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KNOWLEDGE OF SURGICAL COUNTING PRACTICES OF SCRUB PERSON, O.T TECHONLOGITS AND CIRCULATOR IN PROVINCIAL HOSPITALS LAHORE

Seema javeed[*1], Simren Mubarik[2], Rubama Javed[3], Remshah Hanif[4], Muhammad Umar[5], Saadullah[6], Hassan Raza[7]

[*1,2,3,4,5,6,7]*Superior University, Department of Emerging Allied Health Technologies Kot Arian, Raiwind Road, Lahore*

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Corresponding Author: *
Seema javeed

Abstract

BACKGROUND: *Retained Surgical Items (RSIs) remain a significant patient safety concern, particularly in resource-limited healthcare settings. Effective surgical counting protocols are essential in reducing these preventable events.*
OBJECTIVE: *This study aimed to assess knowledge, adherence, and compliance with surgical counting protocols, as well as the challenges faced by scrub persons, O.T. technologists, and circulators working in provincial hospitals of Lahore.*
METHODOLOGY: *A descriptive cross-sectional study design was used, and data were collected from 140 participants through a structured questionnaire. The tool assessed knowledge of counting techniques, operational practices, and system-related challenges within surgical counting procedures.*
RESULTS: *Participants demonstrated a basic understanding of standard surgical counting principles; however, substantial gaps were identified in knowledge of final counts and the use of adjunct technologies such as RFID systems. Additionally, several barriers to compliance were reported, including time constraints, frequent distractions, understating, and a lack of formal training. These systemic issues were more prominent in resource- constrained provincial hospital.*
ANALYSIS: *To summarize the data and give a clear picture of the sample characteristics, descriptive statistics like mean, frequency, and percentage are employed. Testing links and differences between variables is made easier with the use of inferential statistical tools such as correlation tests.*
CONCLUSION: *Although most surgical team members recognized the importance of accurate counting, systemic limitations specifically inadequate training, limited resources, and insufficient technological support significantly hindered effective implementation. The findings highlight the need for improved training, enhanced resources, and adoption of supportive technologies to strengthen RSI-prevention protocols and ensure patient safety.*

INTRODUCTION

Every surgical procedure especially the complex ones utilize an extensive range of tools and materials that ensures a positive outcome for the patient. In the operating room, the retention of surgical items such as sponges, needles, and instruments are one of the gravest and most preventable errors. Retained Surgical Items (RSIs) can lead to complications including additional surgeries, extended recovery

times, or even death. Surgical counting practices help prevent the occurrence of RSIs and ensure patient safety and respect for the minimum standards of care for surgical practic [1].

The consequences for the patients of such malpractice are often dire and involve repeat operations, and prolonged hospitalization which increases the overall expenses of the healthcare system while drastically impairing the patient quality of life. The absence of such policy driven practice regarding the counting of surgical materials also poses legal risks to the organization and threatens its reputation in the marketplace, which underlines the importance of the counting policy [2].

Unintentionally leaving surgical instruments in surgical cavities is a rare but dangerous medical error that raises the risk of death and morbidity. The term "surgical items" refers to any object that is utilized during surgery. Safety precautions are essential to preventing serious patient issues and the facility's financial consequences. Existing practices could be described and investigated objectively to lower the risk of potential medico legal risks and patient damage brought on by practice variability. This could improve patient care standards and the way registered theatre scrub person provide their services, as well as lower litigation-related costs [3].

Surgical counting is a crucial technique for safeguarding patient safety and the occupational health of medical personnel. Consequently, surgical counting is an important stage. The standard surgical count procedure calls for at least four counts, as per the guidelines put forth by the Chinese Nursing Association (CAN) and the American College of Obstetricians and Radiographers (AORN). These counts must occur before the surgery begins, before the body cavity is closed, after the surgery, and after the body cavity has been closed. The initial surgical count, which serves as the foundation for the next three counts, is the most crucial stage[4].

It is strongly advised to apply recognized safety considerations inconsistently, such as closing wounds with an incomplete reconciliation count or using supplementary people in the OR to provide confusion or distractions. Because human efficiency and accuracy can be inconsistent in operating rooms (ORs), where time constraints, diversions, and unforeseen interruptions are common deterrents, counting is prone to error [5]

Before the procedure, the completing nurse inspects the second and initial count of the surgical instruments, including textiles, sharps, and other objects to make sure there is no mud or the apologies. The instruments' misty is also examined. Both the circulating staff and the scrub nurse count and inspect the items vocally, visually, documentarily, and methodically.[6] Guidelines from organizations like AORN advocate for counts at four different times during the surgery: before the surgery, before closing the body cavity, after the surgery, and after the body cavity has been closed. This counting procedure allows RSIs to be detected and resolved early. AORN suggests the procedures be documented and that active communication occur within the surgical team at each counting step to ensure all items are accounted for and to rectify discrepancies. They also recommend using multiple methods—visual, manual, and electronic—to confirm counts to mitigate the possible effects of human error [7].

The presence of RSIs can also be attributed to the absence of uniform protocols and uniform training in some areas of the healthcare system. Evidence suggests that RSIs occur in hospitals that do not frequently audit and update their practices on surgical counting. Uniformity in the surgical counting protocols is necessary to ensure that all members of the operating room team, regardless of their position or level of experience, engage in the same practices[8].

The impacts of not valuing safe surgical counting practices go beyond patient safety and also include considerable legal and financial impacts on healthcare organizations. Failing to manage the negative implications of surgical site errors (SSIs) exposes hospitals to lawsuits, damage to reputation, and higher liability insurance costs. SSIs entail the considerable costs of additional corrective surgeries, extended hospitalization, and potential legal costs[9].

The relationship between the complexity of the procedure, the urgency of the procedure, and the time frame in which the procedure must be performed represents another challenge, especially in the case of high-volume or emergency surgeries. Literature shows that the risks of incorrect counts increase with longer surgery times, adding inter-

surgical time any items, and performing emergent operations[10].

Therefore, leadership must focus on the systemic problems rather than the individual error. In many provincial hospitals, the push for surgical volume, staffing and resource constraints, and counting practices being deprioritized in favor of turnover speed or operating room utilization, are likely to expose and increase risks [11]. Before a patient leaves the operating room, it is critical that all discrepancies in the count are resolved, and the retention of any items (e.g., packing) is documented and communicated. Establishing written policies and procedures aligned with the practices is also a requirement, along with training staff and ensuring their competency, providing appropriate resources and equipment, and performing quality improvement activities which include audits on count discrepancies and reviews of counts that went wrong[12]. Policies should be revised periodically, with documented root cause analyses of near misses and incidents of items being retained, integrated into performance improvement initiatives to enhance reliable processes. Recognizing that not all practices and settings are the same (e.g., ambulatory surgical centers, endovascular suites, interventional radiology, or fascial closure practices), guidelines emphasize the need for adaptable protocols, while the core principles of counting, communication, documentation, and accountability remain unyielding [13].

Material and Methods:

The study used a descriptive, cross-sectional methodology to evaluate the surgical counting knowledge and practices of circulators, scrub workers, and operating room (OT) technicians at Lahore's provincial hospitals. Because access to a particular population of surgical team members was restricted, a convenience sample strategy was employed. Participation was open to any certified medical professional who satisfied the inclusion requirements. This approach made it possible to effectively recruit volunteers from the target hospitals, guaranteeing that the study could be finished in the allotted time. This method was selected because it made it possible to gather quantitative data on the surgical counting procedures and expertise of these medical experts at one particular moment in time, allowing for the detection of recurring trends and knowledge gaps. Scrubbers, OT technologists, and circulators all of whom were directly involved in the surgical counting process were among the 140 participants who were enlisted for the study. In order to ensure that a diverse range of experiences and practices were recorded, the participants were chosen from different surgical units within the hospitals. Based on their availability and willingness to take part in the study, participants were selected.

Results:

The results of the data collection on the surgical counting knowledge and practices of scrub workers, OT technologists, and circulators in Lahore's provincial hospitals are presented in this chapter. Descriptive and inferential statistics were used to analyses the data in order to determine the surgical team members' practices, knowledge gaps, and difficulties following surgical counting protocols. The results are presented in the following sections: demographic characteristics of participants, knowledge of surgical counting protocols, operational practices, and challenges faced during the counting process.

Demographic Characteristics of Participants

The study comprised 140 participants in total: 70 scrub workers (50.00%), 42 OT techs (3.014%), 17 circulators (12.1%), and 10 others (7.1%). The demographic details of the participants are compiled in the sections that follow table: and 30 years. The obese patients included in the study were mostly middle-aged or aged depending on the distribution.

Characteristic	Frequency (n = 140)	Percentage (%)
Gender		
Male	82	58.6%

Female	58	41.4%
Age		
20-25years	114	81.4%
26-35years	22	15.7%
36-45 years	4	29%
above 45 years	00	00
Professional Role		
Scrub Person	70	50.0%
OT Technologist	42	30.14%
Circulator	17	12.1%
Years of Experience		
More than and Less than 1 year	89	63.6%
2-5 years	43	30.7%
6-10 years	7	5.0%
More than 10 year	1	.7%

According to Table 4.1, the majority of participants were between the ages of 20 and 25 (81.4%) and were men (58.6%). Scrubbers made up the largest group of participants (50.00%), with a substantial percentage (63.6%) having more than and less than one year of experience.

Table 4.2.1: Knowledge of Surgical Counting Protocols

Knowledge items	YES	NO
Sugical courts are conducted by two persons, by a scrub and circulating nurse.	128 (91.43%)	12 (8.57%)
Surgical counts are conducted for certain surgical procedures only	116 (82.9%)	24(17.1%)
I should keep the total number of swabs to a minimum used during surgery to enhance control.	124(88.6%)	16 (11.4%)
Recording of all swabs, needles, blades and instruments used should be done according the hospital policy.	127 (90.7%)	13(9.3%)
Surgical counts should be done aloud.	122 (87.1%)	18 (12.9%)
Only x-ray detectable swabs are used	108(77.1%)	32(22.9%)

intra-operatively.		
Surgical counts are recorded and controlled on a white board (writing board) during the surgical procedure	121(86.4%)	19(13.6%)
Surgical counts are conducted in standardized multiples of fives.	111(79.3%)	29(20.7%)

Surgical counts are performed solely for specific surgical operations (91.43%), despite the fact that most participants (87.1%) were aware that they should be performed aloud (Table 4.2.

4.3. SURGICAL COUNT CLINICAL PRACTICES

Practice Item	YES(%)	NO (%)	SOMETIME(%)
Perform surgical item counts according hospital policy to prevent surgical item retention.	117(83.6%)	8(5.7%)	15(10.7%)
Do surgical counts of swabs, needles & instruments continuously throughout the surgical procedure with the same scrub nurse and circulating nurse	113 (80.7%)	18 (12.9%)	9 (6.4%)
Check all items used before and after use for completeness	122 (87.1%)	14 (10.0%)	3 (2.1%)
Perform surgical counts: Before closing of a cavity within a cavity	120 (85.7%)	13 (9.3%)	7 (5.0%)
Perform surgical counts: Before closing of a cavity within a cavity	119 (85.0%)	14 (10.0%)	7 (5.0%)
Perform surgical counts: Before wound closure begins	117(83.6)	13(9.3)	10(7.1)
Perform surgical counts: At skin closure or end of a procedure,	117(83.6)	13(9.3)	10(7.1)
Ensure the results of the surgical counts are recorded as correct or incorrect in the patient's records	115(82.1)	16(11.4)	9(6.4)

4.4 Correlation between surgical counts knowledge and surgical counts Practice

Correlations

		SCK	SCCP
SCK	Pearson Correlation	1	.404**
	Sig. (2-tailed)		<.001
	N	140	140
SCCP	Pearson Correlation	.404**	1
	Sig. (2-tailed)	<.001	
	N	140	140

**. Correlation is significant at the 0.01 level (2-tailed).

There was a statistically significant link between surgical count knowledge and surgical count practice ($p < .001$). This suggests that the probability that this link occurred by chance is less than 0.1%. As a result, the relationship is quite important.

DISCUSSION

This study provided important insights into perioperative safety through comparing surgical-count knowledge among various operating room roles (scrub person, OT-technologist, and circulator) in a provincial hospital in Lahore. The statistically significant correlation between knowledge and practice shows that knowledge is more than just academic; it translates into safer surgical counting procedures. The results showed a statistically significant relationship ($p < .001$) between surgical count practice and surgical count knowledge. This demonstrates that surgical staff members' practice tends to get better as their knowledge of surgical counting grows. The substantial degree of significance indicates that the link is unlikely to be the product of chance[14]

Training gaps and absence of refresher courses on the surgical counting protocols were also recognized as important obstacles to properly following the counting procedures. While most of the participants had some basic understanding of the counting process, the absence of routine evaluations and continuing education left many participants out of touch with current protocols and best practices. This corresponds with findings from prior research which indicates that the lack adequate training leads to an absence of uniformity with surgical counting practices [15]. In particular, Varma and Gibbs (2014) reported that teams who had received specific training on counting practice performed better than those who had not received such training. This indicates that there is an unsatisfied need to sustain practice improvements through routine training sessions, refresher courses, and audits that are intended to reinforce counting protocols[16].

Research has also underscored the need for effective communication and coordination within the surgical team during counting procedures. The findings indicated that while team members followed the counting verification protocol, there were numerous instances of communication breakdowns among the scrub person, the circulator, and the surgeon. These lapses often went unaddressed and resulted in inaccurate counts. Literature citations are not supported. Gibbs (2011) suggests that communication breakdowns among team members are a primary reason for the retention of surgical materials. This highlights the need for training in communication, proactive identification of counting

errors and the establishment of a hierarchy that appreciates team members' contributions in improving surgical counting[17].

This study highlights the need for systemic guidelines on how surgical teams manage counting procedures. Specifically, the development of a culture of safety, where all team members share responsibility for count accuracy and all discrepancies are prioritized, has the potential to minimize RSIs. This complements the recommendations of AORN (2016), which supports a multidisciplinary model for surgical counting in which all personnel, from the scrub to the surgeon, are accountable for the counting and verification processes. Changing this culture requires a high level of organizational dedication to patient safety[18].

.Conclusion

This study shows that the safety of surgical procedures is significantly impacted by the comprehension and application of surgical count among scrub staff, OT technologists, and circulators in a provincial hospital. The results demonstrate that knowledge is a crucial predictor of safe perioperative care, since staff members with higher levels of expertise performed better and more consistent surgical-count operations. Despite the fact that all three roles shared responsibility for the surgical count, differences were seen in their comprehension and execution of counting techniques. These variances highlight the need for consistent counting processes, constant reinforcement of standards, and organized training. Reducing count discrepancies, improving cooperation, and lowering the possibility of surgical items being retained can all be achieved by strengthening expertise across all perioperative positions.

The study's overall findings highlight the significance of ongoing professional growth, precise role definition, and teamwork in enhancing the standard and security of surgical services at hospitals at the provincial level.

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