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ORIGINAL RESEARCH

Effect of ISBAR Communication Mode on the Bedside Delivery Quality of Nurses Working in the Department of Rheumatology and Immunology

Meiyu Wang, Zhenlei Gao

Department of Rheumatology and Immunology, Beijing Chao-Yang Hospital, Capital Medical University, Beijing, 100020, People's Republic of China

Correspondence: Zhenlei Gao, Department of Rheumatology and Immunology, Beijing Chao-Yang Hospital, Capital Medical University, 8 Gong-Ti South Road, Beijing, 100020, People's Republic of China, Tel +86-10-85231063, Email gaozhenlei1@163.com

Objective: To explore the effect of ISBAR communication mode on the quality of bedside handover in the rheumatology and immunology department.

Methods: Nine nurses in the ward were prospectively selected using convenience sampling, and the nursing handover scale (NHS), the nurse "eleven knows" of patient condition assessment scale, and medical staff satisfaction questionnaire on morning nursing handover were collected and compared 1 month before the implementation of the ISBAR handover mode (ie, Apr. 1, 2024) and 1 month after the implementation of the mode for three months (ie, Sept.1, 2024).

Results: The scores of all items in the NHS, the knowledge of the nurse "eleven knows" of patient condition, and both doctor's and nurse's satisfaction with morning nursing handover report were increased, and the writing and reporting time required for nursing handover report was decreased after the implementation of the ISBAR communication mode compared with those before the use of this mode.

Conclusion: The ISBAR communication mode effectively improves the quality of bedside handover in rheumatology department, enhances the nursing handover assessment, helps nurses to understand the patients' condition, and standardizes the nurse handover process.

Keywords: ISBAR communication mode, bedside handover, rheumatology and immunology department, nursing

Introduction

Autoimmune rheumatic diseases, referred to as rheumatism, are a group of chronic inflammatory autoimmune diseases mainly involving joints and the musculoskeletal system, and associated with autoantibodies against various targeted molecules, including modified autoepitopes. Rheumatism, including diffuse connective tissue diseases and joint and periarticular soft tissue diseases with various causes,[1] can be divided into 10 major categories according to the American College of Rheumatology (ACR) classification, including rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), Sjogren's syndrome (SS), ankylosing spondylitis (AS), systemic sclerosis, idiopathic inflammatory myopathy (IIM), gout, vasculitis syndrome, osteoarthritis, and juvenile idiopathic arthritis, and RA, SLE, SS, AS and gout among others are the common type encountered in clinical practice.

SLE is a typical autoimmune disease characterized by multiple organ involvement and the presence of various autoantibodies in serum. RA is a chronic, systemic autoimmune disease with aggressive and symmetrical polyarthritis as the main clinical manifestations.[2] SS is a diffuse connective tissue disease that is characterized by invasion of exocrine glands such as lacrimal gland and salivary gland, abnormal proliferation of B lymphocytes and lymphocyte infiltration of tissues.[3] AS is an autoimmune disease that mainly involves the sacroiliac joint, spine and peripheral joints, with lesions in multiple organs and systems such as the kidney, lung and heart.[4] Gout is a group of heterogeneous diseases caused by purine metabolic disorders and/or uric acid excretion disorders and its clinical features include increased serum uric acid, recurrent acute arthritis, tophi and joint deformity, uric acid nephrolithiasis, and glomerular, tubular, interstitial and

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vascular renal lesions.[5] Autoimmune rheumatic diseases are a group of systemic diseases that affect multiple systems in the body, and involvement in muscles and joints, the skin and eyes, and the kidney are very common.

Autoimmune rheumatic disease is a general term, and the condition of the patients is complex with significant differences, which results in more details and difficulties in nursing. As one of the core systems of nursing care, nursing handover plays a pivotal role in ensuring and improving the quality of clinical nursing and patient safety as well as providing safe and high-quality nursing services.[6] Patients admitted to the rheumatology and immunology department are large in number with complex disease, and treated with various drugs, resulting in increased nursing procedures, operations, and handover contents, and more detailed and successive services. In order to ensure that any changes in the condition of the patients can be promptly found and dealt with, nurses are required to communicate effectively and seamlessly during shift handover to ensure that the handover is comprehensive and focused, and nursing errors caused by unclear handover are avoided. This may further lead to a series of problems such as delayed nursing shift time, nurse fatigue, easy omission of handover content, and lack of emphasis on key points.

ISBAR is the acronym of Identification, Situation, Background, Assessment and Recommendation. This mode effectively delivers information during the handover process and prevents omissions to consequently avoid risks and reduce medical errors. ISBAR is an evidence-based standardized and structured communication tool with advantages of complete structure, clear handover content, and easy expression and learn, and has been widely used in medical institutions to improve the quality of shift handover, ensure patient safety, and promote team cooperation.[7,8] The introduction of ISBAR into medical institutions has provided a rule-based and structured communication mode for medical professionals.[9] During shift handover, the outgoing shift nurses completely deliver the information of patients according to the process of ISBAR communication mode to avoid omission of important information, and the incoming shift nurses selectively obtain the key information they need according to the handover process. Therefore, ISBAR standardized communication mode can optimize the process of information transmission and ensure the integrity of the handover content.

Numerous studies have reported the effect of ISBAR used in medical institutions, the introduction of ISBAR communication mode in the treatment of autoimmune rheumatic diseases, however, has not been reported. On this basis, the present study was designed to apply the ISBAR communication mode to the practice of nursing handover in autoimmune rheumatic diseases and explore the effect of ISBAR communication mode on nursing handover in these diseases.

Materials and Methods

General Data

Nine nurses in the ward were prospectively selected using convenience sampling. Inclusion criteria included nurses who obtained a nursing license; with nursing experience in rheumatology and immunology department ≥1 year; and who were willing to participate in the study. Exclusion criteria included nurses who were employed but not in responsible positions. This study was approved by the Beijing Chao-Yang Hospital, Capital Medical University ethics committee (Approval number: 2023-ke-728), and all medical staff included in the study signed an informed consent form.

Methods

In the conventional handover mode, personnel involved in the handover gathered in the doctor's office, and the outgoing shift nurse reported the basic information of the discharged and newly admitted patients in writing and verbally reported the changes in patients' condition on duty; they started the ward round, and conventional oral bedside handover was performed.

The ISBAR communication model for bedside handover was designed with reference to relevant literature.[10] Briefly, (1) the head nurse explained the theoretical knowledge, implementation significance and specific practice methods of ISBAR to nurses to ensure that all nurses understood and mastered the basic concepts, contents, advantages and implementation methods of ISBAR. On-site practice was conducted to ensure the effect of application; (2) a department-specific ISBAR handover template was developed considering the characteristics of specialist assessment and the patients' condition, as shown in Table 1. The handover nurses stood at the patient's bedside, and a shared thinking model was established on the basis of two-way feedback communication; (3) the outgoing shift nurse reported step by

Table 1 ISBAR Specific Handover Contents

Steps	Detailed Contents
Identification (I)	Scan the code with PDA to confirm the identification of the patient
Situation (S)	The current treatment status of the patient, including diagnosis, main treatment, and positive test results
Background (B)	Allergy history and risk scores on admission of the patient
Assessment (A)	Evaluation of various systems of the patient, including 6 systems such as nervous, circulatory, and respiratory systems
Recommendation (R)	Handover suggestions for the next shift, including continuation of nursing measures, key observation indicators, and communication between doctors and nurses.

Abbreviations: ISBAR, Identification (I), Situation (S), Background (B), Assessment (A), Recommendation (R); PDA, Personal Digital Assistant.

step in a brief and concise order according to the ISBAR handover content; and (4) the incoming shift nurse performed the handover using an active inquiry method, including active listening and inquiry, and confirming his/her complete and accurate understanding of the information. The flow chart was shown in Figure 1.

Evaluation Indicators

This study started on May 1, 2024, and the observation indicators were collected at two time periods. The first period was 1 month before the implementation of the ISBAR handover mode, which was April 1, 2024; and the second period was the first month after the implementation of the ISBAR handover mode for three months, which was Sept. 1, 2024. (1) The

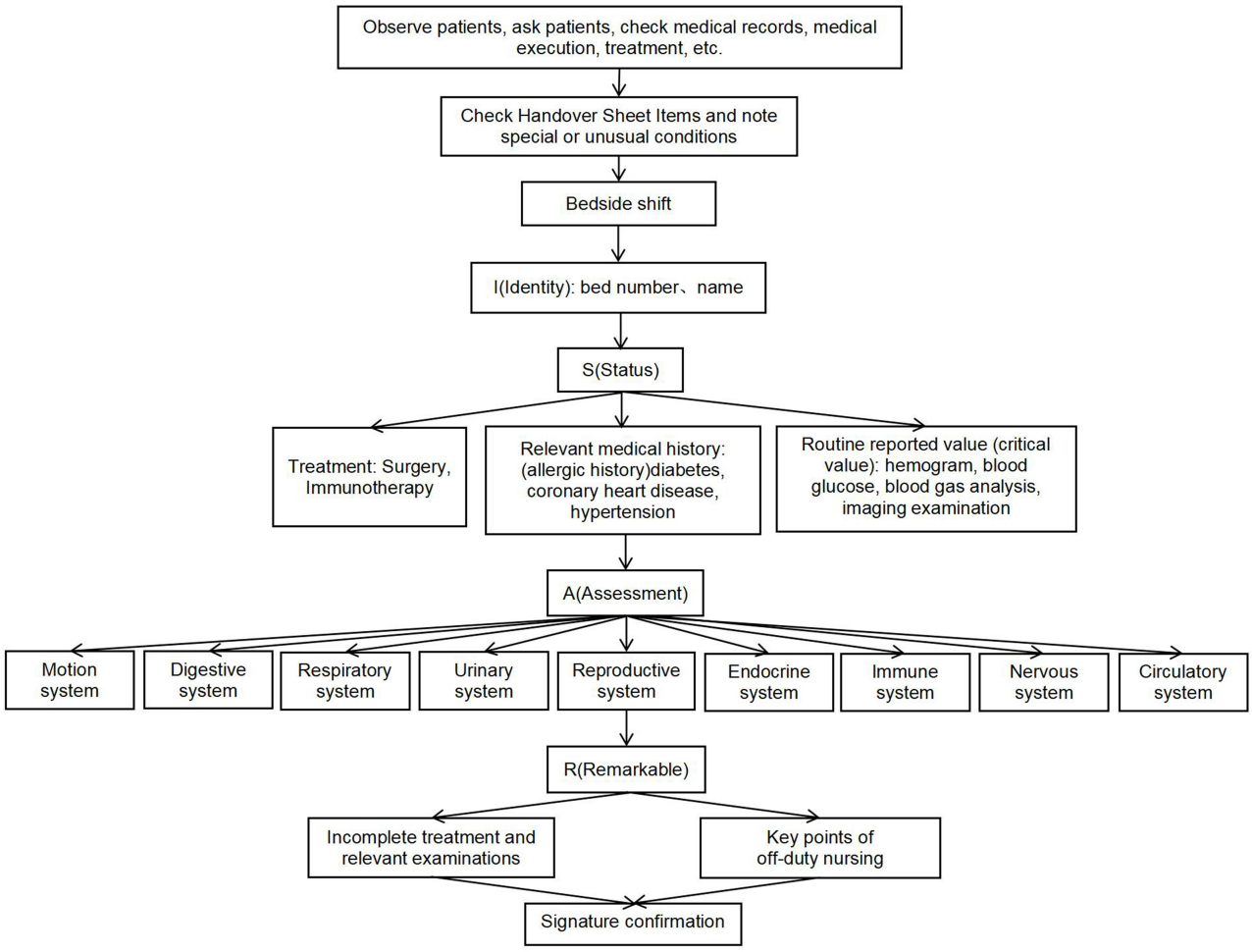

Figure 1 Flow chart.

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"Chinese version of the Nursing Handover Scale (NHS)" and the "Medical staff satisfaction questionnaire on morning nursing handover" were distributed to the 9 nurses participating in the study during the two time periods; (2) 10 doctors who regularly participated in the morning nursing handover report were selected from the departments involving the study, and "Medical staff satisfaction questionnaire on morning nursing handover" were distributed to these doctors before and after the implementation of ISBAR handover mode; (3) the nurse "eleven knows" of patient condition was assessed. Briefly, spot checks on nurses were conducted by the responsible team leader before and after the implementation of ISBAR handover mode. At least two patients were selected for each nurse from the patients under the responsibility of the responsible nurse, and Level I nursing patients, critically ill patients, and surgical patients should be included. If these three types of patients were not available, other patients with prolonged hospitalization and special conditions should be selected for assessment. The average scores of the cases assessed before and after ISBAR implementation were used as the nurse's understanding of the patient's medical condition; and (4) data on the use of the nursing handover report were collected. Data were collected before and after the implementation of the ISBAR handover mode, with a cumulative time of 1 month, and data of 4 weeks were statistically analyzed. The time spent by each nurse on writing the handover report, the total number of patients reported in the handover reports, and the time spent by the nurse on morning nursing handover reporting were collected from Monday to Friday.

The Chinese version of the Nursing Handover Scale (NHS) developed by Liu Jingying et al[11] was used for self-assessment. The Cronbach's alpha coefficient of the Chinese version scale was 0.907, the test-retest reliability was 0.910, and the content validity was 0.917, indicating favorable reliability and validity. The scale contained 13 items, including 6 items for information quality, 4 items for interaction and support, and 3 items for efficiency. Seven-point Likert scale was used, with 1 to 7 points being strongly disagree to strongly agree. This was a positive scoring system, and a higher score indicated higher level of handover quality.

The nurse "eleven knows" of patient condition scale was designed based on the "Responsible nurse 'ten knows' of the condition of critically ill patient scale" designed by Peng Xiaobei et al.[12] The assessment included: (1) basic information of the patient (bed number, name, sex, and age); (2) major diagnosis, allergy history and medical history of the patient; (3) positive results of auxiliary examinations; (4) main treatment regimen; (5) main nursing problems and nursing measures; (6) potential risks and preventive measures; (7) changes in vital signs; (8) diet and defecation/urination; (9) posture and activities; (10) psychological condition; and (11) sleep. Each item was rated on a scale of 10 points, with a total score was 110 points, and a higher score suggested a better understanding of the patients' condition.

Medical staff satisfaction questionnaire on morning nursing handover was self-designed on the basis of literature review, group discussion and expert consultation. The Cronbach's alpha coefficient of the scale was 0.93, and the content validity CVI was 0.84, indicating favorable reliability and validity. The scale included 16 items such as "Understanding the basic information of patients", "understanding the medical history and reasons for hospitalization of the patient", "understanding the recent abnormal positive test results of patients", "identifying the safety risks of patients", "cultivating the logical analysis ability of nurses", and "Completing the morning nursing handover report within a reasonable time". A 5-point Likert scale was used, with 1 to 5 points being strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree, respectively, with a total score of 80 points. A higher score indicated that doctors and nurses were more satisfied with the handover report of the night nurses.

Statistical Analysis

Data were statistically analyzed using SPSS 26.0 software. Normality test was performed using the K-S method. Measurement data with normal distribution were presented as mean ± standard deviation ($\overline{x} \pm s$), and paired *t*-test was used for comparison between groups. Differences with a two-sided p value of <0.05 were considered statistically significant.

Results

General Information

The 9 nurses included in the study were females, with an mean age of 33.78 ± 5.93 years old. The education levels of these nurses included 8 undergraduates and 1 junior college, with professional titles of 5 supervisor nurses (Senior professional

title), 3 senior nurses (Intermediate professional title), and 1 nurse (Junior professional title). Their nurse levels included 3 N1 nurses, 3 N2 nurses, and 3 N3 nurses. At the same time, 8 doctors (2 males and 6 females) who consistently participated in the morning handover report meeting were selected from the departments involved in this study, and the mean age of these doctors was 43.38 ± 6.40 years old, with an education level of Ph.D. Among them, 3 doctors with senior professional titles and 5 doctors with intermediate professional titles. The general information of nurses and doctors was shown in Table 2.

Comparison of Handover Effects

Comparison of the nursing handover effect showed that the scores of handover effect assessed by nurses were increased after the use of ISBAR mode compared with those before the use of this mode ($P < 0.05$) (Table 3).

Comparison of the Nurse "Eleven Knows" of Patient Condition

The results showed that the scores of all items and the total score of nurses were increased after the implementation of ISBAR handover mode compared with those before the introduction of this mode ($P < 0.05$), except for the basic data of the patients (Table 4).

Table 2 General Information of Nurses and Doctors

Item		Nurse	Doctor
Gender (Male/Female)		0/9	2/6
Age		33.78±5.93	43.38±6.40
Education levels	Junior college students	1	0
	Undergraduate	8	0
	Doctor	0	8
Professional title	Senior professional title	5	3
	Intermediate professional title	3	5
	Junior professional title	1	0
Nurse levels	N1	3	/
	N2	3	/
	N3	3	/

Table 3 Comparison of Specific Scores of Nursing Handover Assessment (Points) ($\bar{x} \pm s$) (n = 9)

Items	Before Implementation	After Implementation	T	P
I can receive the latest information	5.33±0.50	6.67±0.50	5.657	<0.001
I can fully obtain information about the patient	5.78±0.44	6.67±0.50	3.411	0.009
I can clearly organize the information I have obtained	5.44±0.53	6.44±0.53	6.00	<0.001
The information provided to me by colleagues is easy to hand over	5.67±0.50	6.56±0.53	3.411	0.009
I can always receive the important information	5.56±0.73	6.44±0.53	3.411	0.009
I focus on the information I received	5.44±0.53	6.44±0.53	3.464	0.009
I can discuss with other colleagues if I have any difficulties during the handover	5.67±0.50	6.44±0.53	3.5	0.008
I have the opportunity to discuss the issue of workload during the handover	5.67±0.50	6.56±0.53	2.874	0.021
I have the opportunity to discuss clinical issues that were difficult during handover	5.56±0.53	6.56±0.53	6.00	<0.001
I have the opportunity to ask questions that I do not understand	5.44±0.53	6.44±0.53	3.464	0.009
I find the handover does not take much time	5.67±0.50	6.56±0.53	3.411	0.009
All I received during the handover is patient-related nursing information	5.67±0.50	6.67±0.50	4.243	0.003
I can get the patient's information in time	5.67±0.50	6.56±0.53	3.411	0.009
Total score	72.44±4.95	85±1.32	8.417	<0.001

Abbreviations: $\bar{x} \pm s$, Mean ± Standard Deviation; T, Measurement value of paired *t*-test; P, Probability Value.

Table 4 Comparison of the Nurse "Eleven Knows" of Patient Condition

Items	Before Implementation (n=9)	After Implementation (n=9)	*P*
1. Basic information of the patient (bed number, name, age)	9.01±0.44	9.05±0.39	0.562
2. Major diagnosis, allergy history and medical history of the patient	7.62±0.73	8.53±0.67	<0.001
3. Positive results of auxiliary examinations	6.78±0.99	8.62±0.72	<0.001
4. Main treatment regimen	8.33±0.52	9.05±0.39	<0.001
5. Main nursing problems and nursing measures	6.93±0.45	8.55±0.58	<0.001
6. Potential risks and preventive measures	7.54±0.67	8.95±0.62	<0.001
7. Changes in vital signs	8.25±0.49	9.28±0.72	<0.001
8. Diet and defecation/urination	7.82±0.61	9.17±0.55	<0.001
9. Posture and activities	8.39±0.35	9.33±0.34	<0.001
10. Psychological condition	6.26±1.15	8.45±0.81	<0.001
11. Sleep	5.23±0.78	8.23±0.77	<0.001
Total score	87.32±3.31	93.56±3.64	<0.001

Abbreviation: P, Probability Value.

Doctors' Satisfaction with Nurse Morning Nursing Handover Report

The results showed no significant differences in the scores as assessed by the doctors in items "the morning handover report helps me to better understand the basic information of the patient", "the morning handover report helps me to better understand the treatment process of the patient", "the morning handover report helps me to better understand the patient's chief complaints and the name of surgery", "the morning handover report helps me to better understand the patient's medication and intravenous treatment", and "the morning handover report helps me to better understand the dynamic change of the patients' condition" before and after the implementation of the ISBAR handover mode ($P > 0.05$); and scores of other items were increased after the use of the mode compared with those before the introduction ($P < 0.001$) (Table 5).

Table 5 Doctors' Satisfaction Questionnaire on Morning Nursing Handover Report

Items	Before Implementation (n=8)	After Implementation (n=8)	*P*
1. The morning handover report helps me to better understand the basic information of the patient	4.96±0.18	4.98±0.13	0.322
2. The morning handover report helps me to better understand the medical history and reasons for hospitalization of patient	3.34±0.47	4.21±0.45	<0.001
3. The morning handover report helps me to better understand the treatment process of the patient	3.23±0.76	3.36±0.76	0.386
4. The morning handover report helps me to better understand the patient's chief complaints and the name of surgery	3.54±0.73	3.46±0.59	0.568
5. The morning handover report helps me to better understand the current specialist assessment of the patient	3.32±0.66	4.30±0.80	<0.001
6. The morning handover report helps me to better understand the patient's medication and intravenous treatment	3.89±0.84	4.10±0.58	0.145
7. The morning handover report helps me to better understand the patient's recent abnormal test report	3.13±0.47	4.04±0.46	<0.001
8. The morning handover report helps me to better understand the recent abnormal imaging results of the patient	3.38±0.84	4.18±0.99	<0.001
9. The morning handover report helps me to better understand the dynamic change of the patients' condition	3.68±0.66	3.57±0.55	0.314
10. The morning handover report helps me to better understand the patient's current nursing problems	3.52±0.73	4.39±0.77	<0.001
11. The morning handover report helps me to better understand the treatment regimen of the patient	3.79±0.73	3.65±0.51	0.269
12. The morning handover report helps me to better identify the safety concern of the patient	3.79±0.80	4.36±0.81	<0.001
13. The morning handover report can cultivate the logical analysis ability of the nurses	3.73±0.79	4.27±0.86	<0.001
14. The morning handover report can reflect the working ability of the nurses	3.77±0.87	4.30±0.93	<0.001
15. The content of the morning handover report is clear and focused	3.64±0.81	4.29±0.88	<0.001
16. The morning handover report is completed within a reasonable time	3.75±0.47	4.75±0.47	<0.001
Total score	58.45±6.47	69.86±9.69	<0.001

Abbreviation: P, Probability Value.

Nurses' Satisfaction with Morning Nursing Handover Report

The results showed no significant differences in the scores as assessed by the nurses in items "the morning handover report helps me to better understand the basic information of the patient", "the morning handover report helps me to better understand the treatment process of the patient", "the morning handover report helps me to better understand the patient's chief complaints and the name of surgery", "the morning handover report helps me to better understand the patient's medication and intravenous treatment", "the morning handover report helps me to better understand the dynamic change of the patients' condition" and "the morning handover report helps me to better understand the treatment regimen of the patient" before and after the implementation of the ISBAR handover mode ($P > 0.05$); and scores of other items were increased after the use of the mode compared with those before the introduction ($P < 0.001$) (Table 6).

Statistics on Nursing Handover Reports

The results showed that the time for day/night shift nurses to write handover reports and reporting time were decreased after the introduction of ISBAR mode compared with those before the use of this mode, with no statistical significance in the total number of patients reported by white day/night shift nurses ($P > 0.05$) (Table 7).

Table 6 Nurses' Satisfaction Questionnaire on Morning Nursing Handover Report

Items	Before Implementation (n=9)	After Implementation (n=9)	*P*
1. The morning handover report helps me to better understand the basic information of the patient	4.94±0.24	4.99±0.09	0.114
2. The morning handover report helps me to better understand the medical history and reasons for hospitalization of patient	3.33±0.49	4.25±0.51	<0.001
3. The morning handover report helps me to better understand the treatment process of the patient	3.29±0.70	3.48±0.84	0.071
4. The morning handover report helps me to better understand the patient's chief complaints and the name of surgery	3.36±0.73	3.43±0.89	0.518
5. The morning handover report helps me to better understand the current specialist assessment of the patient	3.34±0.75	4.32±0.83	<0.001
6. The morning handover report helps me to better understand the patient's medication and intravenous treatment	3.57±0.71	3.64±0.80	0.418
7. The morning handover report helps me to better understand the patient's recent abnormal test report	3.38±0.70	4.23±0.85	<0.001
8. The morning handover report helps me to better understand the recent abnormal imaging results of the patient	3.58±0.73	4.11±0.82	<0.001
9. The morning handover report helps me to better understand the dynamic change of the patients' condition	3.61±0.77	3.76±0.79	0.094
10. The morning handover report helps me to better understand the patient's current nursing problems	3.62±0.69	4.40±0.80	<0.001
11. The morning handover report helps me to better understand the treatment regimen of the patient	3.76±0.65	3.70±0.67	0.507
12. The morning handover report helps me to better identify the safety concern of the patient	3.76±0.69	4.37±0.78	<0.001
13. The morning handover report can cultivate the logical analysis ability of the nurses	3.60±0.98	4.25±0.95	<0.001
14. The morning handover report can reflect the working ability of the nurses	3.63±0.82	4.19±0.94	<0.001
15. The content of the morning handover report is clear and focused	3.43±0.84	4.25±0.95	<0.001
16. The morning handover report is completed within a reasonable time	3.75±0.47	4.67±0.47	<0.001
Total score	57.51±6.12	71.18±9.1	<0.001

Abbreviation: P, Probability Value.

Table 7 Statistics on the Use of the Nursing Handover Report Form

Items	Before Implementation (n=9)	After Implementation (n=9)	*P*
Time required to write nursing handover report by day shift nurse (mins)	39.13±4.00	22.19±4.45	<0.001
Time required to write nursing handover report by night shift nurse (mins)	30.32±5.92	18.60±4.70	<0.001
Total number of patients reported by day shift nurses	38.41±5.41	37.93±4.30	0.563
Total number of patients reported by night shift nurses	37.87±5.11	36.99±4.55	0.269
Reporting time (mins)	11.67±4.10	7.00±2.52	<0.001

Abbreviation: P, Probability Value.

Discussion

Nurse handover is a summary of the patients' condition, and also a review and assessment of the treatment and nursing care, which provides a basis for the subsequent nursing for the incoming nurses to ensure the continuous observation of the patients' condition and the continuous implementation of treatment and nursing measures. With respect to care transition, there are many applicable techniques. However, national and international regulatory authorities, as well as health service quality committees, recommend using the ISBAR tool.[13] The ISBAR communication mode is a standardized communication tool endorsed by the World Health Organization. In the present study, the application of the ISBAR communication mode in the nursing handover in the department of rheumatology and immunology standardized the content of nursing handover and optimized the handover process. Nurses conducted the handover process orderly according to the structural format of "patient identity confirmation - condition change - background information - assessment - suggestion", which ensured that the thinking of nurses was clear during handover and the content of handover was complete and focused to avoid the omission of important information of patients and also to improve the acceptance rate of effective information of patients in the incoming nurses. Nurses who use ISBAR reported its benefits as they feel they can deliver what is required for patient care information in a structured, fast, and efficient way.[14]

In the conventional mode, the handover is formalized and the process is not clear and focused due to the incomplete understanding of the patients' condition and the lack of clinical experience in junior nurses.[15] The results of the present study showed that the mastery of basic information (number, name and age) of patients in nurses was 9.01 ± 0.44 points before the implementation of the ISBAR mode and 9.05 ± 0.39 points after implementation, with no statistically significant difference. This can be explained by the strict implementation of the patient verification system by responsible nurses in clinical nursing care, and the general data of the patients are presented in daily work. The score of the nurse "eleven knows" of patient condition increased from 87.32 ± 3.31 points before implementation to 93.56 ± 3.64 points after implementation. The scores of nurses' understanding of patients' "diagnosis, allergy history, medical history", "main positive test results", "treatment", "nursing points", "potential complications", "vital signs", "diet and defecation/urination", "posture and activities", "psychological condition" and "sleep" were increased after the implementation of ISBAR handover mode compared with those before the implementation. It was demonstrated in the present study that the application of ISBAR mode in nursing handover improved the understanding of patients' condition in nurses, which was consistent with the findings of Zhou Runmei et al[16] that the application of ISBAR communication mode in the handover of critically ill patients could improve nurses' knowledge of patients' condition.

In the conventional handover mode, it takes a long time for nurses to write the handover report with more content required, and the morning handover reporting is merely formal, without focuses on the key points. Medical staff is not satisfied with the method and mode of nursing handover. Nursing handover in morning shift meeting is an important link in clinical practice. Night shift nurses summarize the condition of patients in the ward and review and evaluate the on-duty nursing activities to provide a basis for nursing work in the next shift. This is also the most convenient way for medical staff to comprehensively understand the overall situation in the ward.[17] Therefore, improving the quality of morning nursing handover significantly affect the medical and nursing quality. In the ISBAR handover mode, changes in the patients' condition are emphasized and analyzed, and reasonable suggestions are provided to the incoming nurses, which can ensure that the medical staff participating in the morning handover meeting quickly and accurately understand the changes of the condition and treatment points of the patients in the ward in a short time, and adopt a series of treatment and nursing measures according to the handover report. Doctors' satisfaction with nurses' morning handover report increased from 58.45 ± 6.47 points before the implementation of the ISBAR mode in morning nursing handover report to 69.86 ± 9.60 points after implementation, and nurses' satisfaction with the handover report by night shift nurses increased from 57.51 ± 6.12 points before implementation to 71.18 ± 9.11 points after implementation.

In the conventional handover mode, there is no standardized writing process for handover reports, and the format of handover report writing is not fixed. The handover reports only present the current condition changes of patients, and analysis of the condition changes and suggestions for current nursing measures are not offered. In the whole handover process, the outgoing nurses are dominant, and the incoming nurses passively receive the information of the patients, without in-depth understanding and analysis of the problem received. The ISBAR communication mode is an evidence-

based, result-oriented, standardized and structured communication mode.[13] The results of the present study showed that the time required for report writing by day shift nurses was shortened from 39.13 ± 4.00 minutes before implementation to 22.19 ± 4.45 minutes after implementation, and the time required for report writing by night shift nurses was shortened from 30.32 ± 5.92 minutes before implementation to 18.60 ± 4.70 minutes after implementation, with statistically significant differences before and after the implementation. The time of handover reporting was shortened from 11.67 ± 4.10 minutes before the implementation to 7.00 ± 2.52 minutes after the implementation, and the difference was statistically significant. These results demonstrated that the application of ISBAR communication mode in nursing handover report shortened the time for nurses to write handover report, reduced the writing pressure of nurses, decreased the reporting time in morning handover, and improved the efficiency of nursing handover, which was consistent with the findings of Hou Ying-Hui[18] who introduced the ISBAR mode to the handover of severe patients.

There were limitations in the present study. Firstly, this was a small-scale study and conducted in only one hospital, and the results of this study were limited. Future studies with increased sample sizes in more broader fields are necessary and the application of the ISBAR mode will be promoted to peer hospitals. In addition, the understanding and adaptation of ISBAR handover mode in nurses with different ages, education levels, years of service, and professional titles were not analyzed and discussed in detail in this study, and the influence and effect of ISBAR handover mode on nurses with different characteristics will be further explored.

Conclusion

In summary, ISBAR communication mode in bedside handover effectively reduces handover defects and improves the quality of handover. ISBAR communication mode make the handover effect better, the time required to write the handover report reduced, and the satisfaction of nurses and doctors with the handover report increased. It may help nurses to comprehensively understand the patients' condition, ensure the continuity of nursing care, enables nurses staff and physicians to have a more detailed understanding of the patient's condition, and also reduces the workload of nurses.

Data Sharing Statement

All data generated or analyzed during this study are included in this published article.

Ethics Approval and Consent to Participate

This study was approved by the hospital ethics committee, and all medical staff included in the study signed an informed consent form.

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Disclosure

The authors report no conflicts of interest in this work.

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