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# MEDICATION ADMINISTRATION ERROR REPORTING RATE AND PERCEIVED BARRIERS AMONG NURSES IN TURKEY

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**ABSTRACT**

This study was planned to determine the barriers perceived by nurses in medication administration error (MAE) reporting. The data of this descriptive and cross-sectional study were collected between January and April 2017. The universe of the study consisted of nurses working in two hospitals in Turkey (N=547). The sample of the study consisted of nurses who met the inclusion criteria of the study and agreed to participate in the study (n=253). The overall response rate is 64%. 90.5% of nurses are women. The mean age of the nurses was 33.5 years. Their mean nursing experience was 10.4 years (SD 8.43 years). Of the study population, only 32% experienced a medication administration error during their working lives and who had a medication error experience, 23.5% reported their error. The most common perceived barriers among nurses are "heavy workload" (81.4%), "fear of being accused by supervisor" (80.6%) and "management believes that medication administration error is caused by individual factors rather than system factors" (80.2%). It was observed that the nurses made a medication administration error, but the majority were not reported.

## Introduction

Drug therapy is one of the most common applications used in the field of health care and has an important role in the responsibilities of the nurse (1,2). The term "Medication Administration Errors (MAEs)" refers to medication errors (MEs) that occur during medication administration (3). Medication administration errors are among the main causes of injury to hospitalised individuals (4). The nurse should be aware of the legal responsibilities that may be encountered during the preparation and administration of the medicines, the safety precautions for the medicines and the pharmacological properties of the medicines (5). Medication failures (prescribing, recording, preparation and administration errors) endanger patient safety, significantly affect health expenses and morbidity and mortality rates of patients (6). Therefore, MAEs are an important problem for patient safety (7,8).

Reporting of MAEs is very important in managing current errors and preventing future errors (9). Research results show that approximately one third of unwanted medication events are preventable errors (10). Underreporting of MAEs is caused by individual and organizational factors such as retaliation, negative attitude towards MAEs and complexity of the reporting system (11). These factors are considered as a barrier that prevents the willingness of nurses to report MAEs (12). Reported barriers are affected by the nursing work environment, including the staff, peer relations and quality management initiatives (11,13). In

addition, cultural features such as organizational hierarchy have also been suggested as factors that affect error reporting behaviours (14).

In 2016, the Security Reporting System was established by the Ministry of Health in order to standardise the reporting of MAE in our country to establish a common vision and to conduct report analysis in a more systematic manner. However, only 3.58% of the 312,778 error reports that were reported throughout the country in 2017 are MEs (15). As seen, in our country, reporting of MAE rate is very low. Due to the insufficient reporting culture in our country, there is no reliable data about the rates of ME. In the literature, it is reported that health workers do not report MAEs for reasons such as fear of punishment, being unaware of error, not seeing enough errors to report MAEs, not knowing how to report errors, seeing reports as a burden of record, being accused when they report MAEs and being afraid of being excluded (16,17). In addition, taking the perceived barriers of MAE reporting by nurses into consideration is a crucial step in increasing medication safety (18).

Analysis of MEs allows the system to improve errors and reduce risk in cases where errors are used to detect, report and design better patient care practices and systems. The emergence of MEs is first determined by means of voluntary reporting systems. Voluntary MAE reporting systems are perceiving errors as part of routine applications. Because of the central role played by nurses in medication administration, it is important to understand nurses' perceptions about MAE reporting process (19).

It is thought that this study may be useful and contribute to the literature because the number of studies related to the reporting cases of nurses in our country and the perceived barriers to reporting is extremely limited.

## Materials and Methods

### Aim

The aim of the study is to describe MAE, the rates of nurses' reporting MAEs and perceptions of the barriers to error reporting in two Turkish hospitals embracing a collective total of 2228 beds.

### Study Design

A descriptive and cross-sectional design was used in this study. The two hospitals consisted of 2228 beds: 1672 beds in a university hospital and 556 beds in a public hospital.

### Participants

Nurses were recruited from the medical, surgical, women's health, paediatric and emergency services of two hospitals in Turkey. These hospitals have been chosen in the study to represent various public and university hospitals in Turkey. The exclusion criterion was to be nurse with less than 6-month experience (*n*=57) because they were considered less experienced in this topic. Five hundred forty seven eligible nurses were enrolled in this study. 95 nurses declined to participate, 101 nurses filled in missing form and we were not able to reach 98 nurses (because they were on leave or off duty). Overall, the response rate of the study was 64% of the target sample (n=253).

### Instrument

Data were collected by using introduction form including the questions such as age, area of practice and years of experience in nursing and clinical specialty, nurses' experience with MAE and reporting and a structured questionnaire developed by the researchers. The initial step in forming the questionnaire was to constitute an item pool according to literature reviews and expert opinions. A total of 23 items consisted of fears of the nurses regarding the reporting of MAE (10 questions), the nurses' opinions related to reporting process (8 questions) and the nurses' opinions related to administrative concerns (5 questions). Item responses are measured using "yes/no" answers in Parts 1, 2, and 3.

To test the content validity of the questionnaire, the questionnaire's clarity and relevance to the topic were evaluated by five academics and five nurses who were experts in their fields. Each expert rated the content of the form using a 3-point Likert scale (3: appropriate, 2: I have no idea, 1: inappropriate). At the end of the assessment, six items whose content validity index value was lower than 0.62 were removed from the scale and the questionnaire included 17 items. To determine the internal consistency of the questionnaire, reliability analysis was conducted. Kuder- Richardson KR-21 coefficients were 0.72 for part 1, 0.76 for part 2 and 0.82 for part 3.

**Data collection**

Two hospitals were visited before the data collection in order to notify the nursing staff, especially the nursing managers, concerning the study. Nurse managers encouraged the nursing staff to respond to the survey. After informed consents were taken from the nurses, questionnaire forms were hand-dispensed to them. The questionnaire was strictly confidential and anonymous. The data were obtained from the nurses through sealed envelope.

The study was approved from the Research Ethics Committee of Ege University Faculty of Nursing (permission number 2016-128) and the hospitals that participated in the study.

**Data analyses**

The data were analysed with Statistical Package for the Social Sciences (SPSS Version 22.0 for windows: Inc., Chicago, IL, USA). Statistical advice was taken from a statistician to analyse the data. Kuder-Richardson coefficient was used to estimate internal consistency of the study form. Descriptive statistics were used to describe the sample and each item.

**Results**

As shown in Table 1, 90.5% of the nurses are women (n=229). The sample consisted of 253 nurses. The mean age of the nurses was 33.5 years, with a standard deviation (SD) of 7.6 years. Their mean nursing experience was 10.4 years (SD 8.43 years). Two thirds of the nurses (66.4%) have a bachelor's degree. When we look at the distribution of the nurses according to the units at which they work, 31.6% of the nurses were in internal services, 29.6% in surgical services and 16.2% in the emergency department. When the ratio of the positions of the nurses in the units was examined, it was determined that 73.1% were departmental nurses, 14.6% were intensive care nurses and 11.5% were chief nurses (Table 1). The weekly working hours of all nurses are 40 + (0-16) hours and the number of patients per nurse is 8 + (0-2)

**Table 1.** Sociodemographic Characteristics of Nurses

| Items | n (%) |
|---|---|
| **Institution** | |
| University Hospital | 144 (56.9) |
| Public Hospital | 109 (43.1) |
| **Gender** | |
| Female | 229 (90.5) |
| Male | 24 (9.5) |
| **Education** | |
| Vocational High School of Health | 19 (7.5) |
| Associate Degree | 26 (10.3) |
| Undergraduate Completion | 7 (2.8) |
| Undergraduate Degree | 168 (66.4) |
| Master's Degree | 28 (11.1) |
| Doctoral Degree | 5 (2) |
| **The Unit Where Nurses Work** | |
| Internal Service | 80 (31,6) |
| Surgery Service | 75 (29,6) |
| Emergency Service | 41 (16,2) |
| Paediatrics | 15 (5,9) |
| Gynaecology | 11 (4,3) |
| Operating Theatre | 2 (0,8) |
| Other | 29 (11,5) |
| **Job Position** | |
| Departmental Nurse | 187 (73.9) |
| Intensive Care Nurse | 37 (14.6) |
| Chief Nurse | 29 (11.5) |

**Table 2.** Nurses' Cases of Medication Application Errors, Witnessing of Medication Application Errors and Reporting of Medication Application Errors

| Items | Yes | No |
|---|---|---|
| | n (%) | n (%) |
| Making medication application errors during his/her career | 81 (32) | 172 (68) |
| Reporting of medication application errors | 19 (23.5) | 62 (76.5) |
| Witnessing of medication application errors during his/her career | 158 (62.5) | 95 (37.5) |
| Reporting of witnessed medication application errors | 33 (20.9) | 125 (79.1) |

patients in day shifts in services and 16 + (0-2) patients in night shifts, and 4 + (0-2) patients in intensive care units.

Of the study population, only 32% experienced a MAE during their working lives. Of the nurses who had a MAE experience, 23.5% reported their error. Table 2 provides perceived barriers to the reporting of MAEs among nurses. The most common perceived barriers among nurses are "heavy workload" (81.4%), "fear of being accused by a supervisor" (80.6%), "management believes that MAE is caused by individual factors rather than system factors" (80.2%), "negative feedback from management" (76.3%), "losing patients' trust" (75.1%), "physician's negative attitude" (72.7%), "not causing harm to the patient" (63.6%) and "lack of clear definition of MAE" (56.1%) (Table 3).

**Table 3.** Barriers Perceived by Nurses Regarding Reporting of Medication Application Errors: Fears, Reporting Process and Administrative Concerns

| Category<br>Fears | Yes<br>n (%) | No<br>n<br>(%) |
|---|---|---|
| 1. Accusation as a result of a medication error | 204 (80.6) | 49 (19.4) |
| 2. Losing patients' trust | 190 (75.1) | 63 (24.9) |
| 3. Physician's negative attitude | 184 (72.7) | 69 (27.3) |
| 4. Fear of punishment | 180 (71.1) | 73 (28.9) |
| 5. Other employees hear that they have made a medication application error | 170 (67.2) | 83 (32.8) |
| 6. Other employees see themselves as inadequate | 157 (62.1) | 96 (37.9) |
| 7. Being unaware of a medication administration error | 148 (58.5) | 105 (41.5) |
| 8. Discrimination by other employees | 145 (57.3) | 108 (42.7) |
| **Reporting Process** | | |
| 9. Heavy workload | 206 (81.4) | 47 (18.6) |
| 10. Not causing harm to the patient | 161 (63.6) | 92 (36.4) |
| 11. Lack of clear definition of medication administration errors | 142 (56.1) | 111 (43.9) |
| 12. Believing there will be no change even if the error is reported | 142 (56.1) | 111 (43.9) |
| 13. Error reporting forms take time | 136 (53.8) | 117 (46.2) |
| 14. Not thinking the medication administration error is so important to be reported | 122 (48.2) | 131 (51.8) |
| **Administrative Concerns** | | |
| 15. Management believes that medication administration error is caused by individual factors rather than system factors | 203 (80.2) | 50 (19.8) |
| 16. Negative feedback of management | 193 (76.39 | 60 (23.7) |
| 17. Even if the medication administration error does not have very serious consequences, the response of the management is too heavy. | 181 (71.59 | 72 (28.5) |

**Discussion**

In this study, the rate of reporting MAEs among nurses was found to be 23.5%, which is quite low compared to the results of Jordan 42.1 (20), Taiwan 67.8% (21), Australia 41.9% (22) and Ethiopia 57.4% (18). This difference might stem from both the absence of a formal error reporting system and the reporting culture in Turkey. However, it has been found that the studies by Bifftu et al. (2016), Kim et al. (2011) and Al Youssif et al. (2013) have low reporting rates (23-25). In addition, nurses may not report errors when patients are often unharmed or not potentially vulnerable. Medication administration errors are among the most common medical errors that cause worldwide morbidity and mortality (26). Therefore, in order to increase nurses' reporting rates, a reliable environment and an ideal reporting system should be established to report errors without fear of punishment.

In this study, although the reporting rate is relatively low among nurses, the rate of nurses with MAEs is 32%. Correlatively, in two observational studies, rates of MAEs in the acute care setting were found as 14.9% and 32.4% in France and Switzerland, successively (27). The rates of MAEs of the nurses in different studies were discrepant: 10% in Koohestani and Baghcheghi (2009), 19.5% in Jolayi et al. (2009), 42.1% in Mrayyan et al. (2007), 43% in Lisby et al. (2005), 67% in Stratton et al. (2004) (20,28-31). These inconsistencies in MAE rates may also result from the lack of a reporting system, diversified definitions and varied methods used, as well as places of studies. However, our results indicated a gap between the actual MAE rate and the reporting rate among nurses. This finding of the current study is coherent with that of Jolayi et al. (2009) who found that the average MAE rate of nurses was 19.5% and the reporting rate was as low as 1.3% (29). The level of development and culture of countries can partially account for this inconsistency. A lower drug error rate is a desirable outcome for all health institutions, which is also an important indicator of patient safety to minimise the gap between errors and reporting rates (26).

A heavy workload was regarded as the most substantial obstacle (81.4%) in the reporting process among nurses in our sample. Likewise, this factor is among the most common causes of failing to report MAEs in other studies (32-34). In many health care organisations, patient care was done with a restricted number of nurses in Turkey. In this case, the lack of time may be a reflection of unreported errors, and in the literature, raising the number of staff and simplification of the reporting process are two proposed solutions to overcome the time constraint problem (35).

In this study, the second most important factor in reporting MAEs among nurses was "fear of being accused by supervisors" (80.6%). In a similar manner, as to Jung et al. (2013), this factor is the second obstacle among nurses (36). The negative attitude of managers was determined as a common obstacle in not reporting MAEs in other studies (37,38). This result emphasises the need for managers to be trained in encouraging nurses to report errors and to appreciate the value of reporting errors in the development of effective preventive strategies (37). The use of reporting methods that will eliminate the fear factor in the employees, ensure that employees can feel safe when they report, and the use of reporting methods to protect the person who is reporting will benefit the strengthening of the system (39). Another salient obstacle was the "fear of losing patients' trust". Welsh et al. (2017) noted that concerns about losing patients' trust and loss of support and respect from their colleagues could prohibit disclosure in the event of errors in care (40). Current findings appear coherent with other studies (1,21).

In this study, most of the nurses (80.2%) reported that managers believed that a MAE was caused by individual factors rather than a system as an administrative obstacle, which has echoed in many other studies (41,28). However, according to Reason (2000), about 90% of the errors are in fact innocent

(42). Stratton et al. (2004) stated that all errors tend to recur, and that in the event of an error, when the focus is individual errors, it is insufficient to avoid the system approach in understanding the causes and corrective actions, which is why nursing managers should adopt a system approach that transforms threats to opportunities to learn from mistakes (31). Evidence has indicated that an anonymous, unreliable critical error reporting system can act as a powerful tool to identify most MAEs and risk factors and might help to avoid preventable errors (43).

Our study is subject to various limitations. Firstly, our study is based on the results of a survey. We could not perform a retrospective study because there were no effective reporting systems in the study hospitals. Secondly, the study sample is taken from two university hospitals, which limits generalisation. Another limitation of the study may be that nurses did not overtly express their views for fear of losing their jobs or being punished.

## Conclusion

The study showed that one third of the nurses admitted making MAEs during their working life, but only a minority reported them. The results obtained from these data suggest that the low reporting rates of nurses for MAEs may be due to the lack of formal reporting system and safety culture. Improving MAE reporting is mandatory to ensure that nurses document all errors and possible errors as adverse events. In addition, strategies and protocols are needed to eliminate MAEs. The results of the study show that the most common obstacles to reporting drug errors are the heavy workload, fear of being accused by the management, fear of losing patients' trust, and connecting the errors to the individual factors rather than organisational factors. Therefore, creating an environment that eliminates the fear factor, managers' supportive approaches and anonymous error reporting system will lead to an improvement in medical error reporting rates. A positive organisational security culture can also promote error reporting by nurses and thus improve patient safety.

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