



Evaluation of emergency service nurses' patient handover and affecting factors: A descriptive study

Serap Gungor^{a,*}, Sumeyye Akcoban^b, Betül Tosun^c

^a Kahramanmaraş Sutcu Imam University, Vocational School of Health Services, Kahramanmaraş, Turkey

^b Mustafa Kemal University, Kirikhan Vocational School, Health Services Department Hatay, Turkey

^c Hasan Kalyoncu University, Faculty of Health Sciences, Gaziantep, Turkey

ARTICLE INFO

Keywords:

Emergency nursing
Nursing
Patient handover
Patient safety

ABSTRACT

Aim: The aim of the study was to determine the patient handover efficacy level of emergency room nurses and the influencing factors.

Method: This descriptive, cross-sectional study was completed with (n = 120) emergency room nurses of two different state hospitals from April 26 to May 26, 2021. The “Nurses descriptive information form” and “Handover Evaluation Scale” were used as data collection forms.

Results: The mean age of the nurses was 29.53(6.327 years, 70.8% of them were female, and 76.7% of them had a bachelor's degree. The mean number of handovers was 3.25 (SD = 3.17) for one nurse in a shift, and the mean handover duration for a patient was 10.16 (SD = 9.23) minutes. More than half of the nurses (61.7%) carried out oral handover at the bedside. The mean score of the handover evaluation scale was 53.31 (SD = 9.55). The mean score of the nurses who performed the handover with all the nurses on the shift (spelling and relieving) together was 56.47 (SD = 9.21) and higher than that of the nurses who performed the handover in small groups 49.84 (SD = 9.70), (p = 0.012).

Conclusion: The results of this study may contribute to promoting patient safety and improving patient handover processes in emergency rooms. It is recommended that standardized and comprehensive written handover forms be used, that all emergency room nurses should attend the handover process, and that further observational and interventional studies should be conducted.

1. Introduction

Patient handover is described as the complete transfer of information and responsibility of a patient from one health professional to another without any deficiency. However, the handover process not only entails the transfer of patient information but also enables defining explicit problems, sharing information and promoting emotional support to patients and relatives [1–3]. Information sharing is a crucial interaction process that sometimes involves interaction among colleagues from the same medical profession and sometimes involves contributions from other medical professionals and even patient relatives. An effective shift handover among nurses who interact with patients and relatives for 24 h facilitates the continuity of care and promotes patient safety in emergency rooms where critical patients are treated and patient circulation flows quickly in a complex environment [4–6]. However, during the handover process of patients among nurses in emergency rooms, there

may be some deficiencies for various reasons. Patients in critical condition who have minimal physiological well-being require on-time acute care [7,8], and handover in an emergency situation may be the only chance for nurses to transfer patient information in a limited time [9]. Due to all these factors, handover in emergency situations causes alarming concern in terms of patient safety not only for researchers, but also for emergency room health care workers and national and international organizations [10]. Additionally, it has been stated that communication is one of the basic components of safe patient care during the transfer of patient information from one nurse to another [3]. According to the report of The Joint Commission International, most communication errors occur during the patient handover process [5]. The issue of handover in nursing has recently been emphasized by defining handover as a research priority for patient safety [11]. An approach/model including communication techniques is recommended for an active and effective patient handover. One of these models is

* Corresponding author at: Kahramanmaraş Sutcu Imam University, Vocational School of Health Services, Kahramanmaraş, Turkey.

E-mail address: serap_32_06@hotmail.com (S. Gungor).

<https://doi.org/10.1016/j.ienj.2022.101154>

Received 7 September 2021; Received in revised form 20 January 2022; Accepted 31 January 2022

Available online 14 February 2022

1755-599X/© 2022 Elsevier Ltd. All rights reserved.

SBAR, which stands for “situation, background, assessment, and recommendation” [12]. SBAR is a proven tool that strengthens communication among health care professionals by enabling the discussion of changes in the patient [13].

In emergency rooms, handover takes place in many situations, such as shift changes, unit transfers, tests and procedures, and among internal or external units [8,14]. It is important for the patient’s handover to be carried out at their bedside in the form of both a written and an oral report. The nurses should deliver all the information about the patients simultaneously to their colleagues who will take over the task, both in written and oral reports. Nurses should accurately convey patient records, patients’ health status, future plans for the patient, and even risks during shift changes or patient transfers. Appropriate and complete patient handovers will prevent patient safety and team communication problems among nurses [15,16]. Just as the use of written forms, especially in patient handover, ensures that the transferred information is permanent, the written form also serves as a legal document for nurses. In addition, these forms prevent changes in patient health status from being overlooked and make the nursing care process more effective and of a higher quality [2,15].

2. Background

It has been seen in previous studies that emergency room nurses prevented communication problems, medical mistakes and data loss by careful handover [6,7,17]. In addition, it was found that careful and accurate handover increased the quality of the information conveyed and the reliability of the treatment [8]. The most important point in the patient handover process is that accurate, complete and understandable information is given by the right people at the right time [9]. During patient handover, emergency nurses should report the patient’s name and surname, the name and surname of the doctor carrying out admission, application complaints, planned treatments, tests performed, tests ongoing and to be performed, patient’s diagnosis, vital signs, patient’s allergies, intravenous fluid therapies, level of consciousness, and invasive procedures in the oral and written reports [9]. Tortosa-Altet et al. (2021) reported that emergency care nurses generally tended to perform the handover orally instead of through a written handover report due to the chaotic and critical environment of the emergency room, and, consequently, this may lead to suspicions regarding patient safety [10]. Moreover, studies on enhancing handover processes in emergency rooms recommend that trainings should be provided for promoting nurses’ awareness of effective handover processes and structured, comprehensive and easy-to-apply handover forms that are quickly completed [18,19].

The literature has shown that environmental factors, such as noise, crowding, workload, multitasking in emergency room units, increase the probability of making mistakes in patient handover by nurses [6,20]. Therefore, the bedside is indicated as the place where handover should occur in emergency rooms. Evidence shows that bedside handover improves patient safety, quality of care, and continuity of nursing care as patient proximity is maintained. However, in practice, the most popular places for handover were corridor and computer stations [3,10,21].

Studies on the handover process carried out by nurses are limited, and it has been determined that nurses working in a dynamic environment, such as the emergency room, are not sufficiently focused on the handover processes. The aim of this study was to determine the patient handover processes carried out by emergency room nurses and the factors that influence these processes.

3. Method

3.1. Design

This study was conducted with a descriptive cross-sectional study design.

3.2. Setting

This study was completed with (n = 120) emergency room nurses from two different state hospitals from April 26 to May 26, 2021. In this study, the following questions were determined as research questions:

- What is the patient handover efficiency level of emergency room nurses?
- Is there a difference between patient handover efficiency levels according to the descriptive characteristics of emergency room nurses?
- What is the effect of the professional qualifications of emergency room nurses on the efficiency levels of patient handover?

3.3. The study sample

The study population consisted of all emergency room nurses who worked at two different state hospitals (n = 130). The literature was used to determine the sample size [22]. The sample size was calculated using G*Power, Version 3.1.9.7, and the study by Tuna and Dalli (2018) was taken as a reference. It was predicted that the difference between the two means could be compared with the *t* test, the effect value was calculated as 0.45 with 80% (1- β) power at the 95% confidence interval, and the sample size was calculated as 122 participants. The power of the research was calculated after the study was completed. Considering the difference between the mean scores of the 4 groups of nurses who conducted handovers, patients were evaluated with the one-way ANOVA test, the effect size was found to be 0.309, and the power of the study was 82% (1- β) with 120 participants at the 95% confidence interval.

3.4. Data collection

The data collection forms were prepared electronically, a link was sent to the nurses between April 26 and May 26, 2021, and the purpose of the research was explained. The online data collection form, which was created in Google Forms, was sent to the emergency room nurses via the supervisor nurses of the emergency rooms. The nurses who volunteered to participate in the research read the consent form that was presented at the beginning of the form, ticked the option that they accepted and were willing to participate in the study, and answered the research questions without any time limitations.

3.5. Data collection tools

The data collection form consisted of two parts. The first part was the Nurses’ Descriptive Information Form, and the second part was the Handover Evaluation Scale.

3.6. Nurses’ descriptive information form

This form included the nurse’s age, gender, educational level, working time in the emergency department, number of patients they were caring for during the shift, types and times of handover, forms used during the handover, conditions affecting the handover, and suggestions [2,3,22].

3.7. Handover evaluation scale

The first form of the scale developed by consisted of 4 subdimensions [23]. The first 3 subdimensions were “quality of information” (7 items, internal consistency coefficient 0.80), “interaction and support” (5 items, internal consistency coefficient 0.86) and “efficiency” (3 items, internal consistency coefficient 0.67). A fourth subscale, patient involvement (3 items, internal consistency coefficient 0.69), was removed from the scale. However the patient involvement construct had a low loading of 0,12 onto the higher order perceptions of handover

construct which in turn explained only 1% of its variance. Therefore patient involvement subscale was considered a poor representation of the construct of interest and was excluded from the model. [22,23]. The scale was a 7-point Likert scale, with 7 points for “strongly agree” and 1 point for “strongly disagree”. An increase in the mean of total points for the item Shift Handover Efficiency indicated that there was an increase in the nurse’s handover efficiency [20]. The adaptation of the scale to Turkish was carried out by Tuna and Dalli (2019), and the internal consistency coefficient of the scale total was determined to be 0.92. As a result of the adaptation study, the scale consisted of only two sub-dimensions and 10 item propositions, namely, “Quality of Information” (7 item propositions, internal consistency coefficient 0.90) and “Interaction and support” (3 item statements, internal consistency coefficient 0.82). The total possible score within the scale ranged between 10 and 70. A score between 10 and 23 indicated a low-level handover, a score between 24 and 47 indicated mid-level handover efficiency, and a score between 48 and 70 indicated high-level handover efficiency [22]. For this study, the internal consistency coefficient of the scale total was 0.87, the internal consistency coefficient for “Quality of Information” was 0.87, and the internal consistency coefficient of “Interaction and Support” was 0.70 (Table 3).

4. Statistical analyses

The data were assessed using the IBM SPSS (Statistical Package for Social Sciences) software for Windows, version 22.0. For analysis of the descriptive data in the investigation, the number, percentiles, mean (standard deviation), and minimum and maximum values were used. The normality of the data was calculated with the skewness and kurtosis values using the Shapiro-Wilk test. Student’s *t* test and one-way ANOVA were used for comparison of the scale means in the independent groups. To determine which group caused the difference, Bonferroni correction was carried out. $p < 0.05$ was accepted as the statistical significance level in all statistics.

Ethical considerations of the study

Ethics committee approval was obtained (Date: 19 April 2021, No:2021/047) from the noninterventional research ethics committee of a university’s department of health sciences and written institutional permission was obtained from the hospitals where the research was conducted. The Principles of the Helsinki Declaration were applied during the implementation process. Approval of the participating nurses was obtained by explaining the purpose of the research and offering the option of choosing “I agree to participate in the study” at the beginning of the electronic questionnaire. Before starting the research, permission was obtained from the authors, who conducted a validation study of the Handover Evaluation Scale in Turkish via e-mail.

5. Results

The mean age of the nurses was 29.53 (6.327) years, 70.8% were female, and 76.7% had a bachelor’s degree. The duration of working in the nursing profession was 88.10 (SD = 72.83) months, and the duration of working in the emergency department was 44.40 (SD = 37.67) months. The mean number of patients whom the nurses provided care for in 24 h was 153.381 (SD = 155.71), and the mean number of handovers was 3.25 (SD = 3.17). The nurses stated that the mean handover duration for a patient was 10.16 (SD = 9.23) minutes (Table 1).

More than half of the nurses (61.7%) carried out the patient handover via oral report at the bedside, 46.7% of them used the patient observation form (nursing records) for the handover, and 39.2% of them wanted to use a new handover form to be developed for the emergency room unit. For the item that addresses the attendees of the handover, 38.3% of the nurses responded that there were only two nurses – the one who cared for the patient and the one who would provide care (Table 1).

When the nurses handed over a patient, 90.2% of them conveyed the patients’ diagnosis, 90.0% of them conveyed the present and planned

Table 1
Descriptive characteristics of nurses (n = 120).

| Characteristics | Mean | (SD) | (min-max) |
|--|--------|--------|-----------|
| Mean age (years) | 29.53 | 6.32 | (22-47) |
| Time working in the nursing profession (months) | 88.10 | 72.83 | (4-338) |
| Time working in the emergency department (months) | 44.40 | 37.67 | (4-180) |
| Mean number of patients under a nurses’ care in 24 hours | 153.38 | 155.71 | (2-800) |
| Mean number of handovers for one nurse in a shift | 3.25 | 3.17 | (1-25) |
| Mean duration of a handover of one patient (minutes) | 10.16 | 9.23 | (1-40) |
| | N | % | |
| Gender | | | |
| Female | 85 | 70.8 | |
| Male | 35 | 29.2 | |
| Educational status | | | |
| High school | 9 | 7.5 | |
| Associate degree | 12 | 10.0 | |
| Bachelor’s degree | 92 | 76.7 | |
| Postgraduate | 7 | 5.8 | |
| Method of patient handover (receiving) | | | |
| Oral report at the bedside | 74 | 61.7 | |
| Written report at the bedside | 26 | 21.7 | |
| Oral report in nurses’ room/bench | 13 | 10.8 | |
| Written report in nurses’ room/bench | 4 | 3.3 | |
| Written and oral report at the bedside | 1 | 0.8 | |
| Written and oral report in nurses’ room/bench | 2 | 1.7 | |
| Method of patient handover (spelling) | | | |
| Oral report at the bedside | 74 | 61.7 | |
| Written report at the bedside | 31 | 25.8 | |
| Oral report in nurses’ room/bench | 8 | 6.7 | |
| Written report in nurses’ room/bench | 2 | 1.7 | |
| Written and oral report at the bedside | 2 | 1.7 | |
| Written and oral report in nurses’ room/bench | 3 | 2.5 | |
| Patient handover form used | | | |
| Handover forms recommended by the Ministry of Health | 25 | 20.8 | |
| Handover form developed by hospital management for the emergency room | 9 | 7.5 | |
| No form/oral report only | 24 | 20.0 | |
| With patient records on the computer | 1 | 0.8 | |
| Patient observation form (nursing records) | 56 | 46.7 | |
| With inpatient list | 2 | 1.7 | |
| Blank paper with some notes | 3 | 2.5 | |
| Requested form for patient handover | | | |
| Handover forms recommended by the Ministry of Health | 35 | 29.2 | |
| Handover form developed by hospital management for the emergency room | 47 | 39.2 | |
| No form/oral report only | 6 | 5.0 | |
| With patient records on the computer | 8 | 6.7 | |
| Patient observation form | 24 | 20.0 | |
| Nurses participating in the handover | | | |
| All nurses on the shift (spelling and relieving) in the emergency rooms | 38 | 31.7 | |
| One-on-one between the nurse who cared for a patient and the nurse who will provide care | 46 | 38.3 | |
| Small handover nursing groups (spelling and relieving) | 17 | 14.2 | |
| Handover with the emergency room supervisor nurse | 19 | 15.8 | |

treatments and diagnostic tests, 87.5% of them conveyed the patients’ complaints and vital signs upon admission, 81.7% of them conveyed the indications for intravenous fluid therapy, 79.2% of them conveyed the category of triage, 75.0% of them conveyed the situations requiring isolation if any, and 72.5% of them conveyed the allergies and invasive procedures. Nurses reported the leading barriers to an effective handover, such as workload (86.7%), duties outside of the nursing practice (62.5%), number of patient admissions (52.5%) and noise (44.2%) (Table 2).

The mean score of the quality of information subdimension of the handover evaluation scale of the room was 38.32 (SD = 6.85), the mean score of the interaction and support subdimension was 14.99 (SD =

Table 2
Information conveyed by nurses regarding patient handover and barrier factors.

| Characteristics | N | % |
|--|-----|------|
| Information transferred during handover * | | |
| Name and surname of the patient and the attending medical doctor | 71 | 59.2 |
| Patients' complaints upon admission | 105 | 87.5 |
| Present and planned treatments and diagnostic tests | 108 | 90.0 |
| Patients' diagnosis | 111 | 92.5 |
| Vital signs | 105 | 87.5 |
| Patients' Allergies | 87 | 72.5 |
| Intravenous fluid therapy | 98 | 81.7 |
| Level of consciousness | 83 | 69.2 |
| Invasive procedures | 87 | 72.5 |
| Critical laboratory/radiology or diagnostic results | 73 | 60.8 |
| Category of triage (urgency level) | 95 | 79.2 |
| Nurse suggestions and notes | 75 | 62.5 |
| Situations requiring isolation, if any | 90 | 75.0 |
| Risk of falling | 70 | 58.3 |
| Barrier Factors for patient handover * | | |
| Workload | 104 | 86.7 |
| Noise | 53 | 44.2 |
| Lack of information about the patient | 45 | 37.5 |
| Duties outside of the nursing practice | 75 | 62.5 |
| Number of patients admitted | 63 | 52.5 |
| Communication problems among nurses | 49 | 40.8 |
| Limited time | 51 | 42.5 |
| Misrepresentation of information | 28 | 23.3 |

*Multiply options could be chosen.

3.81), and the total mean score of the scale of handover evaluation was 53.31(SD = 9.557) (Table 3).

When the total mean score of the nurses' handover evaluation scale was compared according to their personal and professional characteristics, there was no significant difference in terms of gender ($p = 0.214$), educational status ($p = 0.388$), method of patient handover (receiving the handoff) ($p = 0.518$), method of patient handover (spelling the handoff) ($p = 0.690$), or patient handover form used ($p = 0.822$). It was determined that the mean score 56.47(SD = 9.21) of the nurses who performed the handover together with all the nurses in the shift was higher than that of the nurses who performed the one-on-one handover between two nurses 49.84 (9.70), ($p = 0.012$) In addition, the mean score of the interaction and support subdimension of the nurses who performed the handover together with all the nurses in the shift 16.13 (SD = 4.14) was higher than that of the nurses who performed the one-on-one handover between two nurses 13.54 (SD = 3.44), ($f = 3.967$, $p = 0.010$) (Table 4).

6. Discussion

This study was completed with the participation of $n = 120$ emergency room nurses, and the factors affecting the handover processes were assessed. It was determined that the majority of nurses working in emergency rooms are young and female. Emergency units are intense areas in terms of number of patients, and the concept of time is important for responding to critically ill patients [24,25]. Dynamic nurses are preferred in these units in many hospitals.

In our study, it was determined that emergency room nurses handed

Table 3
Descriptive measures of the Handover Evaluation Scale

| | α | Mean | SD | Minimum | Maximum |
|--------------------------------|----------|-------|------|---------|---------|
| Handover Evaluation Scale | 0.875 | 53.31 | 9.55 | 20 | 70 |
| Quality of information (1-7) | 0.875 | 38.32 | 6.85 | 12 | 49 |
| Interaction and support (8-10) | 0.708 | 14.99 | 3.81 | 6 | 21 |

α : Cronbach's alpha

over and delivered their patients orally and at the bedside. O'Connor et al. (2020) found that emergency room nurses mostly made oral handovers at the bedside in their observational study [26]. Kiekkas et al. (2020) found in their study that nurses mainly used oral reports while performing the handover [27]. Considering that oral handover does not legally protect nurses and patient safety, it is suggested that emergency nurses have an aspect that needs to be developed in this regard.

In this study, most of the nurses used the patient observation form (nursing records) as the patient handover form, and they stated that they wanted to use a form specially developed for the emergency room and emergency nurses as the patient handover form. In the literature, it is reported that nurses in emergency rooms see filling out an additional form as a waste of time and keeping a comprehensive written report as a challenge [10,19,28]. These results showed that the forms used by emergency room nurses for effective and adequate handover are not at the desired level. Therefore, a form that emergency room nurses can use easily in patient handover can be an important step in a quality handover. In this study, the nurses reported transferring information on patients' admission complaints, present and planned treatments and diagnostic tests, patients' diagnosis, and vital signs during handover. Bakon et al. (2017) found that nurses conveyed the patient's diagnosis and treatments to be performed at a high rate during the patient handover [18]. Cross et al. (2019) found in their study with emergency room nurses that they delivered patients' diagnoses and treatment- and allergy-related information at a higher rate [29]. Conveying patients' diagnosis in the first place is an expected result in patient handover. It is noteworthy that the conveying of patient allergy-related information among nurses was rated low in this study. The presence of allergies in patients is an important finding that can affect the health status and treatment of a patient, and it is important for nurses to especially emphasize the presence of allergies during patient handover.

The emergency room unit nurses stated that workload, duties outside of the nursing practice and number of patient admissions and noise were barriers to effective handover. Factors such as the workload of nurses, the high number of patients and the shortage of nurses are problems that are generally present in many hospitals and units. However, the fact that nurses in the emergency room perform duties other than nursing, which prevents patient handover, may cause different problems in providing emergency care to a patient [20,30-33].

In this study, the mean scores of nurses on the handover evaluation scale and subdimension were slightly higher than those of mild nurses. In one study on nurses' handover, it was found that the efficiency level of nurses' handover was high; it was also found that with adequate information and effective handover, medical errors were reduced and patient safety was increased [34]. In other studies conducted in a similar way, it was found that high-level and effective handover reduced communication problems and prevented undesirable events in terms of patient safety [35,36]. One of the most important ways to ensure patient safety is to carry out the correct handover of patients during changes in shifts. What will ensure this is carrying out handovers with correct information [37] In this study, that emergency room nurses had high mean handover scores was a positive result in terms of patient safety, especially in the "quality of information" subdimension. However, since this study was not an observational study, sufficient information could not be obtained about the impact of this level of knowledge on the clinical environment.

In this study, it was found that when all spelling and relieving nurses in the emergency room shift participated in the patient handover, the efficiency of the shift handover, interaction and support subscale mean scores were significantly higher than those when nurses more commonly participated in one-on-one handovers. Thomson et al. (2018) reported in their study on emergency room nurses that all emergency room nurses should have adequate knowledge and act jointly in patient handovers [38]. In another qualitative study conducted with nurses, only the nurses who would be providing care to the patient participated in the patient handover, but it was stated that this might have negative

Table 4
Handover Evaluation Scale and subscale scores according to several descriptive characteristics (N = 120)

| Characteristics | N | Total handover evaluation scale | | | Quality of information subscale | | | Interaction and support subscale | | |
|---|----|---------------------------------|---------|------------------|---------------------------------|---------|---------------|----------------------------------|--------|------------------|
| | | Mean | (SD) | Testp | Mean | (SD) | Testp | Mean | (SD) | testp |
| Gender | | | | | | | | | | |
| Female | 85 | 52.70 | (10.37) | t = 0.007p = | 37.69 | (7.27) | t = -1.559p = | 15.01 | (3.97) | t = 0.090p = |
| Male | 35 | 54.77 | (7.13) | 0.214 | 39.82 | (5.53) | = 0.122 | 14.94 | (3.45) | 0.929 |
| Educational status | | | | | | | | | | |
| High school | 9 | 51.33 | (9.30) | f = 1.393p = | 37.55 | (6.08) | f = 1.046p = | 13.77 | (4.11) | f = 0.682p = |
| Associate degree | 12 | 57.75 | (6.67) | 0.248 | 41.33 | (5.03) | 0.387 | 16.41 | (2.57) | 0.606 |
| Bachelor's degree | 92 | 53.21 | (9.83) | | 38.25 | (7.11) | | 14.96 | (3.90) | |
| Postgraduate | 7 | 49.42 | (9.18) | | 35.00 | (6.68) | | 14.42 | (4.32) | |
| Method of patient handover (receiving) | | | | | | | | | | |
| Oral report at the bedside | 74 | 53.35 | (9.86) | f = 0.848p = | 38.51 | (6.99) | f = 0.753p = | 14.83 | (3.99) | f = 1.628p = |
| Written report at the bedside | 31 | 52.90 | (9.53) | 0.518 | 38.25 | (7.11) | 0.586 | 14.64 | (3.48) | 0.158 |
| Oral report in nurses' room/bench | 8 | 51.75 | (8.53) | | 36.25 | (5.75) | | 15.50 | (2.92) | |
| Written report in nurses' room/bench | 2 | 64.00 | (1.41) | | 45.50 | (4.94) | | 18.50 | (3.53) | |
| Written and oral report at the bedside | 2 | 47.00 | (9.89) | | 34.00 | (7.07) | | 13.00 | (2.82) | |
| Written and oral report in nurses' room/bench | 3 | 57.66 | (4.50) | | 37.66 | (3.05) | | 20.00 | (1.73) | |
| Method of patient handover (spelling) | | | | | | | | | | |
| Oral report at the bedside | 74 | 53.95 | (9.02) | f = 0.613p = | 38.97 | (6.44) | f = 1.068p = | 14.98 | (3.75) | f = 0.594p = |
| Written report at the bedside | 26 | 53.34 | (10.11) | 0.690 | 38.69 | (7.50) | 0.382 | 14.65 | (3.78) | 0.705 |
| Oral report in nurses' room/bench | 13 | 49.30 | (10.59) | | 34.38 | (6.56) | | 14.92 | (4.32) | |
| Written report in nurses' room/bench | 4 | 51.75 | (15.12) | | 36.50 | (11.15) | | 15.25 | (4.92) | |
| Written and oral report at the bedside | 1 | 54.00 | (-) | | 39.00 | (-) | | 15.00 | (-) | |
| Written and oral report in nurses' room/bench | 2 | 57.50 | (6.36) | | 38.00 | (4.24) | | 19.50 | (2.12) | |
| Patient handover form used | | | | | | | | | | |
| Handover forms recommended by the Ministry of Health | 25 | 52.20 | (8.74) | f = 0.480p = | 37.00 | (5.88) | f = 0.668p = | 15.20 | (3.67) | f = 0.460p = |
| Handover form developed by hospital management for the emergency room | 9 | 54.88 | (14.24) | 0.822 | 40.44 | (9.87) | 0.676 | 14.44 | (5.79) | 0.836 |
| No form/oral report only | 24 | 53.37 | (10.53) | | 38.58 | (7.46) | | 14.79 | (4.23) | |
| With patient records on the computer | 1 | 46.00 | (-) | | 32.00 | (-) | | 14.00 | (-) | |
| Patient observation form | 56 | 53.17 | (9.04) | | 38.32 | (6.61) | | 14.85 | (3.47) | |
| With inpatient list | 2 | 56.00 | (2.82) | | 38.00 | (1.41) | | 18.00 | (4.24) | |
| Blank paper with some notes | 3 | 60.33 | (6.42) | | 43.00 | (7.21) | | 17.33 | (1.15) | |
| Requested form for patient handover | | | | | | | | | | |
| Handover forms recommended by the Ministry of Health | 35 | 52.57 | (10.17) | f = 0.262p = | 37.65 | (7.23) | f = 0.170p = | 14.91 | (3.97) | f = 0.941p = |
| Handover form developed by hospital management for the emergency room | 47 | 52.97 | (10.52) | 0.933 | 38.55 | (7.47) | 0.973 | 14.42 | (4.10) | 0.458 |
| No form/oral report only | 6 | 54.33 | (8.06) | | 38.33 | (6.91) | | 16.00 | (3.84) | |
| With patient records on the computer | 8 | 52.25 | (6.56) | | 38.12 | (5.13) | | 14.12 | (2.47) | |
| Patient observation form | 24 | 55.11 | (8.26) | | 38.87 | (5.94) | | 16.24 | (3.25) | |
| Nurses participating in the handover | | | | | | | | | | |
| All nurses on shift (spelling and relieving) in the emergency rooms ^a | 38 | 56.47 | (9.21) | f = 3.804p = | 40.34 | (6.48) | f = 2.572p = | 16.13 | (4.14) | f = 3.967p = |
| One-on-one between the nurse who cared for the patient and the nurse who will provide care ^b | 46 | 49.84 | (9.70) | 0.012*(a > b) ** | 36.30 | (7.28) | 0.058 | 13.54 | (3.44) | 0.010*(a > b) ** |
| Small handover nursing groups (spelling and relieving) ^c | 17 | 54.41 | (8.17) | | 38.70 | (6.02) | | 15.70 | (3.29) | |
| Handover with emergency room supervisor nurse ^d | 19 | 54.36 | (8.92) | | 38.78 | (6.34) | | 15.57 | (3.53) | |

t = Student's t test; f = One-way ANOVA test, *Statistical significance at $p < 0.05$, **The differences between groups expressed by the letters are statistically significant at $p < 0.05$ after Bonferroni correction

consequences [21]. In other research, the importance of the participation of all nurses in the handover has been emphasized [19,39,40]. The lack of stable patients in the emergency rooms, the constant change in patient population, and the participation of nurses who only care for a patient in patient handover contradicts the functioning of the current unit.

7. Limitations

This study was conducted with emergency room nurses from only two different hospitals located in the same city of the country. The obtained findings, which were based on the nurses' statements and did not involve an observational study, are limitations of the study.

8. Conclusions

According to the findings obtained from this study, emergency room nurses perform a high level of effective handovers. However, there were

some deficiencies of emergency room nurses during the patient handover process. Nurses generally perform oral handovers at the bedside, and most of them do not use a standardized written handover form. Handovers were more effective when all the spelling and relieving nurses were in attendance. It is suggested that using a written, detailed, easy-to-fill and standardized form, as well as ensuring the attendance of all spelling and relieving nurses in the handover, would promote patient safety and contribute to an effective handover in emergency rooms. In future studies, observational studies in which the patient handover processes of emergency room nurses are observed and intervention studies that will improve nurses' handover processes are recommended.

Ethical Approval

The study was approved by the Hasan Kalyoncu University, Scientific Research Ethical Board in the Faculty of Health Sciences (Date: 19 April 2021, No:2021/047). The aim of the study and filling procedures of the form were given on the top of the form that was delivered online. There

was an option at the beginning of the data collection form that the participants had to fill to agree that they understood and volunteered to participate.

Source of Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Author contributions

Serap Gungor: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Resources; Supervision; Writing - original draft; Writing - review & editing. **Sumeyye Akcoban:** Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Resources; Supervision; Writing - original draft; Writing - review & editing. **Betul Tosun:** Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Resources; Supervision; Writing - original draft; Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- Stimpson M, Carlin K, Ridling D. Implementation of the m-ISHAPED tool for nursing interdepartmental handoffs. *J Nurs Care Qual* 2020;35:329–35. <https://doi.org/10.1097/NCQ.0000000000000451>.
- Tugrul E, Sahbaz M. Nurses' practice and opinions about nursing handover. *J Adnan Menderes Univ Heal Sci Fac* 2021;5:13–25. <https://doi.org/10.46237/amusbfd.717408>.
- Tuna R, Dallı B. The Turkish version of the handover evaluation scale: A validity and reliability study. *Int J Nurs Pract* 2019;25(6):e12787. <https://doi.org/10.1111/ijn.12787>.
- Forde M, Coffey A, Hegarty J. Bedside handover at the change of nursing shift: A mixed-methods study. *J Clin Nurs* 2020;29:3731–42. <https://doi.org/10.1111/JOCN.15403>.
- "Patient Safety Systems" (PS) Chapter. *Jt Comm n.d.* <https://www.jointcommission.org/standards/patient-safety-systems-ps-chapter/>.
- Campbell D, Dontje K. Implementing bedside handoff in the emergency department: A practice improvement project. *J Emerg Nurs* 2019;45(2):149–54. <https://doi.org/10.1016/j.jen.2018.09.007>.
- Rut A, Laowo T, Pakpahan M, Octaria M. The Correlation Between Attitude And Motivation With The implementation of SBAR communication technique done by emergency room nurses while doing patient handover in a private hospital in west region of Indonesia. *Nurs Curr J Keperawatan* 2019;6:38–46.
- Sanjuan-Quiles A, del Pilar Hernández-Ramón M, Juliá-Sanchis R, García-Aracil N, Castejón-de la Encina E, Perpiñá-Galvañ J. Handover of patients from prehospital emergency services to emergency departments. *J Nurs Care Qual* 2019;34(2):169–74. <https://doi.org/10.1097/NCQ.0000000000000351>.
- Taskiran N, Sari D. An important problem for patient safety: Nursing handover. *J Educ Res Nurs* 2017;14:93–7. <https://doi.org/10.5222/HEAD.2017.093>.
- Tortosa-Altred R, Reverte-Villarroya S, Martínez-Segura E, López-Pablo C, Berenguer-Poblet M. Emergency handover of critical patients. A systematic review. *Int Emerg Nurs* 2021;56:100997. <https://doi.org/10.1016/j.ienj.2021.100997>.
- Hada A, Jack L, Coyer F. Using a knowledge translation framework to identify barriers and supports to effective nursing handover: A focus group study. *Heliyon* 2019;5(6):e01960. <https://doi.org/10.1016/j.heliyon.2019.e01960>.
- Sert H, İlhan P, Okcu P. Examination of bedside patient handovers of nurses working in adult intensive care units: is a standardized form required? Nurses' opinions. *J Crit Care Nurs* 2019;23:160–7.
- Leonard C, Zomorodi M. Bringing the R back to SBAR: a focused heart failure SBAR tool. *Home Heal Care Manag Pract* 2019;31(3):179–85. <https://doi.org/10.1177/1084822319841572>.
- Patton LJ, Tidwell JD, Falder-Saeed KL, Young VB, Lewis BD, Binder JF. Ensuring safe transfer of pediatric patients: A quality improvement project to standardize handoff communication. *J Pediatr Nurs* 2017;34:44–52. <https://doi.org/10.1016/J.PEDN.2017.01.004>.
- Dewi NA, Yetti K, Nuraini T. Nurses' critical thinking and clinical decision-making abilities are correlated with the quality of nursing handover. *Enfermería Clínica* 2021;31:S271–5. <https://doi.org/10.1016/j.enfcli.2020.09.014>.
- Farhan M, Brown R, Woloshynowych M, Vincent C. The ABC of handover: A qualitative study to develop a new tool for handover in the emergency department. *Emerg Med J* 2012;29(12):941–6. <https://doi.org/10.1136/emered-2011-200199>.
- Müller M, Jürgens J, Redaelli M, Klingberg K, Hautz WE, Stock S. Impact of the communication and patient hand-off tool SBAR on patient safety: a systematic review. *BMJ Open* 2018;8(8):e022202.
- Bakon S, Millichamp T. Optimising the emergency to ward handover process: A mixed methods study. *Australas Emerg Nurs J* 2017;20(4):147–52. <https://doi.org/10.1016/j.aenj.2017.10.001>.
- Haryono MH, Nursalam N, Hasinudin M. Developing SBAR effective communication instrument in emergency handover at emergency department of hajj hospital in Surabaya return migration of Indonesian nurses view project. *Artic Indian J Public Heal Res Dev* 2019;10(10):688. <https://doi.org/10.5958/0976-5506.2019.02893.6>.
- Venkatesh AK, Curley D, Chang Y, Liu SW. Communication of vital signs at emergency department handoff: opportunities for improvement. *Ann Emerg Med* 2015;66(2):125–30.
- Johnson M, Cowin LS. Nurses discuss bedside handover and using written handover sheets. *J Nurs Manag* 2013;21:121–9. <https://doi.org/10.1111/J.1365-2834.2012.01438.X>.
- Tuna R, Dallı B. Nurses' handover effectiveness and related variables. *Acibadem Univ Heal Sci J* 2018;9:432–7. <https://doi.org/10.31067/0.2018.65>.
- O'Connell B, Ockerby C, Hawkins M. Construct validity and reliability of the Handover Evaluation Scale. *J Clin Nurs* 2014;23(3–4):560–70. <https://doi.org/10.1111/jocn.12189>.
- Suleiman K, Hijazi Z, Al Kalaldehy M, Abu Sharour L. Quality of nursing work life and related factors among emergency nurses in Jordan. *J Occup Health* 2019;61(5):398–406. <https://doi.org/10.1002/joh2.v61.510.1002/1348-9585.12068>.
- Silva M, Marcolan J. Working conditions and depression in hospital emergency service nurses. *Rev Bras Enferm* 2020;73:e20180952. <https://doi.org/10.1590/0034-7167-2018-0952>.
- O'Connor DT, Rawson H, Redley B. Nurse-to-nurse communication about multidisciplinary care delivered in the emergency department: An observational study of nurse-to-nurse handover to transfer patient care to general medical wards. *Australas Emerg Care* 2020;23(1):37–46. <https://doi.org/10.1016/j.auec.2019.12.004>.
- Kiekkas P, Michalopoulos E. Patient Handover in the PACU: When Less Can Be More. *J Peri Anesthesia Nurs* 2020;35(3):343–4. <https://doi.org/10.1016/j.jopan.2020.01.009>.
- Klim S, Kelly AM, Kerr D, Wood S, McCann T. Developing a framework for nursing handover in the emergency department: an individualised and systematic approach. *J Clin Nurs* 2013;22(15–16):2233–43. <https://doi.org/10.1111/jocn.12274>.
- Cross R, Considine J, Currey J. Nursing handover of vital signs at the transition of care from the emergency department to the inpatient ward: An integrative review. *J Clin Nurs* 2019;28(5–6):1010–21. <https://doi.org/10.1111/jocn.2019.28.issue-5pt6.10.1111/jocn.14679>.
- Raeisi A, Rarani M, Soltani F. Challenges of patient handover process in healthcare services: A systematic review. *J Educ Health Promot* 2019;8. https://doi.org/10.4103/JEHP.JEHP_460_18.
- Redley B, Botti M, Wood B, Bucknall T. Interprofessional communication supporting clinical handover in emergency departments: An observational study. *Australas Emerg Nurs J* 2017;20(3):122–30. <https://doi.org/10.1016/j.aenj.2017.05.003>.
- Tobiano G, Ting C, Ryan C, Jenkinson K, Scott L, Marshall AP. Front-line nurses' perceptions of intra-hospital handover. *J Clin Nurs* 2020;29(13–14):2231–8. <https://doi.org/10.1111/jocn.v29.13-14.1111/jocn.15214>.
- Bergs J, Lambrechts F, Mulleneers I, Lenaerts K, Hauquier C, Proesmans G, et al. A tailored intervention to improving the quality of intrahospital nursing handover. *Int Emerg Nurs* 2018;36:7–15. <https://doi.org/10.1016/j.ienj.2017.07.005>.
- Uhm JY, Lim EY, Hyeong J. The impact of a standardized inter-department handover on nurses' perceptions and performance in Republic of Korea. *J Nurs Manag* 2018;26(8):933–44. <https://doi.org/10.1111/jonm.2018.26.issue-8.10.1111/jonm.12608>.
- Jane B, Norton C, Smyth N, Ward H, Sophie D. Nurse handover: patient and staff experiences. *British J Nurs* 2016;25:386–93. <https://doi.org/10.12968/BJON.2016.25.7.386>.
- Johnson M, Sanchez P, Zheng C. The impact of an integrated nursing handover system on nurses' satisfaction and work practices. *J Clin Nurs* 2016;25(1–2):257–68. <https://doi.org/10.1111/jocn.13080>.
- Shahian DM, McEachern K, Rossi L, Chisari RG, Mort E. Large-scale implementation of the I-PASS handover system at an academic medical centre. *BMJ Qual Saf* 2017;26(9):760–70. <https://doi.org/10.1136/bmjqs-2016-006195>.
- Thomson H, Tourangeau A, Jeffs L, Puts M. Factors affecting quality of nurse shift handover in the emergency department. *J Adv Nurs* 2018;74(4):876–86. <https://doi.org/10.1111/jan.2018.74.issue-4.10.1111/jan.13499>.
- Merten H, Van Galen LS, Wagner C. Safe handover. *BMJ* 2017;359. <https://doi.org/10.1136/BMJ.J4328>.
- Alberta David N, Idang Neji O, Jane E. Nurse handover and its implication on nursing care in the University of Calabar Teaching Hospital, Calabar, Nigeria. *Int J Nurs Care* 2018;2(3):1–9.