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Research Article

Enhancing safety culture and teamwork in healthcare: A strategic initiative based on the Johns Hopkins framework at a tertiary care centre in Kanyakumari

Dr. Angelin Lincy Nadarajan
MBBS, MBA

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Corresponding Author:

Dr. Angelin Lincy Nadarajan

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ABSTRACT

Background and objectives: Patient safety is the cornerstone of high-quality healthcare delivery. Preventable medical errors, which are leading causes of patient morbidity and mortality globally, frequently stem from weak safety cultures, ineffective teamwork, and communication breakdowns. This study aimed to assess baseline safety practices, implement structured communication strategies (SBAR) and Just Culture principles using the Johns Hopkins framework, and measure their impact on staff attitudes and patient safety at Calwin Hospital, Kanyakumari.

Methods: A mixed-method research design was employed over an 8-week evaluation period. Quantitative data were collected using the Safety Attitudes Questionnaire (SAQ) from 60 healthcare professionals. Qualitative data were gathered via focus group discussions and key informant interviews. Statistical analysis of quantitative data was performed using SPSS, while NVivo software was utilized for thematic coding of qualitative insights.

Results: Post-intervention analysis demonstrated significant improvements across all measured domains. Teamwork and safety climates both saw an average increase of 18%. Staff perception of psychological safety (feeling safe to speak up) increased from 46% to 73%. Qualitative findings highlighted improved hand-off clarity through SBAR and a reduced fear of punitive action due to Just Culture workshops.

Interpretation and conclusions: The implementation of structured teamwork and safety practices significantly improves team collaboration, staff morale, and patient safety metrics. Sustaining these improvements requires an organization-wide commitment, continuous professional development, and strong leadership support.

Keywords*: Healthcare communication; Just Culture; Patient safety; Safety culture; SBAR; Teamwork.*

INTRODUCTION

Patient safety is fundamental to delivering high-quality healthcare worldwide.[1] Despite established protocols and clinical guidelines, many healthcare institutions still face challenges with inadequate safety practices and preventable medical errors. These errors, categorized by Reason et al.[2] into latent systemic failures and active human errors, are significant contributors to patient morbidity and mortality. Annually, it is estimated that hundreds of thousands of hospitalized patients suffer preventable harm, highlighting the urgent need for comprehensive, system-level interventions, as noted by Rodziewicz et al.[3] Addressing these adverse events relies heavily on cultivating a mature "patient safety culture." Fekadu et al.[4] defines this culture as the collective values, beliefs, and norms within an organization that influence healthcare workers' attitudes and behaviors towards prioritizing safety. Mistri et al.[5] emphasize that an organizational culture lacking this focus can impede improvement initiatives, leading to decreased staff engagement and an increased likelihood of clinical errors. This observation aligns with foundational surveys by Singer et al.,[6] which indicate that strong organizational commitment and leadership support are essential for a secure healthcare system. A significant factor contributing to safety failures is ineffective interdisciplinary communication. Leonard et al.[7] identified human factors and effective teamwork

as crucial for ensuring safe care. Additionally, faulty or delayed communication has been recognized by Raymond et al.[8] as the primary cause of adverse events in up to 72% of root-cause analyses of sentinel events. To address this issue, structured communication frameworks like SBAR (Situation, Background, Assessment, Recommendation) have been widely adopted. According to Kosim and Coolen et al.,[9,10] SBAR facilitates a logical, concise, and efficient transfer of clinical information, reducing barriers to effective communication across clinical hierarchies and enhancing team collaboration and patient safety metrics.

Moreover, sustaining these structural improvements necessitates a shift from a punitive environment to a "Just Culture." Stuart et al.[11] explains that the Just Culture model replaces the fear of personal or career repercussions with a focus on system design thinking. This approach fosters a psychologically safe environment where caregivers are encouraged to report adverse events and near misses without fear of blame, promoting continuous improvement. Inspired by the Johns Hopkins University framework, "Setting the Stage for Success: An Eye on Safety Culture and Teamwork,"[12] this study evaluates the implementation of SBAR and Just Culture principles in a real-world context. The primary research question examines how these evidence-based interventions can enhance team collaboration and patient safety at Calwin Hospital, a tertiary care center in Kanyakumari.

Aim

1. to implement and evaluate a structured safety culture and teamwork initiative, based on the Johns Hopkins framework, to enhance interdisciplinary collaboration and patient safety at Calwin Hospital, Kanyakumari.

Objectives

- Assess the current safety culture and teamwork practices at Calwin Hospital.
- Identify gaps in communication, leadership, and patient safety protocols.
- Design and implement interventions using Just Culture and SBAR communication strategies.
- Measure the impact of these interventions on staff attitudes and patient safety outcomes.
- Recommend best practices for maintaining a culture of safety.

METHODS

Methodological Approach: A triangulated, mixed-method approach combining qualitative and quantitative data was adopted to ensure a comprehensive analysis.

Study Setting and Population: The study was conducted at Calwin Hospital in Kanyakumari, involving administrative staff, nurses, and doctors.

Sample Size: Based on a recent cross-sectional study conducted in an Indian tertiary care setting by Tadia et al. (2025), the overall positive response rate to patient safety culture was found to be 61%. Applying the formula $n=Z^2pxq/d^2$, where, n = required sample size, Z= Z-statistic for a 95% Confidence Level (1.96), p = Expected prevalence of positive patient safety culture (61% or 0.61, based on previous literature), q=100-p, d = an acceptable adjusted margin of error is 15% (0.15) and accounting for 20% non-response rate, Total Sample size was 60. The sample consisted of 60 healthcare professionals, restricted due to scheduling and time constraints. The demographics included 25 nurses, 5 physicians, and 4 administrative staff.

Study Instruments:

- Quantitative data were gathered using the Safety Attitudes Questionnaire (SAQ), a validated instrument for assessing safety culture perceptions was utilized to quantitatively assess staff perceptions across four core domains: Teamwork Climate, Safety Climate, Job Satisfaction, and Perceptions of Management. Responses were recorded on a 5-point Likert scale ranging from 1 (Disagree Strongly) to 5 (Agree Strongly), with any negatively worded items reverse-scored prior to analysis. To standardize the data, the mean score for each domain was converted to a 0–100 scale using the formula, Domain Score= (Mean of domain items - 1) x 25. For final reporting and interpretation, a converted score of 75 or higher—which functionally equates to an average response of "Agree Slightly" or above—was classified as indicating a positive attitude or agreement within that domain.
- Qualitative data were sourced from key informant interviews with the hospital safety officer and department heads, alongside focus group discussions involving 3 nurse teams.

Data Collection Procedure: Prior to the initiation of the study, formal ethical approval was obtained from the institutional review board, and written informed consent was secured from all participants. The data collection procedure followed a mixed-method, pre- and post-intervention design spanning an 8-week evaluation period. Initially, baseline quantitative data were collected by administering the Safety Attitudes Questionnaire (SAQ) to 60 healthcare professionals, including doctors, nurses, and administrative staff at Calwin Hospital. Following this baseline assessment, the targeted interventions—comprising SBAR communication training and Just Culture workshops—were implemented. To complement the quantitative metrics, qualitative data were actively gathered to capture deeper cultural nuances and team

dynamics. This qualitative phase involved conducting structured focus group discussions with three distinct nursing teams, alongside in-depth key informant interviews with various department heads and the hospital safety officer. At the conclusion of the 8-week intervention phase, the SAQ was re-administered to the participant cohort to systematically measure shifts in safety attitudes and evaluate the overall efficacy of the initiative

Data Analysis: Continuous variables (SAQ domain scores) were expressed as mean ± standard deviation (SD). To evaluate the statistical significance of the intervention, pre- and post-intervention mean scores were compared using a paired Student's t-test. Categorical variables, such as the proportion of staff reporting psychological safety, were analyzed using McNemar's test. A two-tailed p-value of <0.05 was considered statistically significant. Qualitative data were thematically coded using NVivo software to identify recurrent patterns and cultural nuances.

RESULTS

Post-intervention analysis demonstrated highly significant statistical improvements across all evaluated domains of the Safety Attitudes Questionnaire. The teamwork and safety climates both saw an average absolute increase of 18%. A paired t-test revealed that the enhancements in staff perceptions post-intervention were statistically significant across all four core domains ($p < 0.001$). The comparative descriptive statistics and significance levels are detailed in Table I.

Table I. Comparison of Pre- and Post-Intervention SAQ Domain Scores (n=60)

Domain	Pre-Intervention Mean ± SD	Post-Intervention Mean ± SD	Mean Difference (95% CI)	t-value	p-value
Teamwork Climate	58.0 ± 12.4*	74.0 ± 10.2*	16.0 (13.2 - 18.8)*	8.45*	<0.001
Safety Climate	61.0 ± 11.8*	79.0 ± 9.5*	18.0 (15.1 - 20.9)*	9.12*	<0.001
Job Satisfaction	65.0 ± 13.1*	81.0 ± 11.0*	16.0 (12.8 - 19.2)*	7.98*	<0.001
Perceptions of Management	50.0 ± 14.5*	69.0 ± 12.3*	19.0 (15.5 - 22.5)*	8.88*	<0.001

Staff Perception of Psychological Safety: The proportion of staff members who affirmatively reported feeling safe to speak up about patient care concerns increased significantly from 46% (n=28) in the pre-intervention phase to 73% (n=44) post-intervention. McNemar's test confirmed this proportional increase was statistically significant ($p = 0.002$)

Qualitative Findings: Focus group feedback aligned with the quantitative data, revealing increased accountability and openness among staff. Key findings were that SBAR training noticeably improved the clarity of hand-off communications. Just Culture workshops effectively reduced the fear of punitive action, thereby encouraging proactive incident reporting and Team cohesion saw a marked increase, most notably within the nursing staff.

Table II. Integration of Quantitative SAQ Outcomes and Qualitative Thematic Findings

Core Theme Identified	Associated Intervention	Quantitative SAQ Shift	Qualitative Sub-Themes & Patterns	Illustrative Quote
Communication Clarity	SBAR Implementation	Teamwork Climate: 58% →74%	• Standardized shift hand-offs • Reduced interdisciplinary hierarchy • Faster transmission of critical data	*"Using SBAR has completely removed the guesswork when calling the attending physician at night."*
Psychological Safety	Just Culture Workshops	Safety Climate: 61% →79% Speaking Up: 46%→73%	• Shift from blame to system-design thinking • Reduced fear of punitive action • Proactive incident reporting	*"I used to hide near-misses. Now, we discuss them openly without fear of getting fired."*
Interdisciplinary Cohesion	Combined Framework	Job Satisfaction: 65%→81%	• Increased nursing staff empowerment • Shared accountability • Improved morale and trust	*"The nurses and doctors finally feel like one team working toward patient safety, rather than separate units."*

DISCUSSION

The study's findings confirm that targeted safety culture interventions significantly improve both patient safety metrics and staff morale. Post-intervention results from Calwin Hospital showed a notable increase in Teamwork Climate (from 58% to 74%) and Safety Climate (from 61% to 79%). These improvements align with the results observed by Randmaa et al.,[13] who found that using the SBAR communication tool in clinical settings enhanced staff perceptions of interprofessional communication and the overall safety climate. Additionally, a recent systematic review by Kosim et al.[9] confirmed that SBAR frameworks consistently improve SAQ scores across various clinical environments, particularly enhancing teamwork and perceptions of patient safety.

Our quantitative analysis indicated a significant improvement in psychological safety, with the percentage of staff feeling comfortable speaking up rising from 46% to 73%. This finding is consistent with Badran et al.[14] which showed that a Just Culture educational program for nursing leadership led to a significant decrease in "silent behavior" and an increase in both the frequency and accuracy of error reporting. Additionally, Etemadifar et al.[15] assessed an SBAR-based safety training program and reported a notable increase in the overall patient safety culture score, from a baseline mean of 30.85 to 48.6 after the intervention ($p < 0.001$). This underscores the effectiveness of structured communication in promoting a transparent and non-punitive clinical environment.

Creating and maintaining this type of cultural transformation requires more than basic training; it necessitates a strategic commitment across the organization. Although our targeted efforts have resulted in significant short-term improvements—similar to the findings of larger institutional studies, such as Hill et al.[16] which reported notable enhancements in the SAQ-OR domain post-intervention ($p < 0.001$)—long-term success relies on ongoing professional development, regular evaluation, and consistent leadership support.

Limitations:

The brief evaluation period of 8 weeks limits the ability to observe long-term behavioural changes, and self-reported perceptions inherently carry the risk of introducing measurement bias.

Future Scope: To institutionalize these practices as an ethical operational pillar, future initiatives should focus on scaling these interventions across all hospital departments. Additional recommendations include integrating caregiver and patient feedback into safety strategies, establishing continuous training modules, and utilizing the SAQ alongside organizational dashboards for long-term benchmarking and KPI tracking.

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