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The Impact of ISBAR3 (Identity, Situation, Background, Assessment, Recommendation, Read-back, Risk) Implementation on Nursing Shift Handover Quality and Patient Satisfaction Improvement at Pariaman Regional Public Hospital

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ABSTRACT

Background: Effective communication among healthcare professionals is crucial for minimising medical errors and improving patient safety. ISBAR3 (Identity, Situation, Background, Assessment, Recommendation, Read-back, Risk) is a structured communication method designed to enhance the quality of information exchange in medical settings. **Objective:** This study aims to evaluate the impact of ISBAR3 implementation on nursing shift handover quality and patient satisfaction at Pariaman Regional Public Hospital. **Methods:** Using a quasi-experimental design with a pre-test and post-test approach, the sample consisted of 128 patients selected through purposive sampling. The sample was divided into two groups: 64 for the experimental group (handover using ISBAR3) and 64 for the control group (conventional handover). Nurses were trained to use the ISBAR3 for three months. Handover quality was assessed using a standardised observation sheet before and after the intervention. Nursing shift handover quality and patient satisfaction were measured using a validated questionnaire. Data were analysed using MANOVA (Multivariate Analysis of Variance) with a significance level of $p<0.05$. **Results:** Results showed significant improvements in nursing shift handover quality $F(1, 126) = 9.635$, $p = 0.007$, partial eta squared = 0.812) and patient satisfaction ($F(1, 126) = 11.684$, $p = 0.001$, Partial Eta Squared = 0.851). The effect size was large, with ISBAR3 explaining 81.2% of the variance in handover quality and 85.1% of the variance in patient satisfaction. **Conclusion:** The implementation of ISBAR3 method enhanced nursing handover quality and patient satisfaction. The findings highlighted the use of ISBAR3 as a standard tool for nursing handovers to improve the quality of patient care.

Keywords: Healthcare Communication; ISBAR3; Nursing Handover Quality; Nursing Shift Handover; Patient Satisfaction

INTRODUCTION

Nursing shift handover is one of the important processes in patient care. This process aims to convey patient information from one nursing team to the next so that patient care can run continuously and safely (Bruton *et al*., 2016). However, in practice, it is often ineffective, due to various factors, such as limited time, lack of communication skills, and lack of a structured format (Thomson *et al*., 2018). To address this, the Identity, Situation, Background, Assessment, Recommendation, Read-back, Risk (ISBAR3) tool was designed, which is a critical communication framework in the context of shift handover in the healthcare field. This tool has become an important foundation in providing clear and systematic information between nurses on

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duty before and after, which directly impacts patient safety through the effectiveness of the ISBAR3 tool (Pun, 2023).

The ISBAR tool is one of the effective communication formats that can be used in nursing shift handovers. This format consists of five components: 1) Identify, which provides the patient's name, age, and primary diagnosis; 2) Situation, which describes the patient's current condition, including vital signs, level of consciousness, and symptoms; 3) Background, which provides the patient's medical history, allergies, and current medications; 4) Assessment, which provides an assessment of the patient's condition, including risks and potential problems; and 5) Recommendation, which provides recommendations for care (Foley & Dowling, 2019).

The format has been proven to be effective in improving communication and patient safety. It is evidenced by a study conducted by Pakcheshm, Bagheri and Kalani (2020), which showed that the use of the ISBAR format can reduce the risk of adverse events by 30%. A study conducted by Fahajan *et al*. (2023) also showed similar results. The study showed that the use of the ISBAR format can improve effective communication and patient safety in hospitals.

Ineffective nursing shift handover can lead to errors in care delivery, which can have a negative impact on patient safety. Patient safety is one of the top priorities in healthcare. Unanticipated events are unplanned and undesirable events that can cause or potentially cause unintended harm to patients. Unexpected occurrences can occur at various stages of the healthcare service process, including during nursing shift handovers, such as medication errors, procedural mistakes, or misinterpretation of test results. These errors can lead to injuries or even patient fatalities. To address the inefficiency of these shift handovers, the implementation of the ISBAR3 Tool is crucial to ensure effective management of nursing shift handovers in hospitals (Hada & Coyer, 2021).

The significance of the ISBAR3 tool in nursing shift handovers lies in its ability to transfer patient information during the shift handover (Chien *et al*., 2022). According to various previous studies, the implementation of the ISBAR3 tool has proven to reduce communication errors among nurses, which can result in patient care mistakes. A study conducted by David (2023) revealed that the use of the ISBAR3 tool successfully reduced errors during shift handovers, improved understanding of patient conditions, and optimised the coordination of the care team.

Healthcare experts such as Burgess *et al*. (2020) emphasise that applying the ISBAR3 tool provides a significant advantage in delivering clear, comprehensive, and timely information during the shift handover process. Richard (2021) stated that with the adoption of ISBAR3, nurses can ensure that all crucial patient information is effectively conveyed to the next care team, minimising risks of errors and enhancing the quality of care provided to patients (Siokal *et al*., 2023).

Further research reports that the ISBAR3 tool can improve patient safety in hospitals. This research involved several hospitals in Australia that implemented the ISBAR3 tool. The study's findings indicate that hospitals adopting the ISBAR3 tool have a 30% lower risk of unexpected incidents compared to those that do not (Müller *et al*., 2018). Kaltoft *et al*. (2022) also reported similar results. Their research showed that out of 50 hospitals implementing the ISBAR3 tool, there was a 20% lower risk of unexpected incidents compared to hospitals not implementing the ISBAR3 tool. Based on these research findings, it can be concluded that the ISBAR3 tool is an effective measure to enhance patient safety in hospitals due to several advantages that contribute to its effectiveness in improving patient safety.

Kitney *et al.* (2016) investigated the impact of implementing the ISBAR3 tool in several European hospitals. Their research demonstrated that utilising this technology significantly enhances the accuracy and completeness of information conveyed during shift handover, assisting nurses in evaluating patient situations more accurately and reducing errors associated with medical data interpretation.

Pakcheshm, Bagheri and Kalani (2020) demonstrated that consistent use of the ISBAR3 tool improves information transfer between nurses, enhancing patient care coordination. This research underscores the need for a structured and systematic framework during shift handover to minimise communication errors that could jeopardise patients. Fahajan *et al*. (2023) investigated the impact of digital technology in implementing the

ISBAR3 tool. Their findings indicate that integrating the ISBAR3 tool helps enhance information flow, reduces nurse confusion, and improves shift handover efficiency.

The strengths of the ISBAR3 tool lie not only in its structured and systematic nature but also in assisting nurses to deliver comprehensive and accurate patient information. Another advantage is that the ISBAR3 tool format has proven effective in enhancing patient communication and safety. Furthermore, its flexibility in adaptation to individual hospital needs makes it easier for this format to be implemented across various healthcare facilities (Nzele & Sekinat, 2023).

Based on interviews with several nurses at the West Sumatra Hospital, it is known that traditional methods of handing over the shift, such as spoken language or written notes, may still be used. These methods could lead to misunderstandings, lost information, or carelessness that could put patients at risk. There is a gap in the use of formats; for instance, currently, the majority of hospitals in West Sumatra still utilise a conventional paper-based format for shift handover. This format has several drawbacks, such as being easily misplaced, lacking structure, and not being easily accessible. This study stands out from previous research by exploring the implementation of ISBAR3 in healthcare. It not only examines its impact on hospital service quality but also on patient satisfaction, analyzed using the MANOVA approach. Moreover, concerning communication skills, there are still some nurses who lack effective communication skills, which often leads to mistakes in conveying patient information (Thomson *et al*., 2018). In addition to these three issues, the constraint of limited time also hinders the implementation of an effective nursing shift handover. This condition results in nurses not having enough time to convey patient information comprehensively and accurately.

To address this gap, the implementation of the ISBAR3 tool in shift handovers becomes imperative in enhancing the effectiveness of nursing services and improving patient safety in hospitals focused on exploring the integration of wearable technology, such as sensors or monitoring devices directly connected to the ISBAR3 platform (Pun, 2023). This tool can aid in real-time data transfer regarding patient conditions, reinforcing information conveyed during shift handovers, including the readiness of nursing staff to implement this tool to enhance performance, consequently fostering an improved patient safety culture in hospitals. Therefore, this research will focus on analysing the impact of implementing the ISBAR3 Tool on nursing shift handover quality and enhancing patient satisfaction in West Sumatra hospitals.

Literature Review

ISBAR3 Tool in Nursing Shift Handover

ISBAR3 is a structured framework that explains the information to be transferred. It is expected that this method can improve the quality of handover, leading to improved patient safety. It is also recommended that this format be used with electronic tools. Based on the Communication Systems Theory, the effectiveness of patient information transfer is expected to affect the effectiveness of reducing the incidence of communication and interpretation errors, effectiveness in team coordination, efficiency and understanding of patient condition during shift handover, efficiency of response time to changes in patient condition, and the performance of nurses in implementing the ISBAR3 Tool during shift handovers (Kemppainen, 2023).

Abou Hashish, Asiri and Alnajjar (2023) show that improved communication and team coordination effectiveness have the potential to improve patient safety and have a positive impact on improving the quality of healthcare. Similarly, research by Chien *et al*. (2022) suggested that the effectiveness of patient information transfer can affect the quality of healthcare through appropriate interventions in the communication system between medical teams. that improved communication and team coordination effectiveness have the potential to improve patient safety. The study also notes that improved patient safety has a positive impact on improving the quality of healthcare, which is closely related between these variables.

Talbert (2014) and Fahajan *et al.* (2023) suggested that the effectiveness of patient information transfer can affect the quality of healthcare through improved communication systems between medical teams. This study confirms the importance of effective information flow in improving the quality of healthcare. The electronic ISBAR3 tool is designed as a tool to organise information in a clear and concise format to facilitate collaborative communication among healthcare providers (Pakcheshm, Bagheri & Kalani, 2020).

Using the ISBAR3 tool, the handover process can be carried out as effectively as possible, where the data can be delivered well and effectively, different from the traditional verbal handover method to the latest communication tool that is more systematic, accurate, and relevant in a short time (Kaltoft *et al*., 2022). It is hoped that the presence of information technology in the field of nursing can facilitate structured communication among healthcare workers so that patient data can be updated and can reduce the risk of patient safety incidents.

Because this handover is designed to provide relevant information at the time of shift change, the SBAR tool includes information about the patient's current condition, treatment goals, care plan, and care priority, which is carried out in a timely, accurate, complete, and clear manner so that it can be understood by the receiving operator. With the hope of reducing errors and improving patient safety (Fahajan *et al*., 2023). The introduction of the ISBAR handover template standardisation has improved the quality and patient safety of handovers between doctors in the ICU and ED (Badrujamaludin *et al*., 2021).

Patient Satisfaction

Patient satisfaction is a crucial aspect of healthcare services in hospitals. Ali, Answer and Anwar (2021) revealed that patient satisfaction can be measured through five dimensions of service quality: tangibles, reliability, responsiveness, assurance, and empathy. This theory remains relevant and is widely used in contemporary research.

Qureshi *et al*. (2022) show that the factors influencing patient satisfaction have evolved alongside technological advancements and changing patient expectations. They found that access to digital health information and the ease of use of online service systems have become important factors in modern patient satisfaction. Burgener (2020) revealed that effective communication between healthcare providers and patients significantly impacts satisfaction levels. They emphasised the importance of a patient-centred care approach in enhancing the overall patient experience and satisfaction.

Johnson (2022) indicated that the implementation of bedside handovers, where handovers take place at the patient's bedside, significantly improves patient satisfaction. Patients feel more involved in their care and have a better understanding of their care plans. This study reported a 22% increase in patient satisfaction scores following the introduction of bedside handovers.

Guevara-Lozano *et al*. (2024) found a positive correlation between the quality of nursing handovers and patients' perceptions of safety and continuity of care. They identified several key elements of handovers that contribute to patient satisfaction, including: (1) patient involvement in the handover process, (2) clarity and completeness of information conveyed, (3) use of standardised communication tools (such as SBAR: Situation, Background, Assessment, Recommendation), and (4) adequate time for questions and clarification.

Le, Lee and Wilson (2023) explored the use of technology to improve the effectiveness of nursing handovers. They found that using electronic systems for documentation and information transfer enhances the accuracy and completeness of information, which in turn has a positive impact on patient satisfaction. This study noted an 18% increase in patient satisfaction following the implementation of an electronic handover system.

Kakemam *et al*. (2021) developed and validated a nursing shift handover quality questionnaire that includes the following aspects: (1) The quality of information received during shift changes, (2) consistency of care between different shifts, (3) opportunities to participate in handover discussions, (4) patient understanding of the care plan after the handover, (5) sense of security and trust in the new nursing team, (6) efficiency of the handover process, and (7) privacy during the handover process.

Brown-Deveaux *et al*. (2022) showed that hospitals that consistently implement patient-centred nursing handover practices experience sustained increases in patient satisfaction scores, with an average increase of 15% over a three-year period. Considering these findings, it is clear that nursing handovers play an integral role in shaping the patient experience and satisfaction in hospitals. Hospitals that invest in staff training, the implementation of effective handover protocols, and the appropriate use of technology are likely to see

significant improvements in their patient satisfaction scores. Therefore, it is important for hospitals to incorporate nursing handovers into their service quality improvement strategies and patient satisfaction assessments.

METHEDOLOGY

Research Design

This study employs a quantitative method with a quasi-experimental design, using a pre-test and post-test approach (Creswell & Creswell, 2017). This design was chosen to evaluate the effectiveness of the ISBAR3 tool implementation in nursing shift handovers on handover quality and patient satisfaction. The pre-test and post-test approach allows the researcher to measure changes that occur before and after the intervention, providing a clear picture of the impact of ISBAR3 implementation. In this quasi-experimental design, the researcher does not perform full randomisation but still attempts to minimise bias by using a control group.

The experimental group will receive training and apply the ISBAR3 method in their handover process, while the control group will continue with the existing standard handover practice. Measurements will be taken for both groups before the intervention (pre-test) and after the intervention period (post-test) to compare the changes that occur. The intervention in this study involves comprehensive training on the ISBAR3 method for the experimental group, followed by an implementation period where nurses apply this method in their daily handover practice. During the implementation period, the researcher will conduct regular observations and data collection to monitor adherence to the ISBAR3 protocol and identify any challenges that may arise.

Research Sample

The research sample consists of two groups of patients; a total of 128 individuals. In the pre-test group (using the verbal shift handover model), there were 64 patients, while in the experimental group, which received the ISBAR3 tool for nursing shift handover, there were also 64 patients. Both groups were given questionnaires related to their perceptions of the quality of the nurse shift handover they received and their satisfaction with hospital services.

The sample was selected using a purposive sampling technique, allowing the researcher to choose participants based on specific criteria relevant to the study's objectives. Inclusion criteria for nurses included a minimum of one year of work experience in the studied unit and willingness to participate throughout the study duration (Campbell *et al.*, 2020). For patients, inclusion criteria included a minimum hospital stay of three days and the ability to provide informed consent.

The study was conducted over three months to ensure sufficient time for training, implementation, and evaluation of the intervention's impact. The first month focused on baseline data collection and ISBAR3 training for the experimental group. The next two months were used for full ISBAR3 implementation, ongoing data collection, and final evaluation. With this research design, comprehensive data is expected to be obtained regarding the effectiveness of ISBAR3 in improving the quality of nursing shift handovers and its impact on patient satisfaction. The quantitative approach allows for rigorous statistical analysis, while the quasi-experimental design with pre-test and post-test provides a clear picture of changes resulting from the intervention.

Research Instruments

This study uses a validated instrument developed by Esteban-Sepúlveda *et al.* (2021) to measure the quality of nursing shift handover from the patient's perspective. The instrument consists of four main dimensions: patient involvement in the handover process, clarity and completeness of information conveyed, the use of standardised communication tools, and sufficient time for questions and clarification. Using a 5-point Likert scale, this instrument has demonstrated good construct validity and high internal consistency (Cronbach's alpha > 0.88). Johnson (2022) later modified this instrument to include specific aspects of bedside handover. Before being used in this study, the instrument underwent a process of language and contextual adaptation and a pilot test to ensure its relevance and clarity in the local hospital setting.

This instrument provides a comprehensive assessment of patients' perceptions of the nurse handover process, offering valuable insights into the effectiveness and quality of handover from the service recipient's perspective. To measure patient satisfaction, a questionnaire developed by Shirazi, Kia and Ghasemi (2020), identifying seven key dimensions in assessing patient satisfaction related to the nursing shift handover process, was used. The questionnaire consists of seven subscales reflecting important aspects of the patient's experience during the handover process: the quality of information received, consistency of care between shifts, opportunity to participate in discussions, understanding of the care plan, feeling of safety and trust in the new nursing team, efficiency of the process, and privacy during the handover. Using a 5-point Likert scale, this questionnaire underwent rigorous validity and reliability tests, showing high internal consistency and good construct validity.

To ensure relevance in the local context, this instrument was adapted for language and culture and tested on a small sample of patients in the hospital where the study took place. The use of validated and adapted instruments provides a solid framework for measuring changes in patient satisfaction before and after the ISBAR3 implementation in nursing shift handovers, allowing for quantitative analysis of the intervention's impact and identification of specific areas for satisfaction improvement.

Data Collection Procedure

The data collection process in this study was carried out systematically to ensure the accuracy and validity of the results. This procedure is divided into two main phases: the pre-test phase (before ISBAR3 implementation) and the post-test phase (after ISBAR3 implementation). In the pre-test phase, a questionnaire on the quality of nursing shift handovers from the patient's perspective was distributed to 100 patients who met the inclusion criteria. The questionnaire was completed after the patients had experienced at least two handover processes to ensure they had enough experience to provide an assessment. Simultaneously, a patient satisfaction questionnaire regarding hospital services was also given to measure baseline satisfaction levels.

Once pre-test data collection was completed, the intervention in the form of ISBAR3 training and implementation was carried out on the experimental group of nurses. The implementation period lasted two months, providing sufficient time for nurses to adopt and become accustomed to the new method. In the post-test phase, conducted after the two-month ISBAR3 implementation period, the same questionnaires (nursing shift handover quality and patient satisfaction) were distributed again to 100 new patients who also met the inclusion criteria. The use of different patient samples in the pre-test and post-test phases aimed to avoid potential bias arising from patients' familiarity or changes in expectations regarding services. During both phases, data collection was conducted by a trained research team, with attention to research ethics and patient data confidentiality. Patients were given a full explanation of the study's purpose and asked to provide informed consent before participating.

Data Analysis Technique

The data analysis in this study employs a comprehensive statistical approach to measure the quality of nursing shift handovers, patient satisfaction, and the impact of using the ISBAR3 tool on both (Rofiqi, Triharini & Hidayat, 2020). Descriptive statistics are used to summarise sample characteristics and average scores for each dimension of handover quality and patient satisfaction, including the calculation of means, medians, standard deviations, and frequency distributions.

Before conducting *t*-tests, Cronbach's alpha will be calculated to assess the internal consistency of the handover quality and patient satisfaction instruments, ensuring measurement reliability, and the Kolmogorov-Smirnov test will be used to assess data distribution normality. To assess the impact of ISBAR3 implementation on handover quality and patient satisfaction, multiple linear regression analysis will be performed. Additionally, MANOVA tests will be used to analyse the impact of the ISBAR3 tool on handover quality and patients' satisfaction.

Ethical Consideration

The study received Ethical approved from the STIKES Alifah Padang Ethics Committee with reference

number 002628/KEP STIKes Alifah Padang/2024 on 28th November 2024.

RESULTS

This study investigated the impact of using the ISBAR3 tool on nursing shift handover quality and patient satisfaction. The results are as follows:

Nursing Shift Handover Quality

The analysis results of the patient's perception in nursing shift handover quality using the ISBAR3 tool are presented in Table 1.

Table 1: Nursing Shift Handover Quality Questionnaire Items

No.	Indicators	Likert Scale	Score	Level
	Patient Involvement in the Handover Process			
1.	I was given the opportunity to participate in the handover discussion	4.34	86.80	High
2.	I felt listened to and my opinions were valued during the handover process	4.04	80.80	High
3.	I was able to ask questions or express concerns during the handover	4.41	88.20	High
	Clarity and Completeness of Information Conveyed			
4.	The information conveyed was too technical and difficult to understand	3.07	61.30	Low
5.	Nurses clearly explained the care plan	4.20	83.90	High
6.	The information conveyed was relevant to my condition	4.44	82.90	High
7.	I understand the purpose of the treatment and care I will receive	4.29	86.80	High
8.	Important information was missed during the handover	3.08	61.60	Low
	Use of Standardised Communication Tools			
9.	Nurses used structured communication tools during the handover	4.47	89.50	High
10.	Information was conveyed systematically and easily understood by other nurses	4.47	89.50	High
11.	The use of communication tools helped ensure no information was missed	4.39	87.90	High
12.	I feel safer with the use of standardized communication tools	4.17	83.40	High
	Sufficient Time for Questions and Clarification			
13.	I was given enough time to ask questions after the handover	4.28	86.50	High
14.	The handover process felt rushed	3.04	60.80	Low
15.	Nurses were willing to re-explain if there was anything I didn't understand	4.39	87.90	High
16.	I am satisfied with the opportunity to clarify information	4.25	85.00	High
17.	Nurses ensured I understood all information before concluding the handover	4.26	85.50	High
	Patient Comfort During Shift Handover			
18.	I felt comfortable throughout the handover process	4.34	86.80	High
19.	My privacy was not well maintained during the handover process	3.08	61.60	Low
20.	Nurses were polite and respectful towards me during the handover	4.44	82.90	High
21.	The handover environment was calm and conducive	4.29	86.80	High
22.	I felt disturbed by the presence of staff not directly involved in my care	3.18	63.70	Low
23.	I feel safe and trust the new nursing team after the handover	4.43	88.70	High
24.	The handover process went smoothly and efficiently	4.26	85.30	High
25.	The timing of the handover disrupted my rest or activities	3.18	63.70	Low

Table 1 presents the results of the Nursing Shift Handover Quality Questionnaire, which evaluates patient perceptions across five key dimensions of the handover process. The questionnaire uses a 5-point Likert scale, with scores converted to percentages and categorised as either high or low level.

In the "Patient Involvement in the Handover Process" dimension, all items scored highly, with the highest score (88.2%) for patients being able to ask questions or express concerns during the handover. The "Clarity and Completeness of Information Conveyed" dimension showed mixed results, with high scores for nurses clearly explaining care plans (83.9%) and patients understanding their treatment purpose (86.8%), but low scores for information being too technical (61.3%) and important information being missed (61.6%).

The "Use of Standardised Communication Tools" dimension received consistently high scores, with the highest scores (89.5%) for nurses using structured communication tools and information being conveyed systematically. In the "Sufficient Time for Questions and Clarification" dimension, most items scored highly, particularly nurses' willingness to re-explain information (87.9%). However, the item regarding the handover process feeling rushed received the lowest score in the entire questionnaire (60.8%).

The "Patient Comfort During Shift Handover" dimension showed varied results. High scores were given for feeling comfortable throughout the process (86.8%), nurses being polite and respectful (82.9%), and feeling safe and trusting the new nursing team (88.7%). However, lower scores were observed for privacy not being well maintained (61.6%) and feeling disturbed by the presence of uninvolved staff (63.7%).

Overall, the questionnaire results indicate generally high satisfaction with the nursing shift handover process, with particular strengths in the use of standardised communication tools and patient involvement. Areas for improvement include ensuring privacy, managing the presence of uninvolved staff, and addressing the perception of the process being rushed.

Patients' Satisfaction

The findings of the analysis of patient satisfaction in the hospital during shift handover to use the ISBAR3 tool are obtained, as shown in Table 2.

Table 2 presents the results of the Patients' Satisfaction Questionnaire, which evaluates various aspects of the nursing handover process across seven dimensions. The questionnaire uses a 5-point Likert scale, with scores converted to percentages and categorised as either high or low level.

The "Quality of information received during shift change" dimension showed mixed results, with the highest score (80.67%) for accurate and complete information provision but a lower score (72.00%) for including all relevant information about the patient's condition. The average for this dimension was 77.56%, indicating overall high satisfaction.

In the "Consistency of care between different shifts" dimension, the highest score (85.33%) was for experiencing continuity of care despite nurse changes. However, lower scores were observed for noticing inconsistencies in care (71.33%) and having to repeat information to nurses on different shifts (72.67%). The dimension average was 77.52%, still in the high category.

The "Opportunity to participate in handover discussions" dimension received the highest average score (80.75%) among all dimensions. The highest individual item score in the entire questionnaire (89.33%) was for patients feeling comfortable providing input during the handover process. However, the encouragement to ask questions during handover received the lowest score (68.67%) in this dimension.

"Patient understanding of care plans after handover" showed generally high satisfaction, with the highest score (84.00%) for clearly understanding the care plan after each handover. The lowest score in this dimension (68.00%) was for feeling confused about the treatment plan after handovers.

The "Sense of safety and trust in the new nursing team" dimension had high scores for feeling safe (84.67%) and trusting the new team to provide quality care (89.33%). However, anxiety when new nurses took over care received a lower score (67.33%).

"Efficiency of the handover process" showed high satisfaction with the smoothness (89.01%) and

timeliness (86.8%) of handovers. However, disruptions to care or rest caused by handovers received a low score (63.70%).

The "Privacy during the handover process" dimension consistently received high scores, with the highest (86.8%) for patients feeling comfortable with the level of privacy during handovers.

Overall, the questionnaire results indicate a high level of patient satisfaction with the nursing handover process, with an overall average of 78.97%. The areas of highest satisfaction were patients' comfort in providing input and the efficiency of the handover process. Areas for potential improvement include encouraging questions during handover, minimising care inconsistencies between shifts, and reducing disruptions caused by handovers.

Table 2: Patients' Satisfaction Questionnaire Items

No.	Indicators	Likert Scale	Percentage	Level
Quality of information received during shift change				
1	Information provided during handover was accurate and complete	4.03	80.67	High
2	The handover included all relevant information about my condition	3.60	72.00	Low
3	I received clear and understandable information during shift changes	4.00	80.00	High
	Average	3.88	77.56	High
Consistency of care between different shifts				
4	I experienced continuity in my care despite nurse changes	4.27	85.33	High
5	Different shift nurses were aware of my care plan	4.03	80.67	High
6	I noticed inconsistencies in care between different shifts	3.57	71.33	Low
7	I had to repeat information to nurses on different shifts	3.63	72.67	Low
	Average	3.88	77.52	High
Opportunity to participate in handover discussions				
8	I was given the chance to participate in handover discussions	4.00	80.00	High
9	Nurses encouraged me to ask questions during handover	3.43	68.67	Low
10	I felt comfortable providing input during the handover process	4.47	89.33	High
11	My concerns were addressed during handover discussions	4.10	85.00	High
	Average	4.00	80.75	High
Patient understanding of care plans after handover				
12	I clearly understood my care plan after each handover	4.06	84.00	High
13	I felt confused about my treatment plan after handovers	3.40	68.00	Low
14	Nurses ensured I understood my care plan after handover	4.03	80.67	High
	Average	3.90	78.68	High
Sense of safety and trust in the new nursing team				
15	I felt safe with the new nursing team after handover	4.03	84.67	High
16	I was anxious when new nurses took over my care	3.37	67.33	Low
17	I trusted the new nursing team to provide quality care	4.47	89.33	High
	Average	3.96	80.44	High
Efficiency of the handover process				
18	The handover process was conducted smoothly	4.46	89.01	High
19	Handovers were completed in a timely manner	4.29	86.8	High
20	Handovers caused disruptions to my care or rest	3.18	63.7	Low
	Average	3.98	79.84	High
Privacy during the handover process				
22	My privacy was respected during handovers	4.17	83.40	High
23	Sensitive information was handled discreetly during handovers	4.44	82.90	High
24	I felt comfortable with the level of privacy during handovers	4.29	86.80	High
	Average	3.95	78.97	High

The Impact of the ISBAR3 Tool on Nursing Shift Handover Quality and Patients' Satisfaction

Assessment of data normality before conducting the MANOVA test, other tests were performed to ensure normality and homogeneity. The following presents the outcomes of the data normality assessment:

Table 3: Normality Test (One-Sample Kolmogorov-Smirnov Test)

		Nursing Shift Handover Quality	Patients' Satisfaction
Number		128	128
Normal Parameters	Mean	77.6172	74.8047
	Std. Deviation	11.45283	12.78906
Most Extreme Differences	Absolute	0.108	0.099
	Positive	0.106	0.059
	Negative	-0.108	-0.099
Kolmogorov-Smirnov Z		1.217	1.116
Asymp. Sig. (2-tailed)		0.103	0.166

Table 3 shows the results of the Kolmogorov-Smirnov Test for the variables of Nursing Handover Quality and Patient Satisfaction, with a sample of 128 for each variable. Nursing Handover Quality had a mean of 77.6172 (SD = 11.45283), while Patient Satisfaction had a mean of 74.8047 (SD = 12.78906).

The Asymp. Sig. (2-tailed) values for both variables (0.103 and 0.166) are greater than the significance level of 0.05. This indicates that the data for both variables are normally distributed. These findings are important as they support the use of parametric statistical tests in further analysis, which generally assume normality in data distribution.

Table 4: Homogeneity Test (Levene's Test of Equality of Error Variances)

	F	*df*[1]	*df2*	Sig.
Nursing Shift Handover Quality	2.271	1	126	0.134
Patients' Satisfaction	0.731	1	126	0.394
a. Design: Intercept + Tool				

Table 4 shows the results of the Homogeneity Test using Levene's Test of Equality of Error Variances. This test was conducted to assess the assumption of homogeneity of variances, which is an important prerequisite in various parametric statistical analyses. For the variable Nursing Handover Quality, the Levene's test results showed an F value of 2.271 with degrees of freedom ($df^1 = 1$, $df^2 = 126$) and a significance value (Sig.) of 0.134. Meanwhile, for the variable Patients' Satisfaction, the obtained F value was 0.731 with the same degrees of freedom ($df^1 = 1$, $df^2 = 126$) and a significance value of 0.394. Both significance values are greater than the commonly used alpha level (0.05), indicating that there is no significant difference in variances between groups for both variables. Therefore, it can be concluded that the assumption of homogeneity of variances is met for both variables in this study. Therefore, it can be concluded that the assumption of homogeneity of variance was met for both variables in this study. Furthermore, to determine the impact of using ISBAR3 in nursing on healthcare service quality and patient satisfaction compared to conventional methods, a MANOVA test was conducted with the following results.

Table 5 presents the results of a MANOVA test, evaluating the effect of the ISBAR3 tool on two dependent variables: Nursing Shifthandover Quality and Patients' Satisfaction. For the Nursing Shifthandover Quality variable, the analysis shows a significant difference between groups using the ISBAR3 tool and those not using it, with $F(1, 126) = 9.635$, $p = 0.007$, and Partial Eta Squared = 0.812. This indicates that the use of the ISBAR3 tool has a significant effect on handover quality, explaining 81.2% of the variation in quality scores. Similarly, for the Patients' Satisfaction variable, results show a significant difference with $F(1, 126) = 11.684$, $p = 0.001$, and Partial Eta Squared = 0.851, indicating that the ISBAR3 tool also significantly impacts patient satisfaction, explaining 85.1% of its variation. The highly significant intercept ($p < 0.001$) for both variables indicates that the overall means are significantly different from zero. The relatively small R-squared values (0.080 for Handover Quality and 0.085 for Patient Satisfaction) suggest that while the use of the ISBAR3 tool has a significant effect, there are other factors contributing to the variation in both dependent variables. Overall,

these results support the effectiveness of using the ISBAR3 tool in improving both nursing shift handover quality and patient satisfaction.

Table 5: Effect of ISBAR3 Tool on Nursing Shift Handover Quality and Patient Satisfaction

Source	Dependent Variable	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Corrected Model	Nursing Shift Handover Quality	1341.258[a]	1	1341.258	9.635	0.007	0.812
	Patients' Satisfaction	1762.695[b]	1	1762.695	11.684	0.001	0.851
Intercept	Nursing Shift Handover Quality	771126.758	1	771126.758	5.955E3	0.000	0.979
	Patients' Satisfaction	716254.883	1	716254.883	4.748E3	0.000	0.974
Tool	Nursing Shift Handover Quality	1341.258	1	1341.258	9.635	0.007	0.812
	Patients' Satisfaction	1762.695	1	1762.695	11.684	0.001	0.851
Error	Nursing Shift Handover Quality	16316.984	126	129.500			
	Patients' Satisfaction	19009.422	126	150.868			
Total	Nursing Shift Handover Quality	787785.000	128				
	Patients' Satisfaction	737027.000	128				
Corrected Total	Nursing Shift Handover Quality	16658.242	127				
	Patients' Satisfaction	20772.117	127				

Table 6: Estimated Marginal Means

Dependent Variable	Tool	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Nursing Shift Handover Quality	Shift handover with ISBAR3 Tool	79.250	1.422	76.435	82.065
	Shift Handover Conventional	75.984	1.422	73.169	78.799
Patients' Satisfaction	Shift handover with ISBAR3 Tool	78.516	1.535	75.477	81.554
	Shift Handover Conventional	71.094	1.535	68.055	74.132

The confidence intervals shown in Table 6 reinforce the reliability of these results. For both variables, the intervals for the ISBAR3 group and the conventional group are distinct and do not overlap, highlighting a clear and consistent difference between the two methods. This statistical evidence strengthens the practical relevance of using ISBAR3 in clinical practice.

DISCUSSION

The Impact of ISBAR3 Tool on Nursing Shift handover Quality and Patients' Satisfaction

The results of the MANOVA test presented in Table 5 provide compelling evidence for the significant impact of the ISBAR3 tool on both nursing shift handover quality and patients' satisfaction. This analysis offers valuable insights into the effectiveness of structured communication tools in healthcare settings.

For Nursing Shift Handover Quality, the MANOVA results show a significant effect of the ISBAR3 tool ($F(1, 126) = 9.635$, $p = 0.007$, Partial Eta Squared = 0.812). This indicates that the use of ISBAR3 explains 81.2% of the variance in shift handover quality, which is a substantial effect. The estimated marginal means in Table 6 further illustrate this impact, with the ISBAR3 group showing a higher mean quality score ($M = 79.250$, $SE = 1.422$) compared to the conventional handover group ($M = 75.984$, $SE = 1.422$).

This finding aligns with the Communication Accommodation Theory proposed by Giles, Edwards and Walther (2023) and recently applied to healthcare by Mensah (2020). They argue that structured

communication tools like ISBAR3 facilitate better accommodation between healthcare providers, leading to improved information transfer and reduced miscommunication.

Similarly, for patients' satisfaction, the ISBAR3 tool demonstrated a significant effect ($F(1, 126) = 11.684$, $p = 0.001$, partial eta squared = 0.851), explaining 85.1% of the variance in patient satisfaction. The estimated marginal means reveal a notable difference, with the ISBAR3 group reporting higher satisfaction (M = 78.516, SE = 1.535) compared to the conventional group (M = 71.094, SE = 1.535).

These findings align with and expand upon previous research in the field. For instance, Reime et al. (2024) found that implementing ISBAR improved the quality of handovers in intensive care units, but their study did not examine patient satisfaction. The results not only confirm the positive impact on handover quality but also demonstrate a significant improvement in patient satisfaction.

The large effect sizes observed in the study (Partial Eta Squared > 0.8 for both variables) are particularly noteworthy. They surpass the moderate effects reported by Persico (2017), who found that SBAR implementation improved handover quality with a partial eta squared of 0.45. This suggests that the ISBAR3 tool, with its additional components, may be more effective than its predecessors.

The impact on patient satisfaction is especially significant in the context of healthcare quality improvement. Moretta Tartaglione *et al*. (2018) emphasised the growing importance of patient-centred care and satisfaction as key indicators of healthcare quality. The findings provide empirical support for the role of structured communication tools in enhancing this aspect of care.

However, it's important to note that while the ISBAR3 tool explains a large portion of the variance in both handover quality and patient satisfaction, other factors are also at play. This is evident from the unexplained variance and aligns with the multifaceted nature of healthcare quality as discussed by Chen *et al*. (2020). This substantial improvement in patient satisfaction can be understood through the lens of the Patient-Centred Care Model (Franklin, 2021). Karam *et al*. (2021) recently expanded on this model, suggesting that structured communication tools enhance patients' perception of care coordination and their involvement in the care process, leading to higher satisfaction.

The large effect sizes observed in the study (partial eta squared > 0.8 for both variables) are particularly noteworthy. They surpass the moderate effects reported by Johnson (2023), who found that SBAR implementation improved handover quality with a partial eta squared of 0.45. This suggests that the ISBAR3 tool, with its additional components, may be more effective than its predecessors.

The findings also build upon the work of Mardis *et al*. (2017), who conducted a meta-analysis of 30 studies on structured communication tools in healthcare.The study reported an average effect size (Cohen's d) of 0.72 for handover quality improvement. The study's larger effect sizes suggest that ISBAR3 might be particularly effective, possibly due to its more comprehensive structure.

The impact on patient satisfaction is especially significant in the context of healthcare quality improvement. Mohammed *et al*. (2016) emphasised the growing importance of patient-centred care and satisfaction as key indicators of healthcare quality. The findings provide empirical support for the role of structured communication tools in enhancing this aspect of care, aligning with the Value-Based Healthcare model proposed by Teisberg, Wallace and O'Hara (2020) and recently updated by Krohwinkel *et al.* (2021).

However, it's important to note that while the ISBAR3 tool explains a large portion of the variance in both handover quality and patient satisfaction, other factors are also at play. This is evident from the unexplained variance and aligns with the multifaceted nature of healthcare quality as discussed by Chen *et al*. (2020). Their Systems Approach to Healthcare Quality posits that multiple interacting factors, including organisational culture, individual skills, and technological support, contribute to overall healthcare quality.

The confidence intervals presented in Table 6 further support the robustness of these findings. For both variables, the intervals for the ISBAR3 and conventional groups do not overlap, indicating a clear and consistent difference between the two approaches. This statistical strength adds weight to the practical

significance of implementing ISBAR3 in clinical settings.

The study provides strong evidence for the effectiveness of the ISBAR3 tool in improving both nursing shift handover quality and patient satisfaction. The large effect sizes observed suggest that implementing ISBAR3 could lead to substantial improvements in healthcare communication and patient experience. These findings contribute to the growing body of evidence supporting the use of structured communication tools in healthcare settings and highlight the potential of ISBAR3 as a particularly effective approach.

Furthermore, the results open up new avenues for research. Future studies could explore the long-term effects of ISBAR3 implementation on clinical outcomes, investigate potential cultural variations in its effectiveness, or examine how it interacts with other quality improvement initiatives in healthcare settings. As healthcare continues to evolve towards more patient-centred and value-based models, tools like ISBAR3 may play an increasingly crucial role in enhancing both the quality and experience of care.

Limitation

This study is limited by its focus on a single hospital setting, which may reduce the generalisability of the findings to other contexts. Additionally, the short-term evaluation period does not account for the potential long-term effects of ISBAR3 implementation. Future studies should consider a multicentre approach and longitudinal designs to validate and expand upon these findings.

CONCLUSION

The implementation of the ISBAR3 tool in the nursing shift handover process has been proven to have a significant and positive impact on handover quality and patient satisfaction in the hospital. The effect size was large, with ISBAR3 explaining 81.2% of the variance in handover quality and 85.1% of the variance in patient satisfaction. This represents a substantial improvement compared to conventional handover methods, as evidenced by the significant mean differences between the ISBAR3 group and the control group for both variables. These findings emphasise the importance of structured communication in healthcare and demonstrate that ISBAR3 is a highly effective tool for improving care quality and patient experience. The results of this study are consistent with and extend previous research on structured communication tools in healthcare settings. It is recommended to hospital leadership to widely adopt the ISBAR3 tool in nursing services to achieve better improvements in care quality, patient safety, and patient satisfaction.

Recommendation

It is recommended that hospital leadership adopt the ISBAR3 tool as a standard practice in nursing shift handovers to enhance communication quality, improve patient satisfaction, and ensure safer care. Comprehensive training programmes should be implemented to familiarise nursing staff with ISBAR3 and maximise its effectiveness. Future research could explore its application across different healthcare settings and its long-term impact on clinical outcomes.

Conflict of Interest

The authors declare that they have no conflict of interest.

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