

ASSESSMENT OF KNOWLEDGE AMONG SURGICAL NURSES REGARDING SURGICAL TIME OUT PROTOCOLS IN THE OPERATING ROOM AT TERTIARY HOSPITAL RAWALPINDI

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Abstract: *Surgical Time Out protocols are pivotal for ensuring patient safety in operating rooms (ORs), designed to prevent surgical errors such as wrong-patient surgery and retained surgical instruments. Despite established protocols, adherence varies, with potentially fatal outcomes. Aim: The study aims to assess the knowledge and implementation of Surgical Time Out protocols among surgical nurses at a Tertiary Care Hospital in Rawalpindi, determining the impact on patient safety and surgical outcomes. Methods: We conducted a descriptive cross-sectional study involving 150 OR nurses selected through convenience sampling. A validated questionnaire was employed to collect data on the nurses' knowledge and application of Time Out protocols. Results: Results showed that 68% of nurses had adequate knowledge regarding Time Out protocols, recognizing their essential role in patient safety. Nevertheless, 32% had insufficient knowledge, which could compromise surgical safety. Conclusion: The study concludes that while a majority of nurses understand the importance of Surgical Time Out protocols, there is a significant portion who require further training. It emphasizes the necessity of regular, structured training programs to enhance adherence to Time Out protocols, thereby improving patient safety and reducing preventable surgical complications.*

Keywords: Nurses, OR, Knowledge, surgical time out, Patient safety

Introduction

The health and safety of patients are paramount concerns for healthcare professionals, who adhere to standard policies and procedures established by healthcare organizations (1). Within the hospital setting, Operating Rooms (ORs) or operation theaters serve as critical departments where surgeries are performed, necessitating a clean, aseptic environment equipped with advanced surgical instruments and machinery (2). Nurses working in the OR are highly trained professionals tasked with ensuring patient safety from the moment they are received from the ward. Therefore, adherence to OR protocols, including thorough patient checks, verification of patient identity, understanding of the surgical procedure, and pre-operative, intra-operative, and post-operative care, is essential (3). Central to these protocols is the concept of "TIME OUT," mandated by the Joint Commission International (JCI) as part of its certification requirements (4, 5). Nurses' understanding and compliance with TIME OUT protocols are crucial, as any negligence in patient safety measures within the OR can have severe consequences for patients and their families. TIME OUT procedures typically involve the use of a checklist, where surgical nurses document various steps of the surgical procedure, ensure the readiness of all necessary equipment, and facilitate effective communication throughout the procedure (6, 7). Additionally, at the conclusion of the surgery, a designated surgical nurse is responsible for ensuring that no foreign bodies, such as surgical gauze or other equipment, remain

inside the patient's body (8). Historically, nurses were primarily responsible for pre- and post-operative procedures. However, contemporary practices have shifted towards a more collaborative approach, with shared responsibilities among doctors, nurses, and technicians (9). The collaborative model not only enhances patient safety but also fosters a culture of teamwork and accountability within the OR environment (10, 11). Although nurses are generally aware of the importance of preventing counting errors during surgeries, they may sometimes neglect these protocols due to workload pressures in the operating room. Patient time-out procedures, conducted before anesthesia administration and during surgical procedures, play a crucial role in preventing surgical errors, including counting discrepancies (12-14).

Patient safety remains a significant challenge in healthcare delivery, as highlighted by the National Institute for Health Research's report on patient safety in 2030 (15). To mitigate the risk of safety incidents in the OR, it is imperative to identify influencing factors and monitor the professional behavior and attitudes of surgical nurses during time-outs (16). Encouraging reporting of adverse events is essential for improving patient safety and preventing errors (17). Operating room nurses play a critical role in ensuring patient safety during time-outs, which serve as the first line of defense against adverse events. Establishing a safe organizational culture in the OR is paramount, requiring an understanding of the attitudes and perceptions of nurses towards safety reporting (18). Research indicates that

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millions of surgeries are performed globally each year, with a significant number of adverse events occurring, underscoring the importance of robust safety protocols (18). Operating room teams must ensure patient safety during patient transfers and checklist utilization, as well as adherence to aseptic techniques and effective communication (19). These practices mitigate hazards and reduce the risk of postoperative complications, leading to improved patient outcomes (19). Patient comfort and recovery are paramount considerations for healthcare workers, with pre-procedure protocols such as time-outs ensuring patient readiness and procedural safety (20). These practices contribute to a culture of safety and enhance the quality of care provided in the OR.

The main purpose of this study is to assess knowledge of surgical (operating room) nurse and protocols of ‘Time Out’ in operating room. It is remarkable for the participants (staff) of operating room to follow and implement the policies of JCI regarding patient’s safety and protocols of Time out. All nurses and other surgical team of the operating room can develop positive attitude towards patient’s health care and following patient safety protocols of Time out can reduce the morbidity and mortality rate. This study is also helpful for keeping down surgical errors, minimizing the pressure work and other departmental conflicts. To execute the Time out protocols, nurses can manage their responsibilities efficiently, also beneficial for the organization to accomplish the protocols and helping out the patient in quick recovery.

Having worked in this unit for the past six years, our team has witnessed firsthand the challenges faced by our seniors and colleagues. These challenges include coping with heavy workloads, navigating demanding interactions with senior staff and surgeons, and occasionally making errors while adhering to time-out protocols and utilizing the surgical safety checklist (SSC). Given these experiences, conducting this study holds the potential to offer valuable insights and support to operating room nurses in addressing these challenges effectively in the future.

Main purpose of the study is to evaluate the knowledge of the surgical nurses of Operating room, also by following the policies of JCI regarding patient’s safety and the protocols of “Timeout”.

Methodology

This study utilized a cross-sectional research design to investigate the perceptions and attitudes of operating room nurses towards surgical safety protocols, particularly focusing on the utilization of the surgical safety checklist. The research was conducted exclusively among operating room nurses, employing a questionnaire-based approach for data collection. The questionnaire format was carefully developed and distributed among the surgical nursing staff to gather relevant insights. Prior to distribution, the questionnaire underwent a rigorous validation process to ensure its reliability and validity. Additionally, an approved list of questionnaires, sourced from "A review of surgical team members’ perception of near misses and attitude towards Time Out protocols," was consulted and incorporated into the study instrument. Data analysis was conducted using statistical software, specifically SPSS,

allowing for a comprehensive examination of the collected data. The questionnaire items were designed to assess the knowledge levels of operating room nurses regarding surgical safety protocols, providing valuable insights into their understanding and adherence to established safety procedures.

The study was directed on different units of Operating room nurses at Teaching Hospital Rawalpindi.

Sample size was taken through convenient selection. The total population was 400.

If N=Population, n=Sample size, E= Margin of error
 $n = \frac{N}{1 + \frac{(N)(E)^2}{n}}$
 $n = \frac{300}{1 + \frac{(300)(0.05)^2}{n}}$

$n = \frac{300}{1 + (300)(0.0025)}$
 $n = \frac{300}{1 + 0.75}$
 $n = \frac{300}{1.75} = 171.43$

$n = \frac{300}{2} = 150$

The sample size was 150

Prior to data collection, participants were provided with both oral and written information regarding the purpose of the study and their involvement in it. Informed consent was obtained from each participant through a comprehensive consent form. The confidentiality of participants’ information was ensured throughout the study.

A precisely designed close-ended questionnaire was administered to the surgical nurses working in the operating room of Teaching Hospital Rawalpindi. This questionnaire served as the primary research tool, facilitating the collection of pertinent information for the study. It encompassed various types of questions aimed at gathering comprehensive data.

The study included surgical nurses who were actively working in the operating room department of the Teaching Hospital Rawalpindi.

Nurses working in units other than the operating room, those unwilling to participate in the study from the operating room, and nursing students were excluded from the research.

Results

A total of 150 nurses participated in the study. The majority of participants had an average experience ranging from 0 to 5 years, with varying qualifications including diplomas, specializations, Bachelor of Science in Nursing (BSN), and Master's degrees. The focus of this analysis was to evaluate the nurses’ knowledge regarding surgical Time Out procedures.

Table 1: Demographics:

Group	AGE	
	Frequency	Percentage
21-30	85	56.7%
31-40	44	29.3%
41-50	16	0.7%
51-60	5	3.3%
Total	150	100.0 %
Qualification		
Diploma	93	62.0%
Specialization	29	19.3%
BSN/Post Rn	18	12.0%
Msn	10	62.0%
Total	150	100%
Experiences		
0-5	91	60.7%

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6-10	31	20.7%
11-15	28	18.7%
Total	150	100.0%

Table 2: Analysis of the question:

1: Have you observed a wrong patient being brought into the operating room?		
Yes	94	62.7%
No	56	37.3%
Total	150	100.0%
2: Have you experienced uncertainty about patient identity in the operating room?		
Yes	108	71.5%
No	42	27.8%
Total	150	100.0%
3: Have you observed wrong positioning of patient prior to surgery?		
Yes	108	71.5%
No	42	27.8%
Total	150	100.0%
4: Have you experienced uncertainty about operation side prior surgery?		
Yes	117	77.5%
No	33	21.9%
Total	150	100.0%
5: Is the responsibility for checking patient identity, operation side, and operation procedure a joint responsibility?		
Yes	98	65.3%
No	52	34.7%
Total	150	100.0%
6: Do you check patient identity prior to each operation?		
Yes	78	51.7%
No	72	47.7%
Total	150	100.0%
7: Do you verify the correct site/side prior to each operation?		
Yes	110	73.3%
No	40	26.7%
Total	150	100.0%
8: Do you verify the correct surgical procedure prior each operation?		
Yes	94	62.7%
No	56	37.3%
Total	150	100.0%
9: Do you believe incorrect surgery is performed as a result of not verifying patient identity, side, and procedure?		
Yes	110	73.3%
No	40	26.7%
Total	150	100.0%
10: Does anyone use the Time Out protocol in your operating room?		
Yes	88	58.7%
No	62	41.3%
Total	150	100.0%
11: Do you believe the Time Out protocol can prevent incorrect surgery?		
Yes	109	72.7%

No	41	27.3%
Total	150	100.0%
12: Do you find the Time Out protocol useful?		
Yes	99	66.0%
No	51	34.0%
Total	150	100.0%
13: Would you like to use a Time Out protocol in your operating room?		
Yes	115	76.7%
No	35	23.3%
Total	150	100.0%

The above table shows the age group, experience, and qualifications of the participants. Different questions regarding time-out protocols were asked of the participants. From the questions, it is shown that most of the study participants know about time-out protocols, which collectively 68% is very productive.

Discussion

Several studies have contributed to our understanding of this area, providing insights into the factors influencing nurses' comprehension and implementation of safety protocols. The operating room nurse analyzes the patient, noted in the form of a checklist, following the surgical time-out protocols. More importantly, the main point of this study is to assess the knowledge of nurses regarding time-out protocols in the operating room. Participants have 68% knowledge about time-out protocols, which is sufficient, rather than 32% of nurses have poor knowledge. Similarly, Chellam Singh B and Arulappan J (2017) explored the influence of organizational culture on nurses' adherence to safety protocols in the operating room (21). Their study revealed that a supportive and safety-focused organizational culture significantly influenced nurses' attitudes and behaviors towards implementing time-out protocols and safety checklists.

The current study revealed that out of 150 participants, 58.7% of operating room nurses had strong knowledge regarding surgical time-out protocols or safety checklists, and 42.3% of participants had very low knowledge about surgical time-out protocols. Moreover, Chen, Lee, and Jun J et al. (2021) conducted a systematic review examining the relationship between organizational culture and nurses' adherence to surgical safety protocols (22). Their analysis emphasized the importance of fostering a culture of safety within healthcare organizations to promote adherence to established protocols. Additionally, Granel-Giménez N et al. (2022) conducted a qualitative study focusing on teamwork and communication in the implementation of surgical safety protocols (23). Their findings underscored the pivotal role of effective interdisciplinary collaboration and clear communication channels in ensuring the successful execution of time-out procedures and safety checklists.

The results indicate varying levels of knowledge among operating room nurses regarding surgical time-out protocols. While a significant proportion of participants demonstrated strong knowledge (58.7%), a notable percentage exhibited low knowledge levels (42.3%). This discrepancy underscores the importance of targeted

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educational interventions to enhance nurses' understanding and adherence to established safety protocols. By synthesizing findings from these studies, we can gain a comprehensive understanding of the multifaceted factors influencing nurses' knowledge and adherence to surgical time-out protocols in the operating room, thus informing future interventions and initiatives aimed at optimizing patient safety practices and enhancing the quality of care delivery.

Operating room nurses have a brief responsibility in the operating room to take care of the patient at the time of receiving the patient before surgery, during the surgery, and after the surgery. In 2016 Jalali H et al. the authors and researcher disclosed in her study that 78% of participants who were working in the operating room had inadequate knowledge, only 20% had appropriate knowledge and 2% had adequate knowledge in respect of standardized surgical checklists during surgery (24). A study conducted by Ozgur Gurlek in 2019 at a state university and hospital in the province of Afyonkarahisar. 80.4% out of 102 contestants were aware of the safety checklist in their service training; they agreed that the safety checklist was very effective and helpful at the time of surgeries (25).

This study showed that 66% of nurses agreed that time-out protocols and surgical safety checklist is most effective and useful in the operating room during surgeries. Comparing findings across different studies reveals fluctuations in nurses' knowledge levels over time. For instance, Tan J et al. study in 2021 found a higher prevalence of inadequate knowledge among operating room nurses regarding standardized surgical checklists, with only 20% demonstrating appropriate knowledge (26). However, the more recent study by Ozgur Gurlek in 2019 reported a higher awareness rate (80.4%) of safety checklists among participants, indicating potential improvements in educational initiatives or institutional practices (25).

Conclusion

The study concludes that while a majority of nurses understand the importance of Surgical Time Out protocols, there is a significant portion who require further training. It emphasizes the necessity of regular, structured training programs to enhance adherence to Time Out protocols, thereby improving patient safety and reducing preventable surgical complications

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department Concerned.

Consent for publication

Approved

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Conflict of interest

The authors declared absence of conflict of interest.

Author Contribution

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Conception of Study, Development of Research Methodology Design, Study Design., Review of manuscript, final approval of manuscript.

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