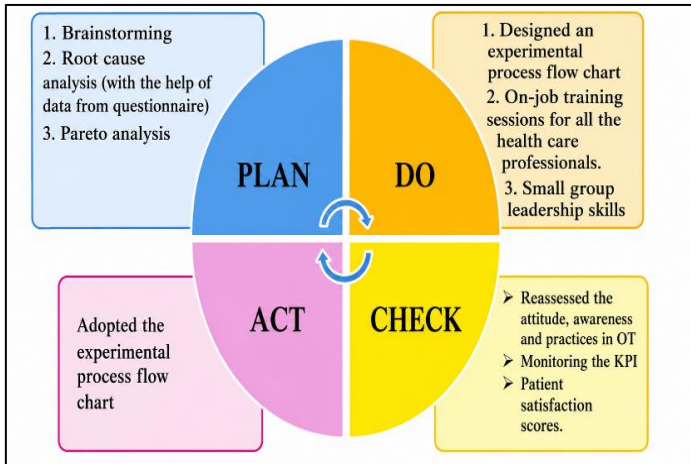


Figure 1: PDCA model

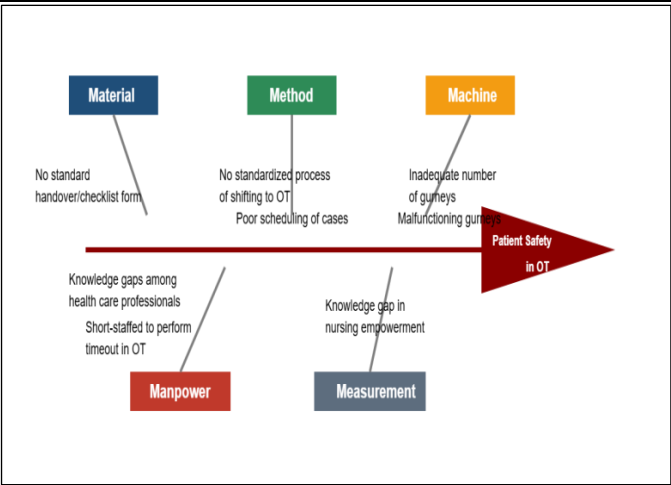


Figure 2: DO Root cause analysis of patient safety in OT (fish bone analysis)

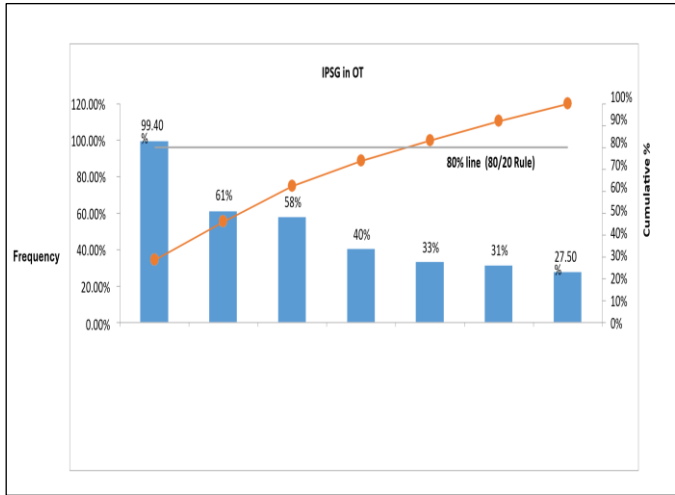


Figure 3: Pareto graph

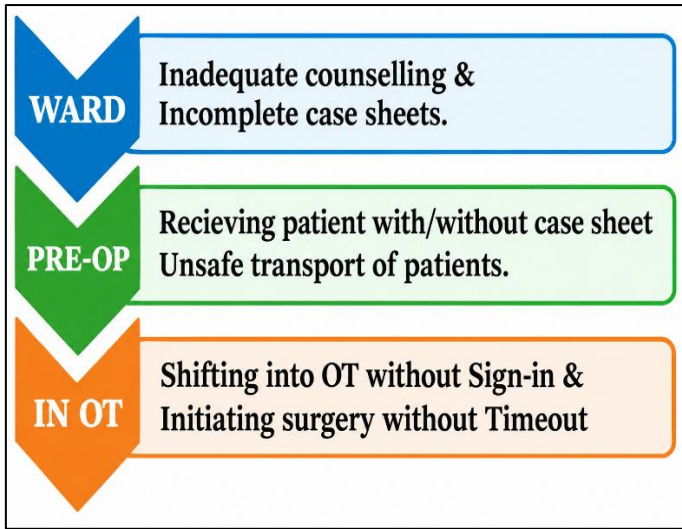


Figure 4: Deficiencies in patient shifting

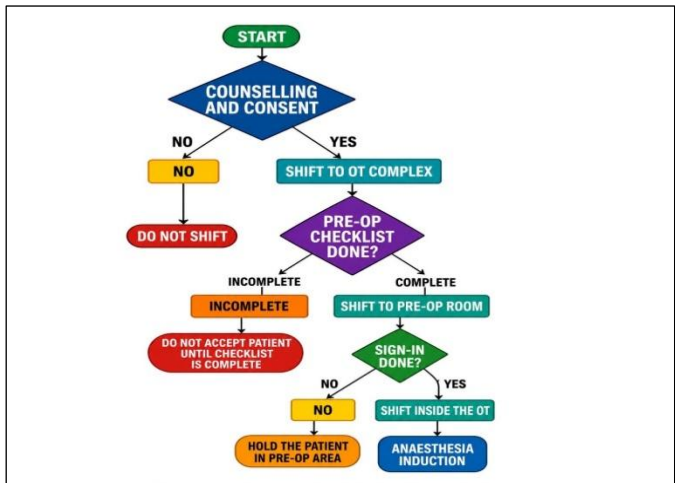


Figure 5: Experimental flow process for patient shifting process

Figure 6: Structured handover form

GITAM INSTITUTE OF MEDICAL SCIENCES AND RESEARCH - HOSPITAL
Rushikonda, Visakhapatnam-530045

Patient Name : _____ Gender : _____ Age : _____
IP No / UHID No. : _____ Ward No. : _____ Bed No. : _____
Surgical Dept.: _____ Unit : _____
Diagnosis : _____ Surgery: _____

(TO BE FILLED BY NURSES)

PREOPERATIVE HANDOVER CHECKLIST

	Yes	No	NA
ID Band present / weight checked			
Nil oral for solid food since (write time)			
Skin Parts preparation done			
Bowel preparation			
Bath given / oral care given			
Hair combed and tucked inside cap			
Denture / Contact lens / Hearing aid / Spectacles / Jewellery removed			
Handed over person details			
Blood cross matching sent			
Blood reserved as per advise by the doctors			
Cannula placed / medications given if yes, write medications details			
Investigation reports attached			
Haematology (CBC/others specify)			
Bio Chemistry (RFT/LFT/others specify)			
Microbiology (Viral markers/others specify)			
ECG/2D Echo/Chest x-ray/CT/MRI			
Others			
PAC Done			
Site Marking done			
Consent for Surgery / Anaesthesia / Transfusion			
Scheme approved / Payment category / Clearance			
Write here			
Vital parameter (PR/BP/RR/TEMP)noted			
Others			

HANDING OVER WARD NURSE
NAME : _____
SIGNATURE : _____
DATE / TIME : _____

TAKEN OT NURSE
NAME : _____
SIGNATURE : _____
DATE / TIME : _____

GIMS/H/OT/POHC/JF-001

Figure 6: Structured handover form

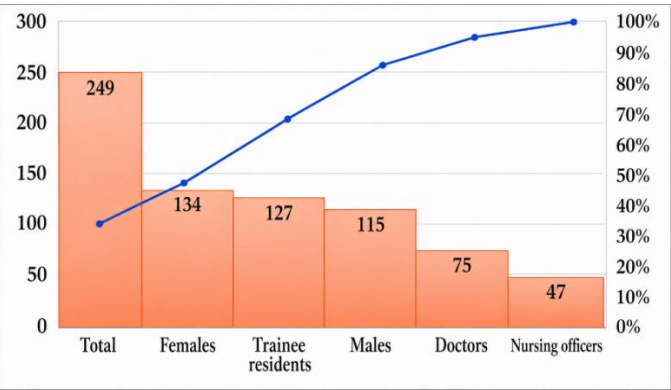


Figure 7: Demographic data of participants

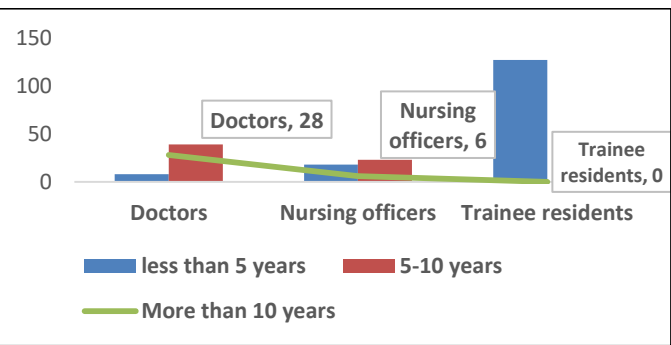


Figure 8: Years of experience of participants

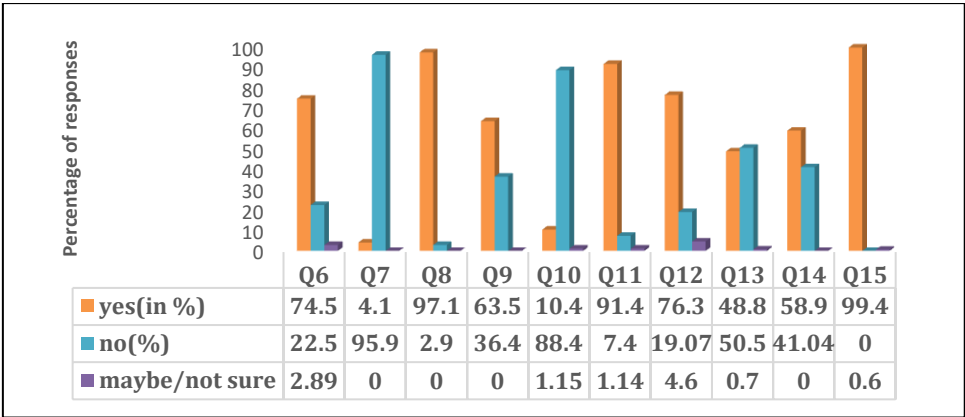


Figure 9: Number of responses in the KAP survey for health care professionals in OTs

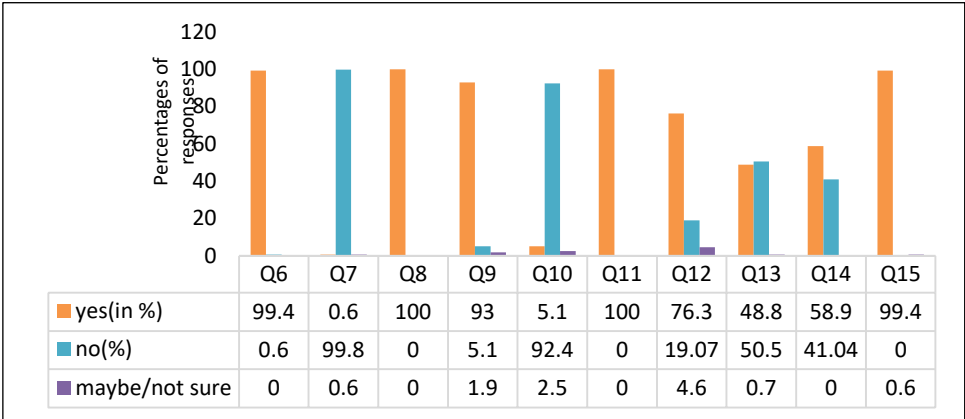


Figure 10: Number of responses in KAP resurvey for health care professionals in OTs

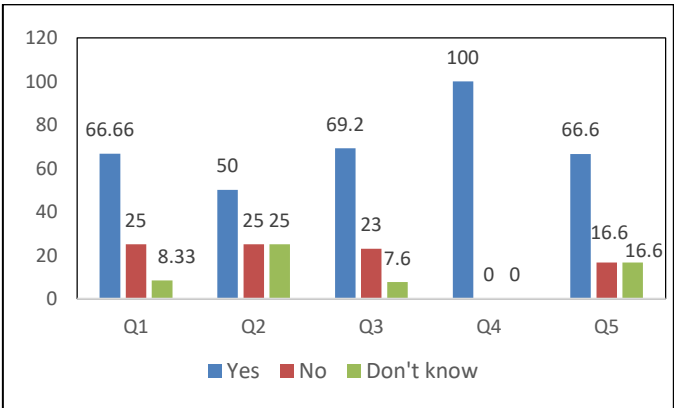


Figure 11: Patient satisfaction scores

Discussion:

Implementation of a structured quality improvement bundle based on the Plan-Do-Check-Act (PDCA) cycle produced substantial gains in both process and outcome measures related to the World Health Organization (WHO) Surgical Safety Checklist and International Patient Safety Goals (IPSG) in the

operating theatre of our tertiary care centre [1-4]. Checklist compliance increased from 63% at baseline to 93% after the intervention, while the proportion of cases with documented adverse events fell from 5.1% to 0.6% over the study period. In parallel, the proportion of patients accompanied by a responsible staff member during transfer to and from the operating theatre improved from 48.8% to 79.7% and the proportion reporting challenges in completing the time-out phase of the WHO checklist nearly halved. Taken together, these changes indicate that previously identified system gaps in training, communication and workflow were amenable to low-cost, locally tailored interventions supported by continuous feedback [3, 5 and 6]. The magnitude and direction of change across multiple indicators suggest that the intervention did not simply improve documentation but meaningfully modified clinical behaviour and safety culture in the operating theatre [1, 4 and 6]. The largest relative improvements were observed in checklist completion and safe patient transfer, both of which directly target IPSG domains related to correct patient and correct site and they support IPSG Goal 6 and perioperative guidance on reducing falls and transfer-related harm. The reduction in adverse events, although based on modest absolute

numbers, is clinically important in a high-risk population and is consistent with the hypothesis - supported by large multicentre data - that standardized checks at sign-in, time-out and sign-out can intercept latent errors before they reach the patient [1, 2]. The PDCA approach was central to these gains, as it enabled the team to identify training deficits and unstructured handovers as key root causes, implement targeted educational sessions and process changes and then iteratively refine them based on run-time feedback [7-9]. The improvement in staff responses on the post-intervention questionnaire, with near-universal endorsement of the importance of the checklist and better awareness of IPSP elements, supports the view that the project helped shift attitudes from viewing safety tools as administrative requirements to recognizing them as integral to clinical practice [10]. Our findings align closely with the global experience of the WHO Surgical Safety Checklist. In the landmark multicentre trial by Haynes *et al.*, implementation of the 19-item checklist across eight hospitals reduced inpatient complications from 11.0% to 7.0% and mortality from 1.5% to 0.8% [1]. WHO's subsequent Guidelines for Safe Surgery and associated implementation manual emphasize structured sign-in, time-out and sign-out phases, multidisciplinary team participation and routine surveillance of outcomes, providing a conceptual framework that our quality-improvement bundle explicitly adopted [2]. The improvement in our checklist utilization from 63% to 93% is comparable to the compliance gains reported in pre-/post-implementation studies from tertiary centres and economic modelling suggests that such adoption can also generate net cost savings for hospitals [3, 4]. Evidence from low- and middle-income countries further supports the effectiveness of checklist-based interventions. A pre- and post-intervention study from an Indian tertiary hospital reported improved documentation of checklist items and a fall in post-operative mortality following targeted education and active engagement of surgical teams [3]. A prospective observational study from a teaching hospital in Bengaluru found that only 16% of WHO checklists were fully completed at baseline, although more than 80% of staff believed the tool reduced human error; lack of training and assertiveness were the main barriers - findings that mirror the training gaps and cultural barriers addressed in our PDCA cycles [10, 11]. Systematic reviews of surgical safety checklists and related tools also show consistent associations with improved adherence to perioperative processes, reduced complications and, in several series, reduced mortality, supporting the plausibility of the outcome changes observed in our setting [12-17]. The use of PDCA or related Plan-Do-Study-Act (PDSA) cycles to improve checklist adherence and perioperative safety is likewise well documented. A quality-improvement project from an Australian hospital used multiple PDSA cycles, staff education and real-time observation to increase observed checklist use from 3.5% to 63%, while highlighting the limitations of relying solely on retrospective audits [6]. A PDCA-based nursing management study from China showed significant reductions in incision infection rates, irregular events and environmental contamination indicators in the operating room, along with gains in nursing quality scores

[5]. Beyond the operating theater, PDCA-driven checklist programs for invasive procedures outside the operating room have achieved sustained increases in completion rates from about 42% to nearly 90% and above, with parallel improvements in correct signatures and timing, underscoring the generalizability of this approach to other high-risk procedural environments [8]. Our results extend this literature by focusing on IPSP-aligned indicators, including safe patient transfer and by showing improvements in both clinical outcomes and patient-reported satisfaction measures in an Indian oncology setting. The observed gains in patient-reported satisfaction regarding preoperative counselling and information about the planned procedure are consistent with studies showing that structured communication and checklist-based team processes enhance patients' understanding of their care and reduce complications associated with communication failures [9, 10]. From a practical standpoint, this project demonstrates that integrating IPSP principles and the WHO Surgical Safety Checklist into routine operating theatre workflows is feasible without major capital investment if efforts are made to simplify processes, clarify roles and ensure visible support from departmental leadership [2, 4 and 6]. Economic analyses suggest that checklist implementation can yield net cost savings by preventing complications and avoiding downstream resource utilization, reinforcing the argument that such programs are sustainable for institutions even in resource-constrained settings [4]. The increase in staff accompaniment during patient transfer reflects not only a procedural change but also a broader recognition of shared responsibility for patient safety beyond the confines of the operating room, consistent with recommendations in IPSP Goal 6 and perioperative safe-handling guidelines on reducing fall and transfer-related harm. The NHS England Never Events Taskforce report, although focused specifically on catastrophic surgical never events such as wrong-site surgery, wrong implant and retained foreign objects, similarly emphasizes system-level standardization, checklists and clear accountability to prevent rare but serious surgical harm [15-20].

Conclusion:

We show that continuous training and education among healthcare professionals and a shift from unstable /unreliable systems to a standardized, structured process will improve patient safety outcomes in operating theatres. The outcomes align with high-impact evidence, affirming the PDCA tool for international patient safety goals in operating theatres.

Acknowledgments: We thank the Institute for its support of the work.

Conflict of interest: Nil

References:

- [1] Haynes AB *et al.* *Engl J Med.* 2009 **360**:491. [PMID: 19144931]
- [2] <https://pubmed.ncbi.nlm.nih.gov/23762968/>

- [3] Dinesh HN. *et al. Int Surg J.* 2018 **5**:3640. [DOI: 10.18203/2349-2902.isj20184637]
- [4] Semel ME *et al. Health Aff (Millwood).* 2010 **29**:1593. [PMID: 20820013]
- [5] Chen H *et al. Front Surg.* 2022 **9**:837014. [PMID: 35372464]
- [6] Brown B *et al. BMJ Open Qual.* 2021 **10**:e001593. [PMID: 34732540]
- [7] De Simone B *et al. World J Emerg Surg.* 2020 **15**:10. [PMID: 32041636]
- [8] Hou Y *et al. Int J Nurs Sci.* 2021 **8**:199. [PMID: 33997134]
- [9] Pugel AE *et al. J Infect Public Health.* 2015 **8**:219. [PMID: 25731674]
- [10] Nilsson L *et al. Acta Anaesthesiol Scand.* 2010 **54**:176. [PMID: 19719811]
- [11] Ajitha MB & Pravalika DM. *New Indian J Surg.* 2019 **10**:481. [DOI: 10.21088/nijs.0976.4747.10519.4]
- [12] Treadwell JR *et al. BMJ Qual Saf.* 2014 **23**:299. [PMID: 23922403]
- [13] Borchard A *et al. Ann Surg.* 2012 **256**:925. [PMID: 22968074]
- [14] Thomassen O *et al. Acta Anaesthesiol Scand.* 2014 **58**:5. [PMID: 24116973]
- [15] Sendlhofer G *et al. PLoS One.* 2018 **13**:e0203544. [PMID: 30188955]
- [16] <https://www.england.nhs.uk/wp-content/uploads/2014/02/sur-nev-ev-tf-rep.pdf>
- [17] Kanimozhi SR *et al. International Journal of Nursing Education and Research.* 2025 **13**:22. [DOI: 10.52711/2454-2660.2025.00005]
- [18] Bibi R *et al. Journal of Health, Wellness and Community Research.* 2026 **30**:1. [DOI: 10.61919/4aenne88].
- [19] Pant I *et al. QAI Journal for Healthcare Quality and Patient Safety.* 2025 **6**:4. [DOI: 10.4103/QAIJ.QAIJ_1_25]
- [20] Joshi DC & Saini RS. *J Clin of Diagn Res.* 2022 **16**:IC01. [DOI: 10.7860/JCDR/2022/58145/17113]

Caveat Emptor is applicable among the literate community where required and possible. The publisher, its journal, editors and the internal/external reviewers take adequate steps to check, evaluate, correct, edit, revise and improve content where possible and required.