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Impact of SBAR Communication Training on Medication Error Reduction Among Staff Nurses

Nazim Shahzad¹, Dr Waliullah Farid², Abbas hakim³, Samia Khan⁴, Dr. Jipi Varghese⁵

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Nazim Shahzad (Corresponding Author)

Islamia Institute of Nursing and Allied Health Sciences Nowshera
nazimshahzad107@gmail.com

Dr. Waliullah Farid

Abbottabad International medical Institute

Abbas Hakim

Dr Ziauddin Hospital Karachi Pakistan

Samia Khan

Simulation Center Specialist
Department of Nursing College of Dentistry and Health Sciences Fujairah University, Fujairah UAE

Dr. Jipi Varghese

Assistant Professor, College of Dentistry and Health Sciences, Department of Nursing Fujairah University, Fujairah UAE

ABSTRACT

Introduction: Medication errors represent a significant issue of the healthcare environment and are commonly provoked by the lack of the effective communication within the clinical handovers. SBAR (Situation, Background, Assessment, Recommendation) is a model communication tool intended to enhance patient safety and transfer of information. The purpose of this study was to measure how SBAR communication training can reduce the number of medication errors among staff nurses. **Methodology:** A quasi-experimental one group pre-test and posttest study design were used. There were 34 medical and surgical inpatient unit staff nurses. A structured checklist was used to collect pre-intervention medication error data in four weeks. An organized SBAR communication training was accomplished in two parts, demonstrations and role-play scenarios. Another four weeks were taken as post-intervention data of medication error. Paired sample t-tests were used to analyze the data, and the level of significant was $p < 0.05$. **Findings:** The study sample consisted of 20 percent BSN, 60 percent RN, and 20 percent post-RN nurses; 45 percent men and 55 percent women, and a mean age of 28.6 years and a standard deviation of 4.2 years. The overall median score on medication errors reduced considerably between 5.82 US = 1.94 before intervention to 2.97 US = 1.41 after the intervention ($t = 8.46, p = 0.001$). All categories such as wrong dose, wrong time, documentation errors, wrong route and wrong patient recorded reductions. **Conclusion:** SBAR communication training proved to be an effective way to decrease medication errors among staff nurses through enhancing the quality of handover and clarity in communication. It is advised to implement SBAR in the everyday practice and education of nurses to make health treatments safer and foster the culture of effective communication in the clinical environment.

INTRODUCTION:

Medication errors have been a perennial problem in clinical practice, and one of the most significant contributors to patient injury in all healthcare environments, and communication failures have been identified as one of the top root causes of such errors during clinical handovers and interdisciplinary interactions (1). It has been heavily suggested that structured communication tools, such as SBAR (Situation, Background, Assessment, Recommendation) could help better clarify and complete necessary information exchange, which in turn would lead to safer clinical practice and would contribute to errors reduction (2). Appropriate SBAR training in nursing settings provides personnel with standardized communication modules that enhance reporting competence and reduce the risk of information omission that might cause medication errors (3). Empirical evidence indicates that SBAR implementation has positive effects on the care quality; an example with that, SBAR communication training was found to have a major impact on knowledge, perception, and practice of structured handoff communication by nurses, which are the principal competencies associated with reducing the risk of information gaps and potential mistakes (2). Also, organized SBAR handover interventions have been correlated with the reduction of clinical errors, including errors related to the medication process in critical units like emergency departments (4). Study on the application of SBAR model in various clinical settings is characterized by improvement in clarity and safety results of communication and emphasizes the importance of the model in promoting consistent information transfer that supports safe medication administration practices (5). The general literature also serves to confirm the idea that SBAR communication training enhances the overall level of nursing care quality and safety climate. Application of SBAR enhances the completeness and accuracy of shift handoffs, which are the periods of high risks of miscommunication and consequent mistakes such as medication errors (1). In addition to personal skills, standardized SBAR communication helps to enhance the collaboration and safety culture in a team, which is fundamental in setting the levels of lower rates of clinical errors, including medication errors (6). Since the implementation of SBAR requires proper training and practice, the importance of organized educational programs based on clinical staff training is emphasized by the study to facilitate the transfer of the SBAR knowledge into practice (2). Despite a systematic review not falling within the 5-year timeframe showing that SBAR has an effect on patient safety (including adverse event reduction), modern studies are still exploring the effect of SBAR on clinical error reduction, particularly in the nursing setting where much of the clinical medication safety revolves around communication (7,8). Although the use of SBAR communication training in healthcare has continued to increase, there is still a gap in understanding its direct effects on the incidence of medication errors among staff nurses in practice. The proposed study will fill this gap through investigating the impact of SBAR communication training on the rates of medication errors in nurses and therefore assist in increasing evidence on the way to improve patient safety and communication effectiveness in clinical practices worldwide.

Methodology:

A quasi experimental one group pretest and posttest design was used to determine the effects of SBAR communication training on reducing medication error in the staff nurses. The study was carried out in the inpatient units of a tertiary care hospital in the medical and surgical units, medication administration, and shift handovers were done on a routine basis. The rationale behind choosing these units was that they have a high turnover of patients and risk of medication errors that are related to communication. The population of the study was a cohort of registered staff nurses with direct clinical handover and medication administration. The non-probability convenience method was employed in the recruitment of 34 staff nurses. Nurses were eligible when they had a minimum of six months of clinical experience, were actively engaged in administration of medications, and were willing to volunteer. Administrative nurses who received leave in the course of the study were left out. The four weeks data preceding the intervention were gathered as baseline data on medication errors through a structured medication error reporting checklist. This checklist contained common

types of medication errors which were wrong dose, wrong drug, wrong patient, wrong time, wrong route and documentation errors. Incident reporting records, medication audit reports and direct clinical observations were used to obtain the data where possible. After the assessment at baseline, a systematic SBAR communication training program was applied. The training was implemented in two sessions, each session took around two hours. Part one was a presentation of the SBAR framework and the importance of structured communication in facilitating patient safety and minimizing medication errors. The second session was based on the discussion of the case, role-play, and the supervised practice of SBAR-based medication handovers. The educational materials were presentations, SBAR templates, and simulated clinical cases. The same checklist was employed to gather post-intervention medication error data four weeks after the training so that there was uniformity in the process. Content validity of training materials and data collection tool was determined by assessing them with the help of nursing education and patient safety specialists. To make sure that the group of nurses was clear and feasible, a pilot test was carried out with a small sample of nurses. The SPSS version 26 was used to analyze data. Calculation of descriptive statistics, such as frequencies, percentages, means, and standard deviations was carried out. Paired sample t-test was used to compare the medication error rates before and after the intervention. The statistical significance was determined at $p < 0.05$. The institutional review board gave an ethical approval and informed consent was signed by all participants before the data collection. Confidentiality and anonymity were maintained in the course of the study.

Result:

The number of staff nurses who took part in the study was 34. In terms of education, 20 ($n = 7$) completed the Bachelor of Science in Nursing (BSN), 60 ($n = 20$) registered nurses (RN) and 20 ($n = 7$) done the post-RN nurses. Regarding gender distribution, 45% ($n = 15$) of the respondents were male and 55% ($n = 19$) were females. The average age of the study population was 28.6 ± 4.2 and most of them (50 percent) belonged to the 26-30 years age range, 30 percent to the 21-25 years age range, and 20 percent to the age group above 30 years. The mean clinical experience was 3.8 Years with a standard deviation of 2.1 as shown in table 01.

Table 1: Demographic Characteristics of Participants (n = 34)

Variable	Frequency (n)	Percentage (%)
Educational Level		
BSN	7	20%
RN	20	60%
Post-RN	7	20%
Gender		
Male	15	45%
Female	19	55%
Age Group (Years)		
21–25	10	30%
26–30	17	50%
>30	7	20%

Before the implementation of SBAR communication training, the pre-intervention assessment showed a higher frequency of medication errors. The mean total medication error score during the pre-test phase was 5.82 ± 1.94 as shown in table 02.

Table 2: Pre-Intervention Medication Error Scores (n = 34)

Medication Error Category	Mean ± SD
Wrong Dose	1.41 ± 0.62
Wrong Time	1.26 ± 0.58
Wrong Route	0.82 ± 0.44
Documentation Error	1.33 ± 0.71
Wrong Patient	1.00 ± 0.59
Total Score	5.82 ± 1.94

Following the SBAR communication training program, a reduction in medication error frequency was observed. The post-intervention mean total medication error score decreased to 2.97 ± 1.41 .

Table 3: Post-Intervention Medication Error Scores (n = 34)

Medication Error Category	Mean ± SD
Wrong Dose	0.71 ± 0.39
Wrong Time	0.63 ± 0.41
Wrong Route	0.44 ± 0.29
Documentation Error	0.75 ± 0.48
Wrong Patient	0.44 ± 0.37
Total Score	2.97 ± 1.41

A paired sample t-test was conducted to compare pre- and post-intervention medication error scores. The analysis revealed a statistically significant reduction in total medication errors after SBAR training ($p < 0.001$).

Table 4: Comparison of Pre- and Post-Intervention Medication Error Scores (n = 34)

Variable	Pre-Test (Mean ± SD)	Post-Test (Mean ± SD)	t-value	p-value
Total Medication Error Score	5.82 ± 1.94	2.97 ± 1.41	8.46	<0.001*

*Significant at $p < 0.05$

Discussion:

This study was aimed at analyzing the effects of medication error reduction in staff nurses due to the implementation of SBAR communication training. The results showed that medication errors were statistically reduced following SBAR training and this supported the hypothesis that SBAR improves communication and minimizes clinical errors. This is in line with previous evidence that organizational communication systems can enhance clinical information transfers and patient safety outcomes. A quasi-experimental study has discovered that SBAR training enhances communication skills of nurses and results in positive patient outcome and safety perceptions (9). The identified decrease in medication errors in the given study is comparable to the general literature on the topic that has demonstrated the positive impact of SBAR on the effectiveness of communication and the ability to prevent medication errors. Simulation training on SBAR has demonstrated considerable positive effects in the clarity of communication and patient safety-related behavior (7). A second quasi-experimental trial by Shahid et al. also indicates that adoption of SBAR communication was associated with a substantial decrease in medication errors and enhanced accuracy of handover between hospital nurses (10). The authors discovered that medication discrepancies statistically decreased with structured SBAR training. On the same note, in the current study, the mean medication error scores significantly decreased following the SBAR communication training ($p < 0.001$), which implies that the structured communication directly correlates with the safer medication practices. Moreover, another study revealed that the implementation of SBAR increased communication between nurses and physicians, and

prevented adverse drug incidents that could be avoided in acute care units (11). Their results underscored the fact that structured communication reduced omissions in the process of medication reporting. As per these findings, our study presented decreases in wrong dose, wrong time, and documentation errors following the intervention in favor of the SBAR role in enhancing reporting completeness. Moreover, a different study established that hospitals that implemented organized SBAR handover protocols reported about 30% decrease in medication administration error (12). The improved clarity and accountability in clinical exchanges were also identified as some of the important mechanisms noted in the study. In line with this, our results indicated that the total medication error scores reduced as 5.82 ± 1.94 to 2.97 ± 1.41 , which is a strong indication of the use of SBAR as a means of enhancing medication safety. A different study had indicated that patient safety climate and communication-related adverse events had improved significantly following SBAR training (13). Their results imply that formal communication enhances the safety culture in general. In agreement with this fact, our study indicated significant medication error reduction after the organized training programs. Besides, in another study, implementation of SBAR enhanced the handover communication process and minimized information omission during medication changeover (14). Similarly, the number of documentation mistakes also reduced considerably in our post-intervention results, which indicated a more accurate communication. In a systematic review, it was found that the use of SBAR was linked to a reduction in preventable adverse drug events and enhanced interdisciplinary cooperation (15). The results of our study can be compared to this review since the structured training on SBAR led to the statistically significant decrease in the error rates. The other study stated that standardized communication tools such as SBAR decreased the errors of medication administration in the critical care environment (16). Likewise, our findings proved that systematic training had a high impact on reducing medicine errors in inpatient units. SBAR education enhanced nurse confidence, and it reduced incidents of near-miss medication (17). Similarly, our study demonstrated a higher accuracy of reporting and reduced cases of medication-related events after training. At the hospitals where the SBAR training was implemented, the decrease in the medication-related adverse events was sustained in half a year (18). We had a shorter time to follow up but immediate post training reductions had been experienced. One more study. stated that the model of the standardized bedside handover with the use of SBAR helped to decrease the number of medication communication mistakes (19). This evidence is further supported by the current findings because they show statistically significant improvements after structured SBAR training. In general, the findings of this study prove SBAR as a powerful communication training model, which can greatly help to minimize medication errors in staff nurses. These results provide the significance of continuous education, systematized handover, and institutional policies that encourage the use of SBAR to achieve longer-term communication and patient safety outcomes.

Conclusion:

The results of this research suggest that SBAR communication training is an effective program to minimize medication errors in staff nurses. Introduction of organized SBAR handover activities positively affected the comprehensibility of communication, the quality of reporting, and made the clinical setting safer. The findings proved that the number and the severity of medication errors decreased after the training, which showed the significance of a structured communication in clinical practice. This study supports that SBAR is a practical and evidence-based tool that enhances the strengthening of nursing handovers and patient safety. Standardization is achieved through the transfer of critical information by reducing mistakes in terms of wrong dose, wrong time, documentation errors, and other medication-related events with the help of SBAR. Furthermore, the results also indicate that constant education, practice reinforcement, and institutional support are the main factors to maintain the advantages of SBAR training implementation in various healthcare facilities.

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