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An Educational Intervention to Improve the Caregivers' Understanding of the SBAR Tool used for Patient Handover during Hospital Transfer Processes

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Abstract

Objective: This study sought to determine the impact of educational intervention on the caregivers' understanding of the SBAR tool used during the patients' handover practices by utilizing a quasi-experimental design.

Methods: This quantitative study was conducted within the Transfer Center of a tertiary care hospital in Abu Dhabi. In a quasi-experimental design, the researcher collected data in two separate phases using a borrowed questionnaire. The first phases, pretest, was administered to all the 40 participants within the first week of July, 2018 to assess their knowledge levels regarding the use of SBAR communication tool during patient handover practices. Subsequently, the educational training was offered to all the 40 participants before administering the posttest on the first week of August 2018.

Results: Descriptive data analysis showed that majority of the participants had ages of between 30 and 49. 72.5% of the participants had over four years of experience and with a Bachelor's degree in nursing. Further comparative analysis using ANOVA descriptive statics showed mean score of 57.4% in pretest and 94% in posttest. Chi-Square analysis of the impact of the various demographic factors and educational intervention on the participants' scores showed a statically significant ($p<.05$) impact of the educational training on the posttest scores.

Conclusion: The educational intervention had a significant improvement on the caregivers' understanding and use of the SBAR tool as used during patient handover practices. It is also apparent that most caregivers do not possess sufficient skills an understanding necessary for effective use of the SBAR communication tool as used during patient handovers and should thus be given further training.

Keywords: SBAR; Patient handover; Nurses' communication; Patient recovery

Introduction

Patient handovers are inevitable practices, especially in large interdepartmental hospitals where nurses operate in shifts. Friesen et al. recognized that the success of the patient handover process is utterly predetermined by the method of communication in place [1]. Despite such expressions, have shown that healthcare providers have not been consistent with the standardized communication guidelines and irregularities in patient handovers persistently arise [2,3]. Such irregularities often lead to poor patient medical outcomes among other undesired operational practices within the healthcare centers. WHO also indicate that poor handover communication approaches lead to clinical adverse events and medical errors [4]. Sometimes, poor patient transfer led to medication errors. Hence, there is an urgent need for a strict standardized handover protocol.

Accordingly, many researchers have sought to determine the significance of using a standardized communication approach such as the SBAR to facilitate patient handovers. Consistently, the results from their prospective studies have shown significant improvements in caregivers' handovers reports and patient outcomes after pilot intervention schemes [2,5]. However, despite such empirical evidence that support the significance of the SBAR tool and the benefits of standardized communication tools in general, report has shown that compliance to the use of such tools is still poor [6]. Consequently, the inconsistent use and poor compliance with the SBAR model have been blamed for the poor patient outcomes. For instance, Williams et al. reported that most of the anesthetists (67% in their experiment) in the clinical setup could not provide accurate information during the handover process [7]. The recorded failure could be due to the inconsistency in the use of SBAR in the clinical setups. As such, a critical gap exists in the reinforcement of how the caregivers use the tool.

Due to the apparent inconsistency of the caregivers' ability to use SBAR tool, this study was designed to determine the nurses' SBAR knowledge gaps before need-specific tanning could be offered for an improved compliance. The researcher speculates that most caregivers do not comply with the SBAR handover protocol due to insufficient knowledge. As such, to improve the caregivers' compliance with the SBAR tool, the researcher identified the knowledge gaps among the nurses for an effective educational intervention measure. In that regard, this study focused on an educational intervention to improve the caregivers' understanding of the SBAR communication tool as used during the patient handover practices within the clinical environment.

Literature Review

This study conducted an expansive literature review to explore the

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already known pieces of idea that surround the caregivers' use and compliance with the SBAR handover communication tools. Evidently, literature sources from CINAHL, PubMed, MEDLINE, and ProQuest have deeply penetrated into the role of SBAR communication tools in the amelioration of patients' handover communication practices. In summary, in the past, almost every hospital had their own means of reporting the handover information [8], however; the increasing rates of adverse events and medical errors prompted researchers to develop a standardized protocol [9]. Despite such developments, literature still reports poor compliance to the developed standard communication tools.

Handover communication and its impact on patient safety and recovery

The SBAR in handover communication: SBAR is an acronym for Situation, Background, Assessment, and Recommendation. This tool is used to examine the handover situation before getting to the background of the case. The Situation presents the information about the present condition of the patient while Background gives more detailed information about the patients' conditions – initial diagnoses, vital signs, previous treatments, medication among others [10]. The Assessment section provides the current state of the patient from the perspective of the nurse and Recommendation highlights the nurse's suggestions for the next treatment schemes. The SBAR tool was developed for the first time by the US Navy so that they could boost the precision of their communication [11]. Accurate use of the SBAR tool has produced positive impacts among patients and reported that, "reliability of a patient progress report improved from 54.5% to 83.73%" after surveying 83 nurses within a single hospital setup [12].

Nevertheless, the SBAR tool also faces some operational challenges. For instance, the concept of filling the tool is hard to learn and this clues the users resistance and poor compliance [13]. Further, filing the hard copy forms is regarded to be time consuming [2].

Regarding the handover as a medical practice, many researchers have explained it as used within the healthcare environment. Friesen et al. defines handover by using a typical case: "the transfer of all the necessary medical information from the primary Emergency Department (ED) to the Intensive Care Unit (ICU)". Similarly, The British Medical Association defines handover as "the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis" [14].

However, Eggins and Slade express that the patients' handover also involves the total transfer of medical information from one nurse to the other during the shifts [15]. Nevertheless, the handover process is essentially the communication of the patient information. The definition explicated by Solet is defined handover as the "transfer of role and responsibility from one person to another in a physical or mental process" [16]. Therefore, getting used to a specific means and accurate relay of information becomes a significant aspect to consider during the handover processes.

Handover and patient safety

Smeulers et al. stresses on the necessity of prioritizing the safety measures and the handover protocols as a way of improving the patient recovery [17]. In such ways, the specific handover protocols make it easier to avoid the common adverse events. According to Herrigel et al. there is a need to evaluate and standardize the hospital transfer practices in order to reduce the incidences of medication errors. After a phone interview with the hospital transfer coordinators in 32 different transfer centers in the US, Herrigel et al. found out that the handover practices in these canters have a high variation. However, some concerns emerge from the study by Herrigel et al. First, the use of phone interview in a descriptive study could omit the behavioral elements in the caregivers' practices. Besides, the transfer coordinators are not in a direct contact with the patients during the handovers and thus the limitation of their study [18].

Melakzdeh et al. also appraise the inconsistent use of a specific handover protocol and remark that "there is no standard handover protocol in our healthcare settings" [19]. In a study to determine the impact of the standardized handover on the effectiveness of the nurses' practices, Melakzdeh et al. showed a significant improvement in the nurses' handovers. Their analyzed data indicated an improvement value of 5.4 (from 11.6 to 17.0) on their Safe Practice Evaluation Checklist. Therefore, a protocol and transfer are significant in improving the patient safety as well. Nurses' performance and patient safety are succinctly dependent. A similar inquiry was conducted by Bomba et al. who relied on four categories of doctors within the Green Metropolitan Hospital (University of New South Wales) to gather the information about the handover processes [20]. Through the observation and questionnaires, 29% of the doctors believed that adequate information was transferred during the patient handovers.

Researchers have reported a myriad of negative consequences attached to poor communication during patient handover processes. For instance, Barach have estimated that between 25% and 40% of the reported medication errors in the US emerged from ineffective communication [21]. Similarly, WHO highlighted that "Of the 25 000 to 30 000 preventable adverse events that led to permanent disability in Australia, 11% were due to communication issues". Still, a descriptive study by Nagpal et al. further highlighted a scenario in which 14% of all the 419 cases of the adverse event in the postoperative handovers were caused by the communication errors [22]. Therefore, it is overwhelmingly evident that patients' outcome is highly reliant on patient handover communication.

Communication breakdown and the need for educational intervention to improve caregivers understanding of the SBAR tool

Breakdown in communication is sometimes inexorable. Friesen et al. associates many causes of communication breakdown to organizational complexity and dynamicity. Solet et al. pointed out that nurses and physicians have the tendency of prioritizing different issues during the transfer of the patient information. While nurses focus on the holistic picture of the state of the patient, the specialists and physicians consider just the particular issue of interest. "Nurses are trained to communicate by being descriptive, detailed, and narrative; physicians are trained to summarize, diagnose, and fix things" [23]. The difference distorts the understanding between the two parties. Nonetheless, poor compliance to standard communication tools such as SBAR has also been mentioned as the propagators of communication breakdown.

Education intervention to improve understanding of the SBAR tool

Researchers including Horwitz, Moin, and Green have mentioned that there is inadequate training and education of the caregivers about the appropriate use of the SBAR communication tool [24]. For the same reason, a number of studies have proved the significance of carrying out the educational interventions to reinforce the best practices in the

use of the SBAR tool [25]. Moreover, empirical data has shown how the continued education and training have improved the caregivers' compliance with the SBAR model. Regardless of the location and environment, the educational intervention has been proved through a number of retrospective studies [25]. Based on the evidence already revealed, this study utilized the educational intervention to improve the caregivers understanding and effective use of the SBAR tool as used during the patient handover processes.

Methodology

This quantitative study followed quasi-experimentation design in collecting, analyzing and making conclusions about the study outcomes. A total of 40 participants were randomly asked to participate in the study after an ethical approval from the ethical committee of the Tertiary Care Hospital in Abu Dhabi. Subsequently, two sets of data were collected within the hospital in Abu Dhabi by administering the pretest and the posttest questionnaires – the research questionnaire borrowed was from Murray through a written mail. The validity and reliability of this instrument, when used by Murray gave scores that ranged between 10/50 and 50/50 (r = 0.82) as rated by the internal raters [26]. The pretest (knowledge test) was administered to acquire the data about the caregivers' understanding about the SBAR communication model while the posttest was an evaluation test to determine the participants' improvement scored from the training. Therefore, two different instruments are used in data collection.

The knowledge test questionnaires were administered to the 40 selected participants during the last week of July 2018 and the participants were given one hour to fill in their responses. The data collected from the pretest questionnaires were then used by the researcher to design the training topics for the presentation that was held during the first week of August 2018 at different times (morning, afternoon and evening) of the day when the participants were free. The researcher offered the training (Appendix 1) to cover the basic concepts of the SBAR tool such as its need, significance, and how to use it during the patient handovers.

After two weeks, all the previously invited 40 participants were again asked to take part in the posttest survey for the final phase of data collection. The questionnaires were administered to the participants during different times of the day (same as the pretest) depending on the participants were free to take part. Consequently, data analysis was performed using the descriptive quantitative statistics and Chi-Square tests of the Statistical Package of Social Sciences (SPSS), version 20. Whereas the descriptive statistics provided information about the socio-demographics as well the mean scores of the mean scores in pretest and posttests, the Chi-square tests confirmed the significant impact of demographic variables on nurses' knowledge gain. As such, a significance interval of 95% was used.

Results

The demographic characteristics of the study participants

The studied sample is distributed according to various sub-groups belonging to four major demographic factors which include; age, level of education, work experience, and work type.

Majority of study participants belong to the age group 30-49 years old. Twenty-nine nurses constitute 72.5% and only eight nurses (20%) were aged 18-29 years, and only three nurses (7.5%) were aged 18-29 years old. Moreover, it was shown that the majority of the studied sample (29 nurses) have a Bachelor's degree (72.5%), and that one quarter of them had a Master's degree 10 nurses (25%) leaving a 2.5% for 1 participant with a nursing diploma. Most of the nurses, 29 (72.5%), had a work experience that exceeded 4 years, and 8 nurses (20%) of the sample had an experience level that ranged from 2-4 years, leaving a 1 participant (2.5%) for the group of 1-2 years of experience and 2 nurses (5%) for those with less than 1 year of experience. Half of the studied sample, 20 nurses, are hospital transfer nurses (HTN) at 50%, and that 11 nurses (27.5%) are case managers (CM), leaving 9 nurses to be shift leaders (SL) – making 22.5% of the sample (Table 1).

The Pre and posttest

The total number of participants who scored below average constituted 42.5% of the studied sample which is slightly less than 50% of the studied sample. Such results indicate that, less than half of the nurses are considered "failures" at the proper understanding of the SBAR handover communication tool which logically has a widespread negative impact on their day to day services that include communicating with doctors, fellow nurses or even patients, thus increasing the chance of error occurrence (Table 2).

Table 3 below shows that at the post-test score, the minimum score was 5/10 whereas the maximum score was 10/10. The two people who

Studied Group		Frequency	Percentage	Mode
Age	18-29 years old	8	20.00%	30-49 years old
	30-49 years old	29	72.50%	
	50-64 years old	3	7.50%	
Education	Nursing Diploma	1	2.50%	Bachelor Degree
	Bachelor Degree	29	72.50%	
	Master's Degree	10	25.00%	
Work Experience	<1 year	2	5.00%	More than four years
	1-2 years	1	2.50%	
	2-4 years	8	20.00%	
	>4 years	29	72.50%	
Work Type	CM	11	27.5	HTN
	SL	9	22.5	
	HTN	20	50	

Table 1: The demographic characteristics of the studied sample.

Score	Frequency	Percent	Valid Percent	Cumulative Percent
1	1	2.50%	2.5	2.5
2	3	7.50%	7.5	10
3	4	10.00%	10	20
4	7	17.50%	17.5	37.5
5	2	5.00%	5	42.5
6	2	5.00%	5	47.5
7	10	25.00%	25	72.5
8	6	15.00%	15	87.5
9	5	12.50%	12.5	100
Total	40	100	100	

Table 2: The pre-test scores (n=40).

Scores	Frequency	Percent	Valid Percent	Cumulative Percent
5	1	2.5	2.5	2.5
6	1	2.5	2.5	5
9	15	37.5	37.5	42.5
10	23	57.5	57.5	100
Total	40	100	100	

Table 3: The participants' scores in the post-test.

one scored 5/10 and the other 6/10 formed a 2.5% of the population each. Moreover, those who scored 9/10 constituted 37.5% of the total participants.

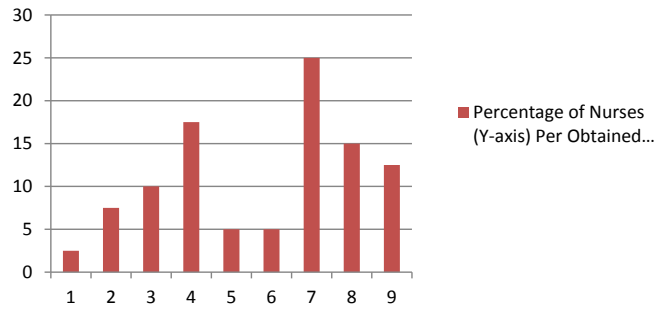
Table 4 shows the results of the pre and posttest results according to each question in the questionnaire (Q1 to Q10). This table gives the major areas of weaknesses of the caregivers regarding the use of SBAR handover communication tool. In order to identify the areas of poor understanding of the caregivers concerning SBAR, the researcher concentrated on the pretest scores, before the educational intervention to spot the specific areas of knowledge gap. It is evident that most of the caregivers do not have adequate knowledge (pretest score of 38%) regarding the preparation measures before using the SBAR tool (Q6). Conversely, the caregivers demonstrated adequate knowledge about the general knowledge and Background (B) part of the SBAR (pretest score of 75%). Nevertheless, the score improved after the educational intervention.

Further graphic illustrations of the pretest and posttest results are presented in the Figure 1 and 2 below.

After performing the Analysis of Variance (ANOVA) a multivariate test, to study the factors (time, age, education, work experience and work type) that generally affect the pre-test and post-test results, the results revealed that the obtained P-Values were all superior to the discriminant (5%) when studying the effect of age, education, work experience and work type, since they were 0.818, 0.677, 0.824 and 0.528 respectively. Hence, the results prove that only time had an impact (p=0.000) on the caregivers performance in the pre and posttests regarding the use of SBAR during the patient handover practices (Table 5).

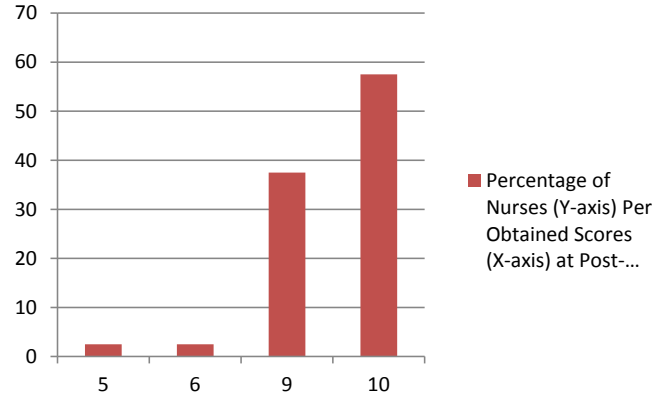
Participants' scores in the Scores (%) in the pre and posttest questions		
	Pretest	Posttest
Q1. Death rate due to communication failure	45	90
Q2. General knowledge about the handover communication	65	100
Q3. Communication by the non-physician team	53	100
Q4. General knowledge about SBAR model	75	100
Q5. The situation (S)	60	95
Q6. Preparation when using SBAR	38	85
Q7. Difficult part in SBAR	45	100
Q8. Recommendation (R)	50	80
Q9. Background (B)	75	95
Q10. Assessment (A)	68	95
Mean scores	57.40%	94.00%

Table 4: A comparative analysis of the pretest and posttest scores.



Further graphic illustrations of the pretest and posttest results are presented in the figures below.

Figure 1: The pretest scores (%) in the individual questions.



The posttest scores showed a significant improvement after the intervention program as shown in the figure 2 below.

Figure 2: The posttest scores (%) in the individual questions.

Studied Factor	Hypothesis df	Error df	P-value
Time	1	39	0
Time and Age	2	37	0.818
Time and Education	2	37	0.677
Time and Work Experience	3	36	0.824
Time and Work-type	2	37	0.528

Table 5: The general effect of the studied factors on the pre-test and post-test; indicator of the nurse's communication ability.

Summary of the major study findings

This study has confirmed that the caregivers within the tertiary hospital did not have sufficient skills necessary for using the SBAR communication tool for patient handover practices. Such deficiencies were established by the pretest questionnaires scores where the participants attained a mean score of 57.4%. However, after the education intervention, the posttest scores shot to 94%, thereby confirming the significant role of such educational intervention.

Moreover, the improvement in performance was recorded across all the ten thematic areas of the SBAR tool. For instance, the researchers examined participants' knowledge level about the general preparations that precede the usage of SBAR communication, and a resultant mean score of 38% was recorded – an indication of knowledge deficiency. Overall, there were improvements in all the tested thematic areas of SBAR usage as recorded in Table 5. Such improvements confirm the role and importance of the educational intervention in improving the caregivers' understanding about the SBAR as a communication tool during patient handovers.

Discussion and Conclusion

The structured SBAR communication tool is one such approach that has become increasingly popular among nurses and other members of the care team to deliver patient information [27]. According to Pang (2017) the SBAR reporting strategy improves the efficacy of information transfer particularly in critical care environments, subsequently improving the safety of patients [28]. SBAR also offers a foundation for a checklist that expedites the quality of communication between the care team members as well as the patients under their care [29]. Such tools give nurses the opportunity to give doctors critical information regarding patients who are deteriorating in a manner that is logical and founded on a complete patient assessment. However, while the

efficacy of the SBAR approach is well established in literature, this study reports that its effective use in the clinical setting is often hampered by inadequate skills or experience among nurses. In addition, several healthcare setups do not have a specific way of carrying out the patient handovers. As such, errors are prone to arise due to such unspecific means of doing the patient transfers [17].

The current study has confirmed the significance of educational intervention in improving the caregivers' understanding and accurate use of the SBAR communication tool used during the patients' handover processes. This finding has also identified the gaps in communication among the healthcare providers regarding the accurate use of the SBAR handover communication tool and hence the potentiality of adverse events in patients' care practices as previously noted by WHO. Further, this study identified that the caregivers are not well conversant with the recommendation (R) part of SBAR and the necessary preparations to make before using the SBAR tool hence a potential pitfall in poor usage of the SBAR. The same idea is noted that most caregivers face hurdles towards making effective recommendations [13].

Nevertheless, clear communication is crucial in the clinical environment impacting patient safety, and problems and failures in communication can result in majority of patient incidents. Notably, researchers have shown that errors in communication are ubiquitous in healthcare and jeopardize the safety of patients resulting in unnecessary deaths [30]. Researchers contend that reporting initial signs of clinical or physiological deterioration can improve the safety of patients and avert 'failure to rescue' or unexpected admissions into the ICU, cardiac arrests or deaths [31].

The results of the study showed that the nurses' performance on the post-test exams were far better than that which was on the pre-test exam, thus showing a significant improvement. Specifically, the results demonstrated that the lowest and highest posttest scores were 50% and 100% respectively. In comparison the lowest and highest pre-test scores were 10% and 90% respectively. Notably, the study participants showed statistically significant improvement in the performance form the pretest to posttest. This finding indicates that the educational intervention to improve the skills of the respondents regarding the use of the SBAR tool had a significant effect on their communication abilities. These results are in agreement from earlier studies who reported a significant improvement in the communication abilities from mean score of 3.47 to 7.72 following the educational intervention in Manipal [32].

Additionally, in a study by Achrekar et al. the level of communication abilities of the study group after the intervention regarding the SBAR best practices was significantly improved. However, the study by Achrekar et al. followed the quantitative design as the current study.

Moreover, a review showed that an improved handover communication skill following an educational intervention conducted among medical staff [33]. Edwards et al. also obtained similar outcomes in their study with nurses in Canada [34]. Nevertheless, Amiri, Khademian, and Nikandish reported that educational intervention is a multifaceted tool with capabilities of empowering nurses' roles in improving patients' safety [35].

In the same manner the communication skills of nurses in the current study at baseline before the implementation of the intervention were relatively positive [36]. The post-test administered indicated that the subjects obtained slightly higher scores compared to those at baseline indicating the strength of the educational package used in the study. Moreover, areas that were particularly problematic in the sample demonstrated significant improvement at posttest. According to the results of the pre-test, participants scored poorly in questions one and eight whereby 55% of the respondents scored zero in both questions. In the posttest, significant improvements occurred whereby only 10% and 15 % answered questions one and eight wrongfully. Velji et al. also found similar increments in baseline scores indicating the importance of training nurses on the use of SBAR tools [37].

Additional investigations to determine the effect of time, age, education, and work experience and work type on the understanding of nurses on SBAR tool showed that time age, education, work experience, and work type have no significant effect on the SBAR communication skills of the caregivers. However, an independent analysis of the relationship between the time factor and the educational intervention showed a significant and positive effect that the "educational course" had on the nurses' communication skills. Specifically, the P-value was less than 5% (p= 0.000) indicating there is a high significance to the change that has occurred over the factor which is time following the execution of the intervention. Such results proved that the observed changes in the communication abilities of nurses occurred mainly because of the educational intervention. This is consistent with previous studies determined the significance of training nurses on how to use SBAR methodology before it is implemented [38,39]. In each of the two studies, the effect of time factor was tested and like the results of this study, the researchers observed that the effects on communication were as a result of the training intervention.

De Meester et al. identified the training received by nurses in the study in relation to the use of the SBAR methodology as being instrumental to the improvements in communication within the care teams as well as the decline in unexpected patient mortality. Achrekar et al. also reiterated the importance of individual and team training on the different features of SBAR in increasing its utility and efficacy for quality patient care. Andreoli and collegues also came to similar conclusions observing that an educational intervention to equip healthcare professionals with the necessary knowledge on how to use the SBAR tool within the clinical setting was important in achieving the envisioned quality outcomes in fall reduction [40].

Aquasi-experimental design to investigate the impact of an education on SBAR methodology among nurses in a teaching hospital [41]. The study found significant improvements in the use of the SBAR methodology in the pretest and posttest results of the experimental and control groups. Findings suggest that nurses who are trained to use the SBAR are more likely to perform an immediate patient assessment and call for assistance sooner than nurses who did not receive training [6].

Nevertheless, this study records some limitations that need to be considered by the future researchers [42-44]. The use of experimental group without the inclusion of the comparative control group needs to be considered in future studies.

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