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The Effect of Using the SBAR Model on Nurses' Perceptions of Change-of-Shift Patient Handoffs

Nöbet Tesliminde SBAR Modeli Kullanmanın Hemşirelerin Hasta Teslimine İlişkin Algılarına Etkisi

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Abstract

Objective: The purpose of study is to evaluate the effect of using the SBAR communication model on nurses' perception of change-of-shift handoffs in an intensive care unit.

Method: Our study was conducted as quasi-experimental research with nurses working at the Pediatric Intensive Care Unit over the period October 2022-January 2023. The research data were collected as pre-test and post-test with a data collection form including "Participant Information Form", "Handover Evaluation Scale", and the effect of the information conveyed about the patient on the quality of care in patient handovers by nurses. After the data collection form was applied to the participants as a pre-test before the training, was given to the nurses to provide information about the SBAR handover form. This SBAR handover form was used in shift handovers for three months and the post-test was applied at the end of the process.

Results: The mean scores of the nurses working in pediatric intensive care unit from the Patient Handover Evaluation Scale and the quality of information sub-dimension of this scale showed statistically significant increase after using the SBAR handover model. It was also found that the effect of the information given during handover on the quality of patient care increased statistically significant with the use of the SBAR handover model.

Conclusion: It can be said that nurses working in pediatric intensive care have changed their perceptions of handover positively and the quality of the knowledge provided has increased with the use of the SBAR delivery model in shift handover.

Keywords: Patient handoff, patient safety, SBAR.

Öz

Amaç: Bu çalışmanın amacı, çocuk yoğun bakım ünitesinde SBAR yöntemiyle yapılan nöbet tesliminin hemşirelerin hasta teslimine ilişkin algılarına etkisini değerlendirmektir.

Yöntem: Çalışmamız, Ekim 2022 - Ocak 2023 tarihleri arasında Pediatrik Yoğun Bakım Ünitesi'nde görev yapan hemşirelerle yarı deneysel bir araştırma olarak yürütülmüştür. Araştırma verileri, "Katılımcı Bilgi Formu", "Devir Teslim Değerlendirme Ölçeği" ve hemşirelerin devir teslim sırasında hasta hakkında aktardıkları bilgilerin bakım kalitesine etkisini içeren veri toplama formu ile ön test ve son test şeklinde toplanmıştır. Veri toplama formları, eğitim öncesinde hemşirelere ön test olarak uygulanmış, ardından hemşirelere SBAR devir teslim formu hakkında bilgilendirme yapılmıştır. SBAR devir teslim formu, üç ay boyunca vardiya değişimlerinde kullanılmış ve sürecin sonunda son test uygulanmıştır.

Bulgular: Pediatrik yoğun bakım ünitesinde çalışan hemşirelerin, SBAR devir teslim modelini kullandıktan sonra Devir Teslim Değerlendirme Ölçeği ve bu ölçeğin Bilgi Kalitesi alt boyutundan aldıkları puanlarda istatistiksel olarak anlamlı bir artış gözlemlenmiştir. Ayrıca, devir teslim sırasında verilen bilgilerin hasta bakım kalitesine etkisinin de SBAR modeli kullanımıyla birlikte istatistiksel olarak anlamlı düzeyde arttığı bulunmuştur.

Sonuç: Pediatrik yoğun bakımda görev yapan hemşirelerin devir teslim süreçlerine yönelik algılarının SBAR iletişim modeli ile olumlu yönde değiştiği ve aktarılan bilgi kalitesinin arttığı söylenebilir.

Anahtar Kelimeler: Hasta güvenliği, hasta teslimi, SBAR

INTRODUCTION

Patient safety is the priority issue of all institutions and organizations providing healthcare services today. Accompanying the technological advances taking place in healthcare services are many risks for healthcare professionals and patients that may arise as a function of the complex nature of health services.[1] The most important condition that all healthcare providers must meet is the capability of providing the highest quality service that reduces harm to a minimum.[2] The World Health Organization's (WHO) 2021-2030 global patient safety action plan reports that 134 million adverse events occur as a result of safety violations every year, leading to approximately 2.6 million deaths. In addition, it is estimated that damages incurred by patients amount to an annual USD 1-2 trillion.[3]

The Joint Commission on Accreditation of Healthcare Organizations (JCHAO) has stated that the fundamental factor in realizing the continuity of care and safe patient care is "Improving Effective Communication," the second of its goals for achieving patient safety.[4] WHO, postulates that communication is the leading problem of patient safety and rates this issue as the third of the first five problems that can cause harm in the context of patient safety.[5] Effective communication is an important part of the healthcare services that increase patient safety, the quality of care and teamwork, and a patient-centered approach.[6] The key to safe and effective care is to achieve standardization and reliable communication between all healthcare providers. In situations where there is no effective communication, there is an increase in potential risks that may harm the patient.[7] In its Global Patient Safety Action Plan 2021-2030 for eliminating avoidable harm in healthcare services, the World Health Organization, recommends the creation of standard and clear handoff protocols that are to be used uniformly as change-of-shift handoff procedures in all health institutions.[8]

Patient handoffs are regarded as a high-risk event that can impact patient safety.[9] The patient handoffs between health workers that take place in the clinical setting are considered the most important building block of the precise communication needed to ensure care and treatment.[10] A study by JCAHO reveals that 80% of all adverse events that occur during shifts are caused by breakdowns in communication.[11] An inadequate transfer of information at changes of shift and deficient communication can not only lead to dangerous outcomes but also place a heavy burden on a country's health expenditures.[12] Communication skills and the precise transfer of information can be developed with a structured patient handoff model. At the same time, by encouraging the health team to engage in critical thinking, such a model reduces the risk of nursing care errors to a minimum and supports evidence-based care practices that prioritize patient safety.[13] The forms used in handoffs should be drawn up in line with patient-specific information and the interventions that are being carried out.[14]

In a systematic review of standard communication techniques used in change-of-shift handoffs, 46 articles on patient handoffs were considered, and it was found that standard communication techniques had been used in 24 of the studies and that a large majority (69.6%) had used the SBAR handoff form.[15] The SBAR handoff model is an effective communications model supported by evidence-based studies that makes it possible to have health professionals transfer all information on a patient to one another.[5,16,17] It cannot be denied that there is a need for a standardized handoff form that permits all data to be transferred between health professionals in order to attain a continuous quality of care and treatment and to ensure that patient information is conveyed accurately, completely and systematically. Study results have pointed to the need for a patient handoff form in terms of patient safety, but there are only a scarce number of studies that have been conducted in Turkiye on patient handoffs, most of these concerning only verbal transfers of information.[12] We considered that it would be useful to learn how nurses' perceptions of the quality of patient care would change if they were to use a standardized handoff form at changes of shift, which formed the basis of the present study. In this context, the study was conducted to evaluate the effect of shift handover using the SBAR method on nurses' perceptions of patient handover.

METHODS

Research Design: This study was conducted with nurses working in the pediatric intensive care unit of a hospital in order to investigate nurses' perceptions of the quality of care and patient handoffs when the SBAR technique was used. The research was designed as a pretest, posttest and quasi-experimental type of study.

Participants: The universe of the study, which was carried out over the period October 2022 - January 2023 in the Pediatric Intensive Care Unit of a hospital, comprised nurses (N=46) who worked in the unit. Within the unit, the nurse-to-patient ratio is 1:2. A sample selection method was not employed, as all of the nurses working in the intensive care unit were included and constituted the study sample. Those nurses who were on vacation or on sick leave as well as those who were new hires during the period of the data collection were excluded from the study. The final total of nurses participating in the study was 40. Based on the results of the paired-samples t-test, a post-hoc power analysis was conducted, and the effect size for the change in the total scale score was found to be moderate (Cohen's d = .45). Using this effect size and the sample size (n=40), the statistical power of the study was calculated as approximately 80% at the $\alpha = .05$ significance level.

The SBAR Handoff Form: The SBAR Handoff Form used in this study was drawn up by the researchers on the basis of the literature.[14,18-22] After creating the SBAR handover form used in our study, two academicians working in this field and a specialist nurse working in the intensive care unit were asked for their opinions. The final SBAR handoff form was devised according to the opinions of the specialists, who based their review on the specific needs of the pediatric intensive care unit.

The SBAR model facilitates handoffs and comprises 4 parts that have been named as a acronym guide.[23] The parts of the SBAR model are shown in the Table 1.

Table 1. SBAR Handoff Form

Situation	What is the current situation of the patient? (Patient's identity information, age, diagnosis, complaints/reason for admittance, chronic diseases, medications taken, allergic status, which side of the patient should not be used, stability status)
Background	The patient's clinical history and reason for admittance (patient's medical history, investigations carried out), chronic diseases, medications taken, whether there is a risk of self-harm, a need for physical or pharmaceutical restraint)
Assessment	Evaluation of patient's treatment plan and treatment response, patient's risk assessment After a general analysis of the patient and his/her situation, identifying any problem 1- Vital signs (treatments-medications, infusion doses and amounts) 2- Pain assessment 3- Functions assessment (patient under intubation/HFNC?* Oxygen mask? At room temperature? Can the patient use accessory respiratory muscles?) 4- Circulation assessment (peripheral refill, pulse, appearance of extremities) 5- Neurological assessment (pupils, orientation, convulsion) 6- Gastrointestinal System (feeding, Total Enteral or Total Parenteral Nutrition, last defecation time, diet information) 7- Urinary system (total intake/output, presence of Foley catheter and date of insertion) 8- Musculoskeletal system (positioning) 9- Catheters used and their care (Intravenous routes, peripheral insertion dates, Cantral Venous Catheter insertion date and last date of care) 10- Risk assessment (pressure injury risk, if there are wounds; ointments used and technique, recommendation of the wound care nurse, dressing status, fall risk assessment) 11- Laboratory results (blood gases, potassium, calcium, sodium, leukocytes, CRP, hemoglobin and monitoring of other vital findings) 12- Nursing diagnoses
Recommendations	What do I recommend? (This section includes the recommendation of the healthcare professional who is handing off the patient), which ends the questionnaire.

*HFNC: High flow nasal cannula References: [18-23]

The order of the basic components of the SBAR communication model is of vital importance and therefore necessitate a logical and productive rendering of information. This communication model requires that situation, background, assessments and recommendations are transferred to the receiver in order, otherwise it may be possible to skip over vital parts of important information.[24] The form we created for the nurses in the unit to use was set up systematically as recommended.

Variables and Measurement: The study data were collected in line with the literature in the form of pre- and posttests using a "Participant Descriptive Information Form" [14,19-21,25,26] drawn up by the researchers and the "Handover Evaluation Scale."[27]

To assess how the participants rated the quality of care, they were asked the following question in the participant Descriptive form: "How does the information conveyed to you about the patient during the patient handoff in the intensive care unit affect the quality of patient/nursing care?" The participants were asked to rate their response on a numerical scale of 0-10 on both the pre- and posttests. To the question, "How would you rate the importance of patient handoffs in terms of the quality of care you provide your patients?" the participants replied on both the pre- and posttests on a scale of 1=Not at all important, 2=Not important, 3=Important, and 4=Very important. Additionally, the participants were asked to reply to the following open-ended questions on the posttest alone: "Do you prefer handling patient handoffs using the SBAR handoff questionnaire rather than the method you used before and what are the difficulties you encounter when you use the SBAR handoff form? How does the SBAR handoff questionnaire contribute to your work?

The Participant Descriptive Information Form and the Handover Evaluation Scale were administered to the participants as a pretest prior to the training. Later, face-to-face training was initiated to provide information about the SBAR method of using the patient handoff model. The SBAR handoff form that was created was left at each patient's bedside and in the nursing station/nurses' desk as a guide to follow and after the training. The SBAR form was used for patient handoffs for three months throughout the period October 2022 - January 2023. The intensive care unit has 24 beds and changes of shift occur twice a day. Over the defined period, 4320 handoffs were made, with the nurses using the SBAR handoff form as a guide in their verbal change-of-shift handoffs. At the end of the training process, the Participant Descriptive Information Form and the Patient Handoff Evaluation Form carrying the collected data were administered to the participants once again.

Data Collection Tools:

Participant Information Form: The Participant Descriptive Information Form drawn up by the researchers based on the literature[14,19-21,25,26] comprises a total of 14 questions on the participants' age, gender, education, total period of working in the intensive care unit, as well as the nurses' thoughts about the process of patient handoffs.

Handover Evaluation Scale: This scale incorporates three subscales concerning the quality of information transferred at patient handoff (items 1, 2, 3, 4, 5 and 6), interactions/support between the healthcare professional handing off the patient and the professional receiving the patient (items 7, 8, 9, 10 and 11), and patient handoff efficiency (items 12, 13, 14). The 14-item scale is a seven-point Likert-type of scale (1=I definitely disagree, 2=I disagree, 3=I partially disagree, 4=I'm undecided, 5=I partially agree, 6=I agree, and 7=I definitely agree). Negatively stated items (items 5, 12 and 13) are reversely scored. With the completion of the scale, the minimum possible score is 14, the maximum is 98. As the score increases on the scale, the perception of the nurses about patient handoffs becomes more positive. The Cronbach alpha coefficient of the scale was 0.89. The Cronbach alpha coefficient was determined as 0.86 for the 'quality of knowledge' sub-dimension, 0.83 for the 'interaction and support' subdimension, and 0.81 for the 'efficiency' sub-dimension.[27]

Statistical Analysis: The data collected in the study were analyzed with the SPSS for Windows 25.0 (IBM SPSS Corp., Armonk, NY, USA) software. Descriptive statistics in the analysis were expressed in numbers (n), percentages (%), minimum-maximum, means, medians and standard deviation (SD). The mean pretest and posttest scores were compared with the t test. Two-way variance analysis was employed in the repeated

measures according to gender and education, and the Wilcoxon Signed Ranks Test was used for nonparametric values. Statistical significance in our study was accepted as *P*<.05.

Ethical Considerations: Written approvals for the conduct of the study were obtained from the Noninterventional Clinical Studies Ethics Committee of a university (Date: 24.02.2022, No:0035) and from the Pediatric Hospital (Date:17.08.2022, No: E-13399118-799) where the study was carried out. The intensive care nurses participating in the study provided their written informed consent after they were given details regarding the study. Additionally, permission for use of the Handover Evaluation Scale that we use to understand the perceptions of the nurses about the patient handover process was obtained via email (Date:25.10.2021).

RESULTS

The distribution of the nurses' descriptive characteristics can be seen in Table 2.

Table 2: Distribution of Descriptive Characteristics

Characteristics		n (%)	Mean ±SD	Min.-Max. (Median)
Age		40 (100)	28 ± 5.48	23-45
Gender	**Female**	29 (72.5)		
	Male	11 (27.5)		
Education	**Associate Degree**	2 (5)		
	Bachelor's Degree	31 (77.5)		
	Graduate degree	7 (17.5)		
Years spent in the profession			5.35± 5.21	1.5-25(3.25)
Years worked in intensive care			3.54±3.15	1-16(3.0)
Previous training on the SBAR handoff model	**Received**	22 (55)		
	Not received	18 (45)		
Patient handoff duration (min.)			5.85±3.84	2-20 (5.0)

Figure 1 displays the responses the intensive care nurses gave to the question, "How important do you think patient handoffs are in terms of the quality of care you provide to patients?" before and after using the SBAR handoff form. It was seen that there was a significant increase in the response "Very important" after the participants had used the SBAR handoff model (Figure 1).

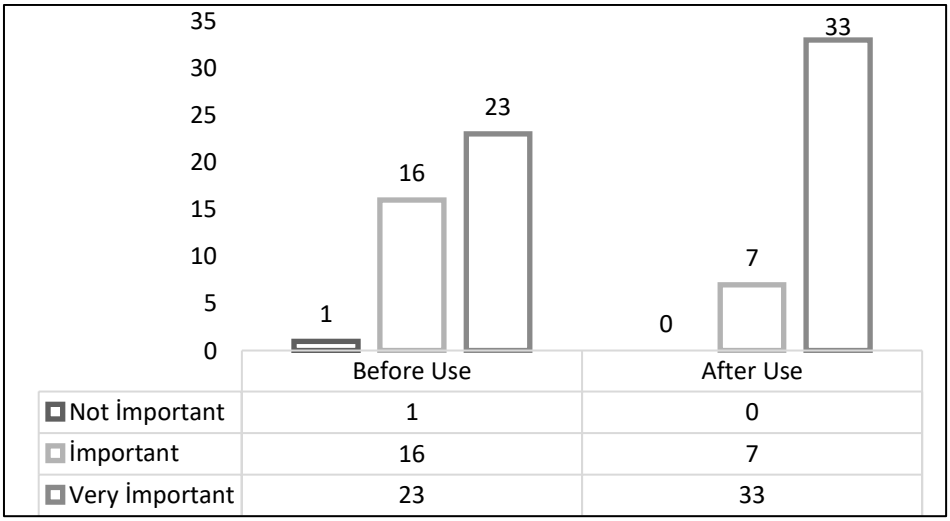

Figure 1. Nurses' Assessment of the Importance of Patient Handoffs in terms of Quality of Care Before and After the Implementation of the SBAR Model

It was observed that before the use of the SBAR handoff model, the intensive care nurses displayed a score of 8.47±1.43 in their assessment of the effect of the transmitted information on the quality of care. After the SBAR had been used, however, this score had increased to 8.92±1.26, which was a statistically significant rise (Table 3).

Table 3: Comparison of Mean Scores regarding the Effect of Transmitted Information on the Quality of Nursing Care before and after the use of the SBAR model

SBAR Handoff Model	Mean ±SD	Min - Max
Before Use	8.47±1.43	3.0-10.0
After Use	8.92 ±1.26	5.0-10.0
Test score*	-2.008	
p	.045	

***Wilcoxon Signed Ranks Test

The scores of the intensive care nurses on the patient handoff evaluation scale can be seen in Table 4. A statistically significant increase was seen in the nurses' mean scores on both the overall scale and the subscale of quality of information in the comparison of the scores before and after the use of the SBAR handoff form ($P<.05$) (Table 4).

On the posttest, the nurses were asked open-ended questions to learn of what they thought the use of the SBAR contributed to them on a personal basis in their handoffs. Almost all responded that *"information about the patient was being transmitted in a planned and systematic manner, in the right order, and without the omissions of any important data."* An additional 30% said *"We are able to receive the patient with effective recommendations that allow us to be more in control"* (not shown in the data table).

Table 4: Distribution and Comparison of Handover Evaluation Scale Mean Scores Before and After the Use of the SBAR Handoff Model

Handover Evaluation Scale	SBAR Handoff Model		*P**
	Before Use Mean±SD	After Use Mean±SD	
Quality of knowledge	33.02 ±4.45	35.62±3.78	**.000**
Interaction and support	24.02±5.40	25.67±4.79	.105
Efficiency	15.97±2.61	15.75±3.15	.644
Scale Total Score	73.02±9.15	77.05 ±8.98	**.015**

*Dependent Groups t-test

To the question on what difficulties they were encountering when using the SBAR handoff form, 48% of the intensive care nurses said they had no difficulties and 52% said the "*handoff took too long"* (not shown in the data table). While the handoff procedure took 5 minutes without the SBAR handoff model, the procedure spread out over 15 minutes using it.

The nurses were asked to indicate on the posttest if they wished to continue using the SBAR handoff form. The participants' responses to this question can be seen in Figure 2.

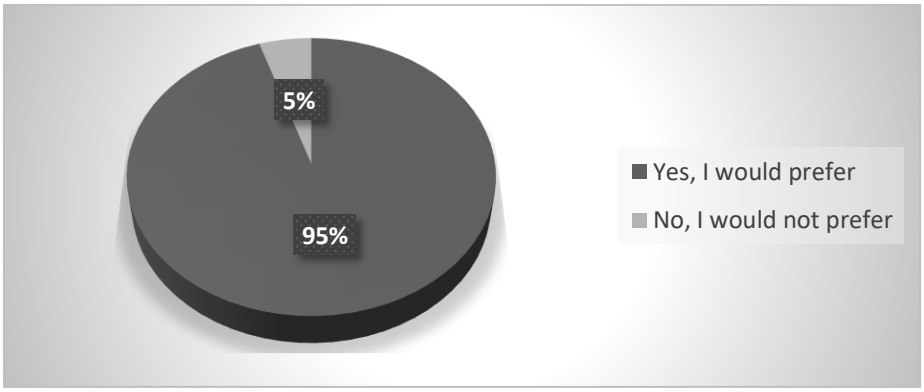

Figure 2. Desire to Use the SBAR Handoff Form

DISCUSSION

One of the most basic responsibilities of nurses, who play a prominent role in ensuring patient safety in the rendering of healthcare services, is to effectively carry out the task of patient handoffs. Patient handoffs are dynamic events that involve the effective and efficient transmission of accurate information from one health professional to another.[27] That this transmission of information is comprehensive and comprehensible is of vital importance in terms of achieving patient safety.[28] The most commonly employed professional communication framework used in the process of patient handoffs in the SBAR technique.[29] In this study, we aimed to assess how nurses perceived of the use of the SBAR handoff model in their changes of shift.

Our study showed that prior to the use of the SBAR handoff model, the nurses were assigning at least a score of 3 to the effect of the information transmitted at change-of-shift on the quality of patient care. We observed that after using the SBAR handoff model, however, this score rose to 5, which was statistically significant ($P<.05$). In another study, it was reported that about one-fourth (27.5%) of nurses stated that the SBAR handoff model served as a good reminder of the patient's situation so that continuity of patient care was achieved.[30] It was

reported in still another study that after using the SBAR communication model at their changes-of-shift, nurses noted that the key points of patient care were rapidly covered and the planning of care was facilitated, thereby achieving a higher quality of care and an improvement in individualized nursing practices.[31] One other study revealed that nurses who used the SBAR model were able to improve their critical thinking skills and regarded the model an effective tool in the treatment and care of acute and urgent cases.[32] The results of our study point to an increase in the quality of information transmitted during patient handoffs, which was reflected, as in other studies, in the positive impact of the model of nursing care.

Our study evaluated the patient handoff evaluation scores of nurses working in intensive care before and after their use of the SBAR handoff model. While before implementing the SBAR handoff model, the nurses' scores on the subscale of "quality of information transmitted" was 33.02±4.45, after using the model, this score rose to 35.62±3.78, which was noted as a statistically significant increase (P<.05). It was found in a study conducted in Korea that after implementing the SBAR handoff model, nurses' scores on the communication indicators regarding the accuracy, comprehensibility and quality of information transmitted displayed improvements in terms of these factors.[33,34] It was proved in a retrospective cohort study that the application of the SBAR method reduced the amount of insufficient information transmitted in changes of shift and improved the quality of patient care.[35] Another study indicated that when the SBAR technique was used to achieve an error-free and authentic handoff, the productivity of the procedure was enhanced.[31] In our study, the results of the pre- and posttest showed that the nurses' total mean score on the patient handoff evaluation scale was 73.02±9.15 but 77.05±8.98 after the implementation of the model. This positive change was statistically significant (P<.05). The high scores on the posttest suggests that using the SBAR handoff form made handoffs more reliable and increased awareness about the importance of securing patient safety in patient handoffs. It was reported in a systematic review that the use of the SBAR model at changes of shift raises the quality of care, reduces the incidence of events that would threaten patient safety, thus preventing the occurrence of unwanted events.[32] In another study, it was observed that with the application of an electronic SBAR handoff form in the pediatric intensive care unit, records were kept more thoroughly and that this led to better communication between nurses and between doctors and nurses.[36] It was reported in still another study conducted in the OB/GYN department that the nurses were first asked to carry out their handoffs without filling out the SBAR handoff form. The authors found that after the SBAR technique had been implemented, teamwork among nurses improved, the quality of working conditions increased, and a much safety working environment was achieved.[37] A prospective study was conducted in Sweden in an anesthesia department that indicated that when the SBAR handoff model was implemented, the percentage of notifications regarding communication-related events dropped from 31% to 11%. It was also noted that there were improvements in the communication between the professionals in the department who made use of the SBAR handoff model as well as in their perceptions of the safety of the environment.[38] A recent study showed that by using the SBAR technique for handoffs there was an increase in communication between nurses, who displayed an expanded level of knowledge and application skills and more positive perceptions of the procedure. It was thus reported that the SBAR technique should be used in all of the units of a hospital.[39] Consistent with the literature, our study also observed that nurses were able to systematically, comprehensively, and accurately transfer information to each other using the SBAR handover model and had more control over their patients, suggesting that this result is reflected in the quality of care they provide. Additionally, their perceptions of the process of patient handoffs showed a positive change. Based on these findings, we can say that handling handoffs with the SBAR handoff model improves patient safety.

According to our study findings, the duration of patient handoffs was extended when using the SBAR handoff form. While the handoff of a critically ill patient took longer, the handoff of a stable patient was shorter, with the overall process averaging 15 minutes. As the nurses were highly familiar with patients who had been hospitalized in this unit for several weeks, nurses focused on reporting only the changes in the patients' conditions during handoffs, resulting in a more efficient and faster handoff process for these patients. In another study conducted in our country, the nurses' handoff duration was found to be highest, ranging between 21 and 25 minutes.[40] A study emphasized that sufficient time should be allocated to ensure the complete transfer of all critical information for intensive care patients; however, no standard time frame has been established for an

ideal handoff duration. In this context, the most appropriate handoff duration can be defined as the time required to transfer the most important information completely in the shortest possible time.[41]

Limitations

The study's findings were limited to the results of the data collected from the nurses working in the pediatric intensive care unit of a pediatric hospital. The nurses used the SBAR handoff model at their changes of shift as guidelines in their verbal interaction and did not fill out the forms. Another limitation of the study is that the data is based on the nurses' self-reported and that there was no randomization.

CONCLUSION and RECOMMENDATIONS

The results of this study indicated that the use of the SBAR [Situation, Background, Assessment, Recommendation) handover model by nurses working in pediatric intensive care unit positively changes their perceptions of the handover process and improves the quality of information provided. Based on this finding, it can be said that the information given during handovers positively affects the quality of patient care. Therefore this information had a positive effect on both patient safety and on the quality of patient care, making it possible to achieve more effective, precise and safe handoffs.

It may be recommended that using a standard form of the SBAR handoff model, adapted to particular needs, at patient handoffs in all hospital units should be made a priority to foster the development of a culture of patient handoffs that will ensure patient safety. This would require that health services lead nurses through an orientation and in-house training program, encouraging them to make use of a standard patient handoff model. Furthermore, there is a need for randomized controlled trials on conducting patient handoffs with the SBAR handoff model.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of İzmir Katip Çelebi University Clinical Research Ethics Committee (Date: 24.02.2022, Number: 0035).

Informed Consent: Written informed consent was obtained from participants who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – BC, BG; Design – BC, BG; Data Collection – BG; Data Analysis – BC, BG; Data Interpretation – BC, BG; Writing the article – BC, BG; Critical revision for important intellectual content – BC; Final approval – BC

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