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ISBAR Communication Implementation in Nursing Handover: A Sequential Explanatory Mixed Method Study at Pariaman Hospital

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ABSTRACT

Effective communication during nursing handovers is fundamental to patient safety and care continuity, yet standardized protocols remain underutilized in Indonesian regional hospitals. This study examined ISBAR (Identify, Situation, Background, Assessment, Recommendation) communication implementation in nursing handover processes at Pariaman Hospital, West Sumatra. A sequential explanatory mixed-method design was employed because quantitative measurement alone cannot explain the contextual mechanisms, nurses' lived experiences, and organizational dynamics that determine implementation success or failure; the qualitative strand was therefore necessary to contextualize and explain numerical findings. Quantitative data were collected from 35 implementing nurses using a validated 25-item questionnaire adapted from the ISBAR Communication Assessment Tool, followed by semi-structured interviews with nine purposively selected informants. Quantitative analysis utilized SPSS version 26.0 for descriptive statistics and Spearman correlation tests, while qualitative data underwent Braun and Clarke's thematic analysis framework. Findings revealed moderately effective implementation overall (mean=3.61), with practical implementation highest (mean=3.78) and handover quality lowest (mean=3.45). Strong correlations emerged between knowledge-implementation (r=0.612), attitude-implementation (r=0.548), and implementation-quality (r=0.689). Qualitative analysis identified management support (88.9%), practical tools (77.8%), and continuous training (66.7%) as key facilitators, while time constraints (66.7%), senior nurse resistance (44.4%), and documentation system gaps (44.4%) hindered implementation. A critical knowledge-practice gap existed particularly under high-workload conditions. The study proposes a four-phase implementation model addressing identified barriers through preparation, graduated rollout, continuous evaluation, and organizational integration to optimize handover quality in resource-constrained settings.

INTRODUCTION

Effective communication during nursing handovers is a critical determinant of patient safety and care continuity in healthcare systems worldwide. In Indonesian regional public hospitals, this challenge is particularly pronounced due to high patient volumes, diverse workforce backgrounds, and limited resources. Communication failures during shift changes contribute directly to fragmented care, medication errors, and adverse patient outcomes. In Indonesian healthcare facilities, the handover process frequently lacks standardization, with nurses relying on informal, unstructured approaches that vary across individuals and clinical units (1). A preliminary needs assessment at Pariaman Hospital a regional public hospital serving approximately 90,000 residents in coastal West Sumatra revealed that 73% of nurses reported difficulties conveying complete information during handover, 58% acknowledged frequent

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miscommunication affecting care continuity, and 42% of incident reports were associated with communication failures during shift changes, predominantly medication errors (35%) and delays in medical procedures (28%). These figures underscore the urgency of implementing a structured communication framework in this setting.

Among available structured communication frameworks, ISBAR (Identify, Situation, Background, Assessment, Recommendation) has emerged as one of the most comprehensive tools for standardizing nursing handover (2). ISBAR represents an evolution of the SBAR framework through the addition of the "Identify" component, which emphasizes verification of both patient and healthcare provider identities, thereby reducing wrong-patient errors. Evidence supports its clinical utility: implementation of SBAR-based protocols has been associated with significant reductions in handover-related errors and improvements in information completeness across multiple international settings (3). Despite this growing international evidence, implementation of ISBAR in Indonesian hospitals remains limited. A study across hospitals in Java found that only 45% of nurses possessed adequate knowledge of structured handover protocols, with 67% reporting the absence of clear institutional guidelines (4). Research in West Java further demonstrated that SBAR implementation encountered substantial barriers including resistance to change, time constraints, and insufficient management support resulting in only 52% adherence after six months (5). Critically, existing Indonesian studies have predominantly focused on hospitals in Java, leaving a significant geographical gap regarding implementation dynamics in Sumatra, where healthcare infrastructure, cultural contexts, and resource availability differ considerably (6).

Beyond geographical gaps, a fundamental methodological gap exists in current literature. Previous Indonesian studies relied predominantly on single-method designs, either quantitative assessments or qualitative explorations in isolation, producing evidence that is informative yet insufficient for developing actionable, context-specific implementation strategies. A mixed-method sequential explanatory design is therefore a methodological necessity: the quantitative strand measures ISBAR implementation levels and correlations among knowledge, attitude, and handover quality, while the qualitative strand contextualizes these findings through nurses' lived experiences and organizational dynamics, together generating understanding that neither method could achieve independently.

This study therefore aims to: (1) assess the level of ISBAR communication implementation and its relationship to handover quality at Pariaman Hospital; (2) explore nurses' perceptions, experiences, and the facilitating and hindering factors influencing ISBAR implementation; and (3) develop an evidence-based, context-specific ISBAR implementation model tailored to the characteristics of regional public hospitals in Indonesia. The third objective is particularly significant in justifying the mixed-method design, as developing a robust and contextually appropriate implementation model requires both quantitative effectiveness data to identify where gaps exist and qualitative contextual understanding to explain why those gaps persist and how they can be addressed. Findings from this study are expected to contribute to nursing science, inform hospital management at Pariaman Hospital, and serve as a replicable reference for other regional public hospitals in Indonesia seeking to strengthen communication quality and patient safety through structured handover protocols.

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METHOD

Research Design

This study employs a sequential explanatory mixed-method design, wherein quantitative data collection and analysis precede qualitative inquiry to provide deeper contextualization and explanation of numerical findings. This methodological framework was deliberately chosen because the research objectives measuring ISBAR implementation levels, exploring nurses' lived experiences, identifying facilitating and hindering factors, and developing a context-specific implementation model cannot be adequately addressed through a single methodological paradigm alone. Quantitative methods provide systematic measurement of implementation effectiveness and statistical relationships among key variables, while qualitative methods generate explanatory depth regarding the mechanisms, barriers, and contextual dynamics underlying those numerical patterns. The integration of both paradigms strengthens validity through methodological triangulation and produces comprehensive, actionable insights into ISBAR implementation phenomena (7).

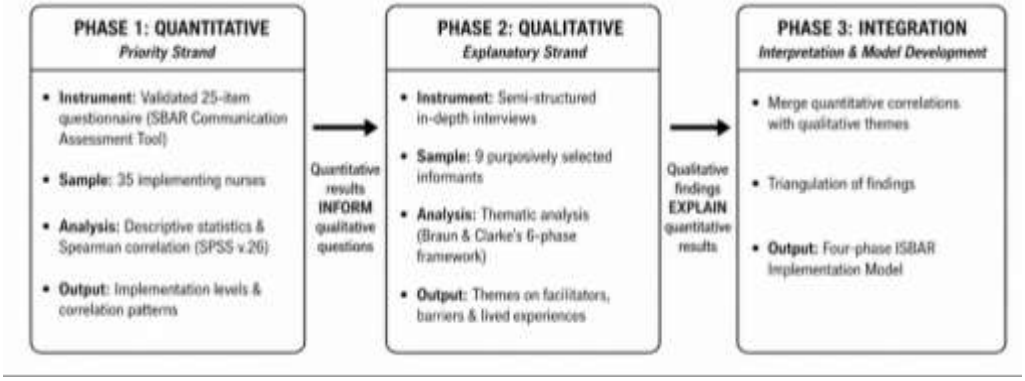

Figure 2. Sequential Explanatory Mixed-Method Design Framework

The proposed ISBAR implementation model is structured across four interconnected phases designed to optimize communication effectiveness in resource-constrained regional hospital settings. The Preparation Phase establishes foundational knowledge and procedural competency through intensive simulation-based training. The Phased Implementation component introduces ISBAR progressively, beginning with the most prepared clinical unit to minimize disruption and build institutional momentum. The Continuous Evaluation phase employs structured feedback mechanisms at individual, team, and organizational levels to identify gaps and refine practices iteratively. Finally, the Sustainability Phase embeds ISBAR within organizational culture through technology integration, recognition systems, and unit-specific customization, ensuring long-term adoption and improved handover quality across all inpatient wards.

Population and Sample

The study population comprised 85 implementing nurses working across inpatient wards at Pariaman Hospital. For the quantitative phase, sample size was determined using the Slovin formula: $n = N/(1+Ne^2)$, where N represents the total population (85 nurses) and e represents the margin of error (0.10), yielding a calculated minimum of 46 participants. After applying purposive sampling with specific inclusion criteria minimum one-year tenure, active participation in inter-shift handover processes, and voluntary informed consent 35 nurses met all eligibility requirements and were recruited as the final quantitative sample. Exclusion criteria encompassed nurses on leave, study assignments, or those unavailable during the data collection period. While this figure falls below the Slovin-calculated minimum of 46, this deviation is methodologically justified on two grounds. First, the Slovin formula assumes a heterogeneous population; however, the study population demonstrated a high degree of occupational homogeneity, as all nurses

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shared comparable professional roles, institutional setting, and daily handover responsibilities, thereby reducing the sampling variance that necessitates larger samples in heterogeneous populations. Second, following the application of stringent inclusion criteria — minimum one-year tenure, active inter-shift handover participation, and voluntary informed consent — only 35 nurses fulfilled all eligibility requirements. In criteria-restricted populations where the eligible pool is exhaustively recruited, total eligible sampling constitutes a methodologically sound approach that prioritizes sample quality over arbitrary numerical thresholds (8).

For the qualitative phase, nine informants were selected purposively from quantitative participants based on the principle of data saturation, wherein participant recruitment continues until no new themes or meaningful insights emerge from subsequent interviews. To ensure maximum variation sampling, informants were selected to represent diverse demographic dimensions including clinical unit placement (internal medicine, surgery, pediatrics, obstetrics), years of clinical experience (1–5 years, 6–10 years, >10 years), and educational background (D3 Nursing, S1 Nursing, professional nurse). This sample size of nine is consistent with established qualitative research recommendations, wherein thematic saturation in homogeneous organizational populations is typically achieved between six and twelve informants (7,8).

Operational Definitions

ISBAR communication implementation refers to the degree of consistent and structured application of the ISBAR protocol during nurse handover, measured across five domains: information completeness across all ISBAR components, information accuracy, handover duration efficiency, nurse satisfaction levels, and miscommunication incident frequency. The nurse handover process encompasses the systematic transfer of patient care information, clinical responsibility, and accountability between consecutive shift nurses. ISBAR constitutes a standardized five-element communication framework: Identify (nurse and patient identification), Situation (current patient status), Background (pertinent medical history), Assessment (clinical evaluation), and Recommendation (proposed care actions) (9).

Data Collection and Instruments

Quantitative data were collected using a validated structured questionnaire adapted from the SBAR Communication Assessment Tool (10), modified to incorporate the Identify component. The instrument comprised 25 items across five domains using a 5-point Likert scale (1=very ineffective to 5=very effective). Prior to main data collection, the adapted instrument underwent content validity assessment through expert panel review involving three nursing communication specialists, yielding a Content Validity Index of 0.89, indicating strong content representativeness. Reliability testing was subsequently conducted on 20 nurses outside the study sample, demonstrating strong internal consistency with Cronbach's alpha of 0.92, confirming the instrument's suitability for this study context (11). Scoring classified implementation levels as low (25–58 points), moderate (59–92 points), or high (93–125 points). Data collection involved direct observation of handover sessions coupled with post-handover questionnaire completion. Qualitative data were gathered through semi-structured in-depth interviews lasting 30–45 minutes, utilizing an interview guide exploring participants' experiences, challenges, and perceptions regarding ISBAR implementation. All interviews were audio-recorded with participant consent and transcribed verbatim following established qualitative research protocols to ensure data accuracy and analytical rigor (12).

Ethical Considerations

Ethical approval was obtained from the Health Research Ethics Committee of Pariaman Hospital (No. 070/KEPK-RSUD/2024, issued on 28 november 2024).All participants provided written informed consent

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after receiving comprehensive information regarding research purposes, procedures, voluntary participation, confidentiality assurance, and withdrawal rights without consequences.

Data Analysis

Quantitative data analysis employed SPSS version 26.0, utilizing descriptive statistics including frequency distributions, means, and standard deviations to characterize implementation effectiveness levels and demographic profiles. Data Normality Testing. Prior to inferential analysis, data normality was assessed using the Shapiro-Wilk test, selected due to the sample size of fewer than 50 respondents (n=35). Results indicated that the majority of study variables deviated significantly from normal distribution ($p<0.05$), confirming the appropriateness of non-parametric Spearman rank-order correlation as the inferential statistical method. Specifically, three of four domains failed the normality assumption, justifying the non-parametric analytical approach throughout. Qualitative Coding Process. Qualitative data analysis employed a systematic two-cycle coding process.

In the first cycle, inductive open coding was applied independently by two researchers to raw interview transcripts, generating initial codes without imposing prior theoretical categories. In the second cycle, pattern coding was used to cluster related first-cycle codes into broader categories and overarching themes, consistent with Braun and Clarke's six-phase thematic analysis framework as referenced in this study (13). Inter-rater reliability was assessed through percentage agreement between independent coders, with an agreement rate exceeding 80%, indicating adequate coding consistency. Audit Trail. To ensure methodological transparency and credibility of qualitative findings, a comprehensive audit trail was maintained throughout the research process. This included: (1) written records of all analytical decisions and their rationale, (2) documentation of theme development from initial codes to final themes, (3) storage of raw interview recordings, verbatim transcripts, and coded data files, and (4) reflexivity memos in which researchers documented their positional assumptions to minimize interpretive bias. The audit trail was made available for independent verification, consistent with established standards for qualitative research rigor as applied in this study (11).

Inferential analysis included Spearman correlation tests to examine relationships between effectiveness domains, with statistical significance set at $p<0.05$. Integration of quantitative and qualitative findings occurred during the interpretation phase, wherein qualitative themes were used to explain, contextualize, and elaborate upon quantitative correlation patterns, consistent with sequential explanatory mixed-method principles (15). Data credibility was ensured through member checking, whereby informants reviewed emerging themes for accuracy, and investigator triangulation involving independent coding verification among research team members (11).

RESULTS

This section presents findings from the mixed-method sequential explanatory study examining ISBAR communication effectiveness in nurse handover processes at Pariaman Hospital. Results are organized systematically: respondent characteristics, quantitative findings across multiple domains, qualitative insights from interviews, and integrated effectiveness analysis.

Respondent Characteristics

Thirty-five implementing nurses meeting inclusion criteria (minimum one-year tenure, active handover participation) participated. Demographics showed female predominance (n=28, 80%), with ages 26-35 years most common (n=15, 42.9%), followed by 20-25 years (n=12, 34.3%) and 36-45 years (n=8, 22.8%). Educational background comprised D3 Nursing graduates (n=20, 57.1%), S1 Nursing graduates (n=13,

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37.1%), and professional nurses (n=2, 5.7%). Work experience ranged from 1-5 years (n=18, 51.4%), 6-10 years (n=11, 31.4%), to >10 years (n=6, 17.1%). Clinical unit distribution included internal medicine (n=12, 34.3%), operating rooms (n=10, 28.6%), pediatrics (n=8, 22.9%), and midwifery (n=5, 14.3%).

Quantitative Data Analysis

Assessment of ISBAR communication implementation using a validated 25-item questionnaire revealed an overall mean of 3.61, indicating moderately effective implementation across all domains. Scores were categorized as low effectiveness (1.00–2.33), moderate effectiveness (2.34–3.66), and high effectiveness (3.67–5.00). Three findings merit particular attention. First, the most notable discrepancy within the Knowledge domain (X1, mean=3.67±1.12) was observed between conceptual understanding (X1_1: 4.11±0.89, high) and implementation procedures (X1_2: 3.26±1.18, moderate), representing a 0.85-point differential that signals a critical knowledge-practice gap. Second, within the Attitude domain (X2, mean=3.54±0.98), acceptance of change scored lowest (X2_1: 3.14±0.95), indicating resistance to transitioning from traditional handover methods, while confidence in ISBAR effectiveness scored highest (X2_3: 3.89±1.02), suggesting nurses recognize ISBAR's value despite hesitancy to adopt it. Third, Handover Quality (M, mean=3.45±1.08) recorded the lowest domain mean across all variables, with time efficiency scoring particularly low (M_4: 3.17±1.28), highlighting significant implementation challenges under high-workload conditions. Practical Implementation (Y) achieved the highest domain mean (3.78±0.92), with consistency of use scoring strongest (Y_5: 3.91±1.07), demonstrating that nurses have incorporated ISBAR into routine practice. Complete descriptive statistics are presented in Table 1.

Table 1. Descriptive Statistics of the Effectiveness of ISBAR Communication Implementation

Variable	Items	Mean	SD	Min	Max	Level
X1 (Knowledge)	X1_1: Conceptual understanding	4.11	0.89	2	5	High
	X1_2: Implementation procedures	3.26	1.18	2	5	Moderate
	X1_3: Component sequence	3.69	1.05	2	5	High
	X1_4: Content requirements	3.54	1.22	2	5	Moderate
	X1_5: Documentation standards	3.74	1.09	2	5	High
	Domain Mean	3.67	1.12			High
X2 (Attitude)	X2_1: Acceptance of change	3.14	0.95	2	5	Moderate
	X2_2: Willingness to apply	3.71	1.13	2	5	High
	X2_3: Confidence in effectiveness	3.89	1.02	2	5	High
	X2_4: Workload perception	3.46	1.31	2	5	Moderate
	X2_5: Training openness	3.51	0.98	2	5	Moderate
	Domain Mean	3.54	0.98			Moderate
M (Quality)	M_1: Information accuracy	3.49	1.19	2	5	Moderate
	M_2: Information completeness	3.63	1.22	2	5	Moderate
	M_3: Communication clarity	3.46	1.31	2	5	Moderate
	M_4: Time efficiency	3.17	1.28	2	5	Moderate
	M_5: Process satisfaction	3.74	1.15	2	5	High
	Domain Mean	3.45	1.08			Moderate
Y (Implementation)	Y_1: Identify component	3.69	1.21	2	5	High

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Y_2: Situation component	3.83	1.14	2	5	High
Y_3: Background component	3.74	1.07	2	5	High
Y_4: Assessment component	3.80	1.09	2	5	High
Y_5: Consistency of use	3.91	1.07	2	5	High
Domain Mean	3.78	0.92			High

Correlation and Effectiveness Analysis

Spearman correlation analysis revealed significant positive relationships among all effectiveness domains ($p<0.05$). The strongest correlation was observed between practical implementation and handover quality ($r=0.689$, $p<0.01$), demonstrating that effective ISBAR application directly and substantially enhances handover quality outcomes. Knowledge showed a strong positive correlation with implementation ($r=0.612$, $p<0.01$), while attitude demonstrated a moderate-to-strong correlation with implementation ($r=0.548$, $p<0.01$), collectively confirming that both theoretical knowledge and favorable attitudes are significant predictors of consistent ISBAR practice in clinical settings.

Qualitative Data Analysis

Nine informants (P1–P9) representing diverse demographics, clinical units, and experience levels participated in semi-structured interviews of 30–45 minutes duration. Thematic analysis identified four major themes, with findings quantified systematically to strengthen mixed-method integration as presented in Table 2.

Theme 1: Nurses' Perceptions of ISBAR Implementation

Seven informants (77.8%) expressed positive perceptions; two (22.2%) remained in adaptation phase. Informant P1 stated:

"This ISBAR system helps me to be more structured in conveying patient information. Nothing is missed anymore."

Informant P3 noted ease after adaptation:

"It was complicated at first, but after getting used to it, it became easier and actually faster because I just follow the format."

However, challenges persisted. Informant P4 described:

"Sometimes I still forget the ISBAR order, especially during busy night shifts when there are emergency admissions."

Theme 2: Facilitating Factors for ISBAR Implementation

Five key facilitators emerged. **Management support (88.9%)** was most cited. Informant P2 explained:

"The room head and supervisor were very supportive. They provided intensive training and regularly monitored our progress without being punitive."

Availability of guides (77.8%) supported learning. Informant P5 stated:

"There is a pocket card containing ISBAR guidelines that makes it easier for us to memorize the components."

Continuous training (66.7%) reinforced competency. Informant P8 emphasized:

"Regular training sessions every month with case simulations make us more proficient in using ISBAR."

Team collaboration (55.6%) enhanced consistency. Informant P1 noted:

"Our team supports each other and reminds each other if anything is not in accordance with the ISBAR format."

Increased confidence (44.4%) emerged from structured approach. Informant P9 reflected:

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"With ISBAR, I am more confident when communicating with doctors because the information is complete and structured."

Theme 3: Barriers to ISBAR Implementation

Time constraints (66.7%) were primary barriers. Informant P3 described:
"When there are many patients and emergency conditions, sometimes we skip some ISBAR components."
Senior nurse resistance (44.4%) impeded adoption. Informant P6 observed:
"Some senior nurses feel they have become accustomed to old ways and are somewhat reluctant to change."
Documentation system gaps (44.4%) hindered integration. Informant P4 explained:
"Documentation is still manual, so sometimes information is not synchronized with the ISBAR system."
Interpretation variations (33.3%) caused inconsistency. Informant P7 stated:
"Sometimes there is difference in understanding of what should be conveyed in each ISBAR component."
Insufficient feedback (33.3%) limited improvement. Informant P5 noted:
"We don't know if the ISBAR we are doing is correct or needs improvement."

Theme 4: Recommended Implementation Model

Informants proposed a four-phase model. Informant P2 recommended comprehensive preparation:
"Need full 3-day training with real-life case simulations before implementation."
Informant P8 suggested graduated implementation:
"Implementation should start from the ready room, then expand gradually to other areas."
Informant P1 emphasized continuous evaluation:
"There needs to be weekly evaluation meetings initially to review progress and discuss obstacles."
Informant P9 proposed sustainability mechanisms:
"Establish recognition system for nurses who consistently demonstrate excellent ISBAR communication."

Table 2. Qualitative Findings of ISBAR Communication Implementation

Aspects	Category	Frequency of Mention	Percentage
Perception	Positive	7	77.8%
	Neutral/Adaptation	2	22.2%
Supporting Factors	Management Support	8	88.9%
	Guide/Checklist	7	77.8%
	Training	6	66.7%
	Team Collaboration	5	55.6%
	Increased Confidence	4	44.4%
Inhibiting Factors	Time Limitations	6	66.7%
	Senior Nurse Resistance	4	44.4%
	Documentation System	4	44.4%
	Variations in Interpretation	3	33.3%
	Lack of Feedback	3	33.3%

DISCUSSION

Integration of Quantitative and Qualitative Findings on ISBAR Communication Effectiveness

This mixed-method study reveals that ISBAR communication implementation at Pariaman Hospital achieved a moderately effective level (M=3.61), representing a meaningful yet incomplete transformation of nurse handover practices. The integration of quantitative metrics and qualitative narratives illuminates

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not merely what effectiveness levels were achieved, but why certain domains succeeded while others struggled, and how contextual factors shaped implementation outcomes.

The Knowledge-Practice Gap: A Critical Implementation Challenge

The quantitative data demonstrated high knowledge effectiveness (M=3.67±1.12), with conceptual understanding scoring particularly strong (M=4.11±0.89). However, this surface-level success masks a critical implementation gap revealed through methodological triangulation. While nurses demonstrated strong theoretical comprehension, implementation procedures scored significantly lower (M=3.26±1.18), dropping into the moderate effectiveness category. This 0.85-point differential between theory and application represents more than statistical variation—it signals fundamental implementation challenges. Qualitative interviews contextualized this gap through lived experiences. Informant P4's statement, "Sometimes I still forget the ISBAR order, especially during busy night shifts when there are emergency admissions," reveals that knowledge deficits emerge not from inadequate understanding but from situational pressures that prevent knowledge activation. This finding aligns with the strong positive correlation between knowledge and implementation ($r=0.612$, $p<0.01$), which suggests that while knowledge predicts practice, the relationship is moderated by contextual factors including workload intensity, time pressure, and stress levels.

The integration of both data streams reveals a nuanced reality: nurses possess theoretical knowledge but struggle with procedural fluency under real-world conditions. This pattern reflects the distinction between declarative knowledge (knowing what) and procedural knowledge (knowing how), a framework well-established in cognitive psychology but underexplored in healthcare communication research. The qualitative theme of “adaptation phase” experienced by 22.2% of informants further validates this interpretation, suggesting that converting theoretical knowledge into automatic, stress-resistant practice requires extended deliberate practice beyond initial training. These findings extend previous research by Wijayanti who reported strong correlations between effective SBAR communication and handover quality, but did not examine the knowledge-to-practice conversion process. Our integrated analysis reveals that correlation strength alone inadequately captures implementation complexity; the pathway from knowledge to practice is mediated by multiple contextual factors that quantitative correlations cannot fully illuminate. This distinction between declarative and procedural knowledge has profound implications for training design: programs must simulate real-world stressors rather than relying solely on classroom instruction to ensure that theoretical competency translates into consistent clinical application under high-pressure conditions (11).

Attitudinal Barriers and the Psychology of Implementation Resistance

Attitude toward ISBAR demonstrated moderate effectiveness (M=3.54±0.98), with acceptance of change scoring lowest (M=3.14±0.95) while confidence in effectiveness scored highest (M=3.89±1.02). This 0.75-point spread within the attitude domain reveals cognitive dissonance: nurses believe ISBAR is effective yet resist adopting it. Qualitative data resolved this apparent contradiction by identifying that resistance stems not from doubting ISBAR's value but from attachment to familiar practices and anxiety about competency during transition. Senior nurse resistance, mentioned by 44.4% of informants, provides the clearest illustration of this phenomenon. Informant P6's observation that "some senior nurses feel they have become accustomed to old ways and are somewhat reluctant to change" reveals resistance rooted in professional identity and expertise threat. Senior nurses have developed tacit communication patterns over years of practice; ISBAR challenges their established expertise, creating psychological discomfort that transcends rational assessment of the new protocol's merits.

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The moderate correlation between attitude and implementation ($r=0.548$, $p<0.01$) quantitatively confirms that attitudes significantly predict practice, yet the correlation strength suggests attitudes alone do not determine implementation success. Qualitative insights reveal why: even nurses with initial resistance adapted when provided with adequate support. Informant P3's progression from stating that the protocol was complicated at first, to acknowledging that it became easier and actually faster because the format provides clear structure, demonstrates that attitudes evolve through positive implementation experiences. This creates a reciprocal relationship where successful practice reinforces positive attitudes, which in turn sustain continued practice over time. The finding that 77.8% of informants ultimately reported positive perceptions despite initial difficulties suggests that early structured support is more critical than pre-existing favorable attitudes in determining long-term adoption. Implementation strategies should therefore prioritize creating early positive experiences and building procedural confidence rather than focusing solely on persuasion-based attitude change campaigns (16).

Facilitators and Barriers: The Implementation Ecosystem

Management support (88.9%) was the strongest facilitator, combining resource provision with psychologically safe accountability. Practical tools (77.8%) reduced cognitive load during implementation, while continuous training (66.7%) maintained skill competency through monthly simulation-based sessions. Conversely, barriers operated through distinct mechanisms: time constraints (66.7%) episodically degraded implementation, senior nurse resistance (44.4%) represented sustained cultural barriers, and documentation system gaps (44.4%) created structural barriers requiring organizational-level solutions. Successful implementation requires aligned support across individual, interpersonal, organizational, and technological levels, explaining why overall effectiveness remained moderate despite high practical implementation scores.

Management support emerged as the strongest facilitator, validated both quantitatively through high implementation scores and qualitatively through detailed informant testimonials. Informant P2 explained that the room head and supervisor were very supportive, providing intensive training and regularly monitoring progress in a non-punitive manner, which reveals that effective management support combines tangible resource provision with a psychologically safe accountability structure. The availability of practical tools, appreciated by 77.8% of informants, further demonstrates that job aids such as pocket cards reduce cognitive load during implementation, allowing nurses to focus attention on patient assessment rather than protocol memorization. Informant P8 further emphasized that regular monthly training sessions with case simulations progressively build proficiency, indicating that skill maintenance requires ongoing reinforcement rather than one-time orientation training (17).

Conversely, barriers operated through distinct mechanisms. Time constraints (66.7%) functioned as situational barriers that episodically degraded implementation, while senior nurse resistance (44.4%) represented sustained cultural barriers requiring different intervention approaches. Documentation system gaps (44.4%) created structural barriers that individual nurses could not overcome through effort alone, requiring organizational-level solutions. Informant P4's frustration that "documentation is still manual, so sometimes information is not synchronized with the ISBAR system" reveals how technological limitations undermine protocol effectiveness regardless of nurse motivation or skill. The integration of facilitator and barrier data reveals that successful implementation requires aligned support across multiple levels: individual (knowledge, attitude, skill), interpersonal (team collaboration, peer support), organizational (management support, resource provision), and technological (integrated documentation systems). Weakness in any level can undermine implementation despite strength in others, explaining why overall effectiveness remained moderate despite high practical implementation scores.

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The Optimal ISBAR Implementation Model: A Theory-Driven Framework

Based on methodological triangulation of quantitative effectiveness measures and qualitative implementation experiences, this study proposes a comprehensive four-phase implementation model designed to address identified barriers while leveraging proven facilitators. This model, illustrated in Figure 1, represents a synthesis of empirical findings and theoretical frameworks for healthcare communication innovation adoption.

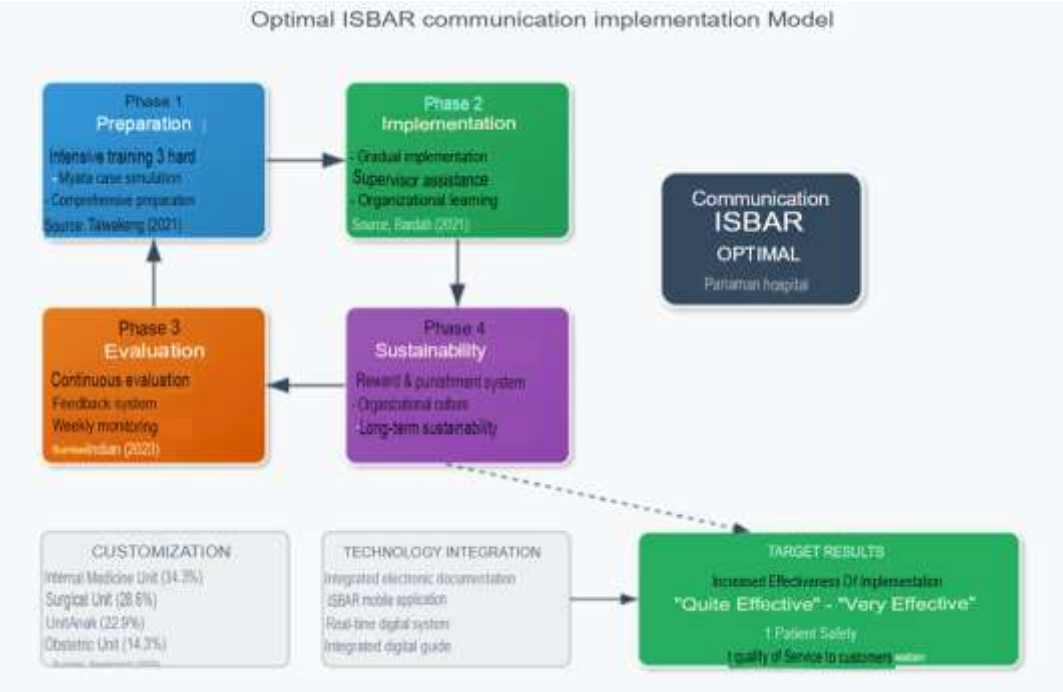

Figure 1. ISBAR Model Framework

The model's architecture reflects the integrated understanding that emerged from combining statistical correlations with lived implementation narratives. Rather than treating ISBAR adoption as a linear knowledge-transfer process, the model conceptualizes implementation as an ecological transformation requiring aligned interventions across individual, team, organizational, and systems levels (18).

1) Phase 1: Comprehensive Preparation

The preparatory phase addresses the knowledge-practice gap (0.85-point differential: conceptual understanding M=4.11 vs. implementation procedures M=3.26) through intensive simulation-based training replicating real-world clinical conditions including time pressure and emergency admissions. A graduated three-day format progresses from component mastery through integration practice to contextual adaptation, developing stress-resistant communication skills. This aligns with Tatiwakeng et al. emphasizing comprehensive preparation's importance in establishing strong SBAR-handover relationships (19).

2) Phase 2: Graduated Implementation with Structured Support

The phased implementation component addresses resistance and unit variability through sequential rollout beginning with the most prepared unit, allowing protocol refinement before expansion (20). Team collaboration (55.6% of informants) significantly influences adoption, while supervisors positioned as coaches provide real-time feedback and model effective ISBAR communication, reducing psychological threat contributing to senior nurse resistance. This aligns with Zulkifli et al. recommending trial implementation in selected rooms with careful effectiveness evaluation.

3) Phase 3: Continuous Evaluation with Actionable Feedback

The continuous evaluation phase addresses insufficient feedback (33.3% of informants) through multi-level assessment: individual feedback via direct observation, team-level weekly meetings for collective learning,

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and monthly organizational data review. Evaluation is formative rather than summative, generating targeted interventions. Regular calibration sessions also address interpretation variations (33.3%), transforming individual interpretation into shared mental models that reduce communication inconsistency across the nursing workforce.

4) Phase 4: Sustainability Through Organizational Integration

The sustainability phase transforms ISBAR from a new initiative into standard practice embedded within organizational culture through technology integration, recognition systems, and unit-specific customization. Integrated electronic documentation systems directly address time efficiency challenges (M=3.17) by embedding ISBAR within workflow. Each clinical unit requires tailored approaches: pediatric units emphasize family involvement, surgical units develop abbreviated formats, and obstetrics units integrate fetal status assessment into the assessment component (21).

This optimal implementation model synthesizes empirical findings into a coherent framework that addresses the complex interplay of knowledge, attitude, organizational support, and systemic factors shaping ISBAR implementation effectiveness. By progressing through preparation, graduated implementation, continuous evaluation, and sustainability phases, the model provides actionable guidance for transforming ISBAR from moderately effective (current M=3.61) to highly effective implementation (target M>3.67 across all domains). The model's success depends on recognizing that communication protocol adoption represents organizational transformation requiring aligned interventions across multiple levels rather than simple knowledge transfer achievable through training alone (22).

Practical Implications for Hospital Management and Nursing Education

Study findings generate actionable recommendations for healthcare administrators and nurse educators. For hospital management, initial training alone proves insufficient; organizations should develop extended practicum periods with graduated responsibility. Staffing adequacy directly impacts communication quality, and documentation system gaps require investment in integrated electronic systems that embed ISBAR within normal workflow. Additionally, staffing adequacy must be recognized as a foundational condition for communication quality improvement; organizations cannot realistically mandate enhanced communication standards while simultaneously maintaining inadequate nurse-to-patient ratios that generate the very time pressures identified as primary implementation barriers. Management support should furthermore be institutionalized through dedicated ISBAR coordinators, protected time allocations for peer mentoring activities, and formal recognition systems that reward nurses demonstrating consistently excellent handover communication, thereby embedding ISBAR compliance within the broader professional performance and development framework of the institution (23). Management support should be formalized through dedicated ISBAR coordinators and recognition systems for exemplary communication practice as suggested by informants (24).

For nursing education, curricula should distinguish between teaching ISBAR components (declarative knowledge) and developing communication fluency (procedural knowledge). Simulation-based education with high-fidelity scenarios and time pressure better prepares students than classroom instruction alone (25). Continuing education should employ peer-to-peer learning with senior nurses as implementation champions, while preceptorship models should assess ISBAR competency before independent practice (24).

CONCLUSION

1) This mixed-method study reveals that ISBAR communication implementation at Pariaman Hospital achieved moderately effective levels (M=3.61), with practical implementation scoring highest

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(M=3.78) and handover quality lowest (M=3.45). Strong correlations emerged between knowledge-implementation (r=0.612), attitude-implementation (r=0.548), and implementation-quality (r=0.689), validating ISBAR's clinical utility while revealing complex interdependencies among effectiveness domains.

2) A critical knowledge-practice gap exists, with conceptual understanding excelling (M=4.11) but procedural application struggling (M=3.26), particularly under time pressure. Qualitative findings contextualized this gap through nurses' experiences of forgetting ISBAR sequences during emergency situations, indicating that theoretical knowledge fails to translate into stress-resistant procedural fluency without extended deliberate practice and simulation-based training.
3) Implementation success depends on multilevel facilitators including management support (88.9%), practical tools (77.8%), and continuous training (66.7%), while facing significant barriers: time constraints (66.7%), senior nurse resistance (44.4%), documentation system gaps (44.4%), and insufficient feedback mechanisms (33.3%). These barriers operate through distinct mechanisms requiring targeted organizational-level interventions beyond individual skill development.
4) The proposed four-phase implementation model—comprehensive preparation, graduated rollout, continuous evaluation, and sustainability integration—provides evidence-based framework for transforming ISBAR from moderate to highly effective implementation by addressing identified barriers while leveraging proven facilitators across individual, interpersonal, organizational, and technological levels.

AUTHOR CONTRIBUTIONS

Novriani Husnah: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing - Original draft. Waldi Rahman: Methodology, Formal analysis

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