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Assessment of Postoperative Handover Communication Practice among Perioperative Staff in Orthopedic Surgery: Implications for Surgical Outcomes

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ABSTRACT

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Objective: To assess the quality of handover practice from Operating Room to Postanaesthesia Care Unit (PACU) in an orthopedic surgical context and to determine shortcomings in communication using Situation-Background-Assessment-Recommendation (SBAR).

Methods: This was a cross-sectional observational study carried out at Zaid Surgical Hospital, Lahore. Consecutive sampling was used in the direct observation of 155 postoperative orthopedic handovers, and they were assessed against a 39 item SBAR linked checklist. The data analysis was conducted in SPSS; the p Related-Samples Friedman Test, with Bonferroni corrected pairwise comparisons was used to assess differences in completeness across the 4 SBAR sections.

Results: The mean completeness measure across the 39 items of the checklist was at 23.5% (out of 100%). The Situation section was the most completely communicated section (77.0%; Patient Name, Procedure, and Surgeon each at 100%), while the Background, Assessment, and Recommendation sections were communicated far less consistently (17.0%, 18.4%, and 11.9% respectively). The ASA Classification, Drug Allergies, and Postoperative Concerns/Alerts were never communicated. The Friedman Test indicated a statistical difference across sections ($p < 0.001$); all pairwise comparisons were statistically significant except for Background vs. Recommendation ($p = .955$). All 155 handovers fell in the Poor completeness (<50%).

Conclusion: Completeness of the postoperative handover in this orthopedic context is poor with situational and procedural facts prioritized over the background, assessment, and recommendation components. SBAR standardization using mandatory standardized measures has the potential to be a viable solution along with targeted staff training.

Introduction

Clinical handover is the transition of accountability for a patient's care from one caregiver to another. The transfer from operating room to Postanaesthesia Care Unit is acknowledged as one of the highest risk stages of this transition, as the patient is moving physically, being monitored by a different team, and has often not returned to a stable physiological state after anaesthesia and surgery [1]. It has been estimated that loss of some vital information during this handover, would increase the risk of major in-hospital morbidity or mortality by roughly 8% per anaesthetic handover [2].

The SBAR framework was introduced to provide structure to this type of communication and has been used widely in perioperative settings [3]. However, published audits have consistently revealed a gap in the completeness of communication. For example, in a recent Saudi Arabian audit, after using the SBAR framework, postanaesthesia handovers were given a Good rating only 42% of the time [4]. Similarly, previously, before a checklist was used, items judged to be important by senior staff in a German hospital were communicated only 31.4% of the time [5], and 'Vital Signs' and the type of anaesthesia were communicated far more reliably than other items in a Nigerian audit [6]. The most comparable work to this one, reported from the Muhimbili Orthopedic Institute in Tanzania, found that only 17.5% (56 out of 319) orthopedic PACU handovers were rated Good, and that Vital Signs were transmitted 90.6% of the time, while ASA classification in only 24.5% of the cases [7].

Nevertheless, there is limited locally derived data on SBAR-based handover completeness in Pakistan. For that reason, this study was done to establish the baseline, using a locally tailored, 39-item SBAR checklist.

Objectives

- To assess the status of postoperative handover practices in an orthopedic surgical setting and to identify gaps in communication using the Situation-Background-Assessment-Recommendation (SBAR) framework.
- To evaluate current communication practice during postoperative handover among perioperative staff in this orthopedic setting
- To identify how often patient-specific, anaesthetic and surgical information was actually communicated versus omitted with the goal of recommending strategies, centred on SBAR standardization for improving handover practice and surgical outcomes.

Methodology

Study Design and Setting

This was a cross-sectional observational research project conducted at the Zaid Surgical Hospital (a teaching hospital associated with the University of Lahore) in the orthopedic Operating Theatre (OT) and its PACU, where direct observation was undertaken, rather than relying on staff recall, in order to collect data that reflects what was actually said as opposed to what staff believed they had said.

Participants in the study were perioperative staff that were involved directly in handing over or receiving postoperative handovers on orthopedic surgical patients. Consecutive sampling was used, and every observed, legible, eligible handover that occurred within the time period for data collection encompassing consecutive perioperative handovers relevant to orthopedic surgical patients were included until 155 handover assessments had been observed and evaluated.

Handover assessments did not include handover assessments for non-orthopedic surgical patients, handover assessments conducted outside of the Operating Theater (OT) or post-anesthesia care unit (PACU) and where handover assessments were for emergency resuscitation cases in which staff cannot feasibly conduct a formally structured handover.

Data Collection

A structured observational checklist was applied to document the handover impressions of each handover that was based on SBAR framework and contained 39 items over all four domains. Each item was ticked off Yes or No depending on if the outgoing provider verbally provided the information, and did not get counted for being documented in the patient's chart. The handover was not mediated by, or affected by the presence researcher.

Data Analysis

Data were analyzed in IBM SPSS Statistics. Frequencies and percentages were used to summarize the completeness at the item level, and a completeness score was computed for each SBAR section (situation, background, assessment, recommendation) for each handover. Given that these scores were related scores from repeated measures from a non-normal sample, the Related-

Samples Friedman's Test was performed to assess completeness differences between the four sections, and Bonferroni adjusted pairwise comparisons for identifying which pairs of scores were different. A p-value of under 0.05 was identified as significant.

Ethics

The study received ethics approval from the University of Lahore, followed by permission from the administration of Zaid Surgical Hospital. Written informed consent was obtained from participating staff, and no patient-identifying information was recorded on the checklist.

A cross-sectional descriptive survey was conducted among students enrolled in the Bachelor of Science program in Operation Theater Technology. This study followed a quantitative approach consistent with the methodology employed by Tan et al. (2021).

Results

Out of all of the observed handovers, a total of 155, the overall mean completeness across 39 items was just 23.5%. In the Situation section, the average completeness score was 77.0%. Patient Name, Operative Procedure, and Operating Surgeon were included in all handovers. Age/Gender was included in 85.2 % of handovers and ASA Physical Status Classification was never included. The mean completeness score for the Background section was 17.0%. The one item always included was Type of Anaesthesia, whereas Medical/Surgical History, Medication History, and Drug Allergies were never mentioned. The Assessment section had an average completeness score of 18.4%. The most frequent items were Vital Signs (84.5%) and Blood Loss/Fluid Balance (57.4%). There were several other items not included such as Blood Products Administered. The mean completeness score for the Recommendation section was 11.9%. The most frequent item was Items Returned to Patient (52.9%), and both Contact Number items and Postoperative Concerns/Alerts were never included.

The results of the Friedman test showed a significant difference in the completeness of information among the four sections of the handover (Test Statistic = 249.89, degrees of freedom = 3, $p < 0.001$). The average rank of each section was as follows: Situation = 3.65; Assessment = 2.76; Recommendation = 1.90; Background = 1.69. Bonferroni adjusted post-hoc pairwise comparisons revealed that all comparisons were significantly different ($p < .001$) except for Background vs. Recommendation ($p = .955$), which showed no significant differences (see Table 2). All 155 handovers reviewed were categorized into "Poor" based on the classification used by the Tanzanian comparison study (Good $\geq 75\%$, Satisfactory 50-74%, Poor $< 50\%$). The most complete handover communicated 41.0% of the items.

Discussion

The pattern observed here - near-total Situation completeness alongside low Background, Assessment, and Recommendation completeness - closely resembles that of the Muhimbili Orthopedic Institute study [7], although overall completeness in this dataset was much lower, likely due to the more extensive 39-item checklist used here compared to the 16-item one employed there, plus genuine local practice differences.

The null completeness of Medical/Surgical History, Medication History, and Drug Allergies corresponds with patterns on the Nigerian [6] and German [5] studies, suggesting that background clinical history is disproportionately likely to be omitted from verbal handover irrespective of setting. The fact that the Background and Recommendation domains did not differ from each other, while both did differ from the Situation and Assessment domains, has not previously been reported in this specific comparison.

The absence of Postoperative Concerns/Alerts and Contact Numbers is a notable clinical concern, since this is the information that would be essential for the receiving party if the patient were to deteriorate after the handover. A Myanmar orthopedic unit noted 0% compliance until they performed staff training, and consequently increased to 100% compliance through staff education and creating an adapted local checklist [8], indicating that this issue is solvable with training and not built-in structural reasons.

It is worth noting that the researcher was present, which may have affected the provider behaviour as this was an observational study. The research was conducted at a separate single hospital with all handovers conducted by Operation Theatre technicians, which inhibited comparisons across provider cadres. Only verbal communication was captured and not any information documented independently in the chart.

Conclusion

Overall, completion of postoperative handover within this orthopedic setting is poor across all elements, with only basic situational facts described and limited background history, assessment detail, and recommendations described; this was confirmed statistically between all four sections. To improve handover completeness and consequently surgical outcomes, mandatory SBAR standardization and targeted staff training focused on the Background and Recommendation areas is proposed.

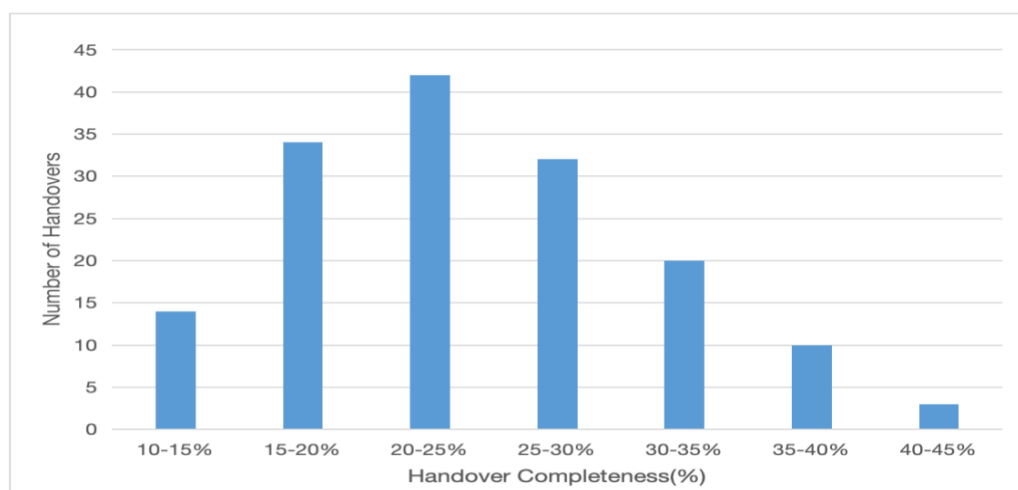
Table I: Section-wise Completeness of SBAR Checklist Items During Postoperative Handover (n = 155)

Section	Items	Mean %	Most Complete Item(s)	Least Complete Item(s)
Situation (S)	5	77.0%	Patient Name, Procedure, Surgeon (100% each)	ASA Classification (0%)
Background (B)	7	17.0%	Type of Anaesthesia (100%)	Medical/Surgical History, Medication History, Drug Allergies (0% each)
Assessment (A)	14	18.4%	Vital Signs (84.5%)	Blood Products, NG Tube, Packing (0% each)
Recommendation (R)	13	11.9%	Items Returned to Patient (52.9%)	Postop Concerns/Alerts, Contact Numbers (0% each)

Table II: Pairwise Comparison of SBAR Section Completeness (Bonferroni-adjusted)

Comparison	Adjusted p-value	Significant
Background vs. Recommendation	.955	No
Background vs. Assessment	<.001	Yes
Background vs. Situation	<.001	Yes
Recommendation vs. Assessment	<.001	Yes
Recommendation vs. Situation	<.001	Yes
Assessment vs. Situation	<.001	Yes

Figure 1: Distribution of Handover Completeness Scores (n = 155)



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