



RESEARCH ARTICLE

EFFECTIVENESS OF NURSE HANDOVERS IN A TERTIARY HOSPITAL IN MUMBAI, INDIA

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ABSTRACT

Background: Effective nurse handovers are essential for maintaining continuity of care and minimizing medical errors. **Objective:** This study analyses handover-related errors across ICU and ward settings over an eight-month period, evaluating factors such as age, experience, qualification, shift timing, and patient-nurse ratio. **Methods:** A quantitative, retrospective observational study was conducted involving 940 ICU patients and 2,132 ward patients. **Results:** Overall error rates declined significantly from 19.39% in May to 0% in December ($p < 0.001$). Factors associated with increased errors included younger age (20–25 years), less experience (0–1 year), night shifts ($p < 0.001$), and higher patient-to-nurse ratios ($p < 0.001$). Shorter handover durations (mean 34.93 mins) were strongly associated with error occurrence compared to error-free handovers (mean 53.68 mins, $p < 0.001$). **Conclusion:** Structured communication protocols, adequate time allocation, and focused training for junior staff are critical for enhancing patient safety during shift transitions.

INTRODUCTION

Nurse Handover is the transfer of professional responsibility and accountability for patient care between nurses during shift changes. Ineffective communication during these transitions is a leading contributor to adverse events, medication errors, and fragmented care. Standardized tools such as SBAR (Situation, Background, Assessment, and Recommendation) and ISBAR have been shown to improve information accuracy and nurse confidence. However, barriers such as high workloads, environmental distractions, and time constraints persist. This study evaluates the effectiveness of handovers in a tertiary care setting to identify systemic and individual risk factors.

RESEARCH METHODOLOGY

- Study Design: Quantitative, retrospective observational study.
- Setting: ICU and ward departments of a tertiary hospital in Mumbai, India.
- Sample Size: 940 ICU patients and 2,132 ward patients.

Data Collection: Monthly error rates were tracked across categories including TPR (Temperature, Pulse, and Respiration), medication, and safety. Demographic data and handover durations were also recorded.

Statistical Analysis: Descriptive statistics and chi-square tests were utilized, with $p < 0.05$ considered statistically significant.

RESULTS

Trend of Errors over Time: The study observed a marked improvement in handover quality. Total errors dropped from 19.39% in May to 0% by December.

- **Significant Declines:** Band ($p=0.001$), TPR ($p=0.006$), and Medication ($p < 0.001$) errors showed the most improvement.
- **Non-Significant Categories:** SPO and Intake errors did not show a statistically significant trend.

Nurse-Related Factors and Error Rates

- Age and Experience: Younger nurses (20–25) and those with 0–1 year of experience had the highest error rates.
- Qualification: In ward settings, BSc nurses had higher error rates (6.6%) than GNM nurses (4.8%, $p=0.047$).
- Gender: Male ICU nurses showed higher error rates in vital sign reporting (TPR and SPO).

Environmental and System Factors

- **Shift Timing:** Night shifts (21:00–21:30) recorded the highest error rates in both ICU (100%) and wards (24.2%).

Table 1. Table showing the Percentage of Errors during handover from May to December, Mumbai, India

MONTH	Any	Band	TPR	SPO	Intake	Pain	Med	Nursing	Safety
May	19.39	7.14	2.04	9.00	0.00	0.00	9.18	2.04	3.06
June	7.78	1.11	2.22	1.11	2.22	0.00	0.00	2.22	1.11
July	16.00	0.80	5.60	0.80	0.00	0.80	0.00	4.00	7.20
August	7.35	0.00	2.21	1.47	1.47	1.47	0.00	0.74	1.47
September	12.86	2.14	0.00	0.71	5.71	1.43	0.00	0.72	2.14
October	0.72	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00
November	0.73	0.00	0.73	0.00	0.00	0.00	0.00	0.00	0.00
December	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	8.09	1.38	1.60	0.53	1.28	0.53	0.96	1.17	1.91
P for trend	<0.001	0.001	0.006	0.31	0.70	0.69	<0.001	0.004	0.002

- **Workload:** High patient-to-nurse ratios ($\geq 1:8.01$) in wards led to 12.5% errors compared to 4.1% in standard ratios ($p < 0.001$).
- **Duration:** Handovers involving errors were significantly shorter (mean 34.93 mins) than those without errors (mean 53.68 mins, $p < 0.001$).
- **Targeted Training:** Providing mentorship and simulation-based training for nurses with less than two years of experience.
- **Staffing Optimization:** Reducing patient loads during critical shifts to prevent communication breakdown.

DISCUSSION

The results underscore that "rushed" handovers are a primary driver of clinical errors. The significant reduction in errors by the end of the study suggests that training and the possible introduction of digital documentation or checklists were effective. Experience remains a critical safeguard; junior nurses were more prone to medication and pain assessment mistakes. Furthermore, the high error rate during night shifts highlights the impact of fatigue and potentially reduced staffing levels on communication quality.

Conclusion and Recommendations

Effective nurse handovers are a critical determinant of patient safety. To sustain high-quality care, the study recommends:

- **Standardization:** Implementation of SBAR or ISBAR tools across all units.
- **Time Management:** Ensuring hospital policies allow at least 50 minutes for comprehensive handovers.

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