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A Threat To Patient Safety: Medication Errors, Reporting Of Medication Errors And The Concerns With Regard To Nurses

Dilek Sakallı[1], Özlem Canbolat[2]

[1] Harran University, Faculty of Health Sciences, Sanliurfa, Türkiye

[2] Gazi University, Faculty of Nursing, Ankara, Turkey

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Abstract

The World Health Organization reports that approximately ten million people become permanently disabled or die each year due to medical errors. For this reason, WHO calls for a worldwide research on patient safety. Medication errors are among the most common incidents encountered in hospitals and pose a threat to patient safety. Nurses assume significant roles in preventing or reducing the errors experienced as they are the people who most frequently come into contact with the patients. Focusing on the underlying causes of medication errors, raising awareness about incident reporting and developing solutions for the root causes of errors are the main factors in ensuring patient safety. This review focuses on identifying the medication errors encountered in health care institutions, ensuring learning from mistakes by duly reporting incidents and thus improving patient safety.

Dilek Sakallı; **(Corresponding author);** ORCID: 0000-0002-9034-2244, e-mail: dileksakalli@harran.edu.tr
Özlem Canbolat; ORCID: 0000-0002-4222-4577, e-mail: ozlemcanbolat06@gmail.com

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1. Introduction

Patient safety is defined as the precautionary measures and improvement efforts that can be taken to minimize all foreseeable hazards that may concern all relevant stakeholders during the provision of health care services (Sağlıkta Kalite Standartları Hastane, 2020).

Main purpose in patient safety is to prevent errors that may happen during the provision of health care services, to protect stakeholders from damages that may occur due to such errors and to ensure the establishment of a system that will eliminate the probability of such errors (Güneş & Güneş, 2018). 72nd World Health Assembly declared World Patient Safety Day in 2019 in order to raise awareness about patient safety, to ensure solidarity and to encourage action on this issue. Attention has been drawn to the significance of patient safety within the context of countries' progress towards universal health coverage and that patient safety should be a global health priority (Ghebreyesus, 2019; Ahsani-Estahbanati et al., 2022).

The Institute of Medicine has reported that medical errors and patient safety are major concerns within the scope of the provision of health care services. In collaboration with International Accreditation Organization, Turkish Republic Ministry of Health has set targets concerning patient safety and has been making improvements in this regard. These improvements, aiming to ensure patient safety, impose certain responsibilities on the management, nurses, physicians, other health care personnel, patients and patient relatives (Güneş & Güneş, 2018).

Medical errors pose a danger to patient safety and are classified as diagnostic errors, treatment errors and system errors. Medication errors, particularly considered as preventable, are classified among the most common medical errors. In 2017, World Health Organization launched a global initiative aiming to reduce medication errors by 50% within five years (Bonner, 2017). This review aimed to provide information about medication errors that pose a threat to patient safety, the concerns of medication errors with regard to nurses, reporting of medication errors, nursing dimension of reporting medication errors and strategies towards nurses to reduce medication errors.

2. Medication Errors within Medical Errors

The Institute of Medicine defined medical error as the failure to implement a planned intervention as intended or to resort to the wrong plan to achieve the goal (Donaldson et al., 2000). Medical errors reduce the quality, thus increase the cost of the health care system. Medical errors are most frequently observed in the intensive care units, emergency services and operating rooms of the hospitals. Prescription of improper medication, incorrect blood transfusion, surgical errors, inadequate or inappropriate treatment and medication applications, incorrect patient identification, misdiagnoses and patient's fall are the most common medical errors (Carver et al., 2021).

Any preventable acts that result in the patient's disability or death due to administration of improper medication during the treatment are defined as medication errors. Failure of one of the ten rights of drug administration, namely right patient, right drug, right dose, right route, right time and frequency, right training, right response, right history and assessment, right documentation and the right to refuse, leads to medication errors (Bennett, 2017).

Drug administration errors are the most common cause of injuries and damages encountered in the health care system and refer to approximately 10% of the preventable damage to inpatients (Altowairq et al., 2023). WHO categorizes medication errors among the most common medical errors and as one of the undesirable incidents most frequently reported to the Joint Commission in 2018 (World Health Organization, 2012; Aslan, 2020). WHO reported that the annual cost of drug administration errors in the world is about 42 billion US dollars as of 2017 and this data corresponds to about 0.7% of the overall cost of health care. About 800.000 drug-related and preventable injury cases are estimated to occur every year in the United States alone (Petrova et al., 2010).

Medication errors are further classified in the literature as follows beginning with the prescription and covering the process of distribution, preparation, administration and follow-up (Yöntem, 2016). (Table 1)

3. Medication Errors and Nursing

Nurses are the first people in health care system to monitor the safety and dosage of prescribed medications. The responsibility of the nurses with regard to the medication errors is stated in the Turkish Nursing Regulation No. 27515 in force as “Nurses fulfill the medical demands prescribed by the physician, to be administered to the patient when necessary, in line with the health care, diagnosis and treatment protocols determined according to scientific principles” (Hemşirelik Yönetmeliği, 2010). A study argues that 38% of the source of medication errors is related to nursing practices (Al-Worafi, 2020). Medication errors due to nursing practices manifest as drug administration without a physician's prescription, miscalculation of the drug dose, ignoring the information available on the drugs, incorrect administration of drugs as a result of similar appearance and drug name and forgetting to administer the drug (Aygin & Cengiz, 2011). A systematic review investigation of nurse-induced drug administration errors performed within the scope of nursing practice reported that most frequently encountered medication errors are due to wrong dose which is followed by skipping the administration of medication dose (Kırşan et al., 2019).

Factors such as nurses’ health status, education, fatigue, inadequate communication, transfer of care responsibility, excessive workload and complexity of the work flow are reported to increase the occurrence of medication errors (Khan & Tidman, 2022). Fathallah Mostafa et al. (2023) reported excessive workload (93.33%) as the leading cause affecting the nurses to make mistakes in drug administration. This was followed by the neglect of the staff (91.6%) and the lowest cause was reported as not recognizing the drug (40%) (Fathallah Mostafa et al., 2023).

4. Incident Reporting in Medication Errors

Incident reports ensure realistic assessment of the causes leading to the negative situation along with the prevention or minimization of the negative consequences thereof (Melo Garcia et al., 2022). Effective use of incident reporting system is the way to learn from mistakes (Gong, 2011). Incident reporting is very significant in improving health care and ensuring patient safety (Hamed & Konstantinidis, 2022). Regulations with regard to the establishment of negative incident reporting systems in hospitals, reporting incidents, the analysis of the incident by the Quality Department in collaboration with the

committees, initiating corrective actions and remedial acts and evaluating their results have been implemented in our country within the framework of the Ministry of Health Quality Standards. Medication errors is also categorized in these standards among the incidents to be reported (Ekici, 2013; Sağlıkta Kalite Standartları Hastane, 2020).

Pursuant to the Health Safety Reporting System in our country, medication errors are ranked the third place among the most common medical errors (Bişkin & Cebeci, 2017). A total of 101.841 errors were reported in 2017 and 5.092 errors, i.e. 4.99%, were related to medication errors (Güvenlik Raporlama Sistemi 2017 Türkiye İstatistikleri, 2018). Considering the ratio of reported incidents to actual medication errors; a review published in UK revealed, in conflict with national error reporting data that, there are higher numbers of medication errors and that reported incidents constitute only 5% to 15% of actual events and higher numbers of errors are detected within the scope of studies conducted through direct observation (Sutherland et al., 2020). Similar to these findings, Karagözoğlu et al. (2019) found in their study that nurses are more likely to encounter medication errors compared to incident reports and that the number of reported incidents remain low although nurses have a positive opinion about reporting medication errors (Karagözoğlu et al., 2019). For the purpose of a review study examining the barriers to reporting medication errors, it was determined that there are institutional barriers such as inadequate in-house reporting systems, management's attitude towards errors, vague definitions with regard to medication errors and personal barriers such as fear and lack of information about errors (Afaya et al., 2021). Nurses were determined to avoid reporting medication errors due to not actively using error reporting systems, the duration of the reporting procedure, the risk of damaging the reputation of the reporting institution or persons and fear of being punished (İntepeler & Dursun, 2012).

5. The Event Notifications of Medication Errors with regard to Nurses

The International Council of Nurses reported that nurses also have responsibilities concerning patient safety and medical errors including reporting the incidents to the relevant authorities, assessing the quality of care provided to patients and determining the standards to minimize errors (Güneş & Güneş, 2018). In addition to the responsibility of reporting the incidents, nurses are expected to make significant contributions to the improvement of health care by getting involved in the quality circle within which the causes of certain incidents are analyzed. Particularly head nurses are expected to analyze the results of the quality indicators and receive the necessary support from their subordinates (Bıyık & Türe, 2020).

Article 9, paragraph 2, subparagraph b of the Turkish Nursing Regulation No. 27515 in force stipulates that "Nurses commissioned pursuant to the nursing services organization are responsible for working in accordance with the legislation and professional principles and for the effective and efficient provision of nursing services. Nurses are further required to take preventive measures for undesirable events and erroneous nursing practices and to ensure that negative incidents are duly recorded and reported", thus the head nurse (health care services manager etc.) is responsible for safe medication practices and incident reporting. Article 10., paragraph 3, subparagraph b of the same Regulation stipulates that

the chief nurse is responsible for ensuring the safe administration of drugs to patients by saying "Nurses ensure the proper application of the patients' treatment plans along with the safe administration and protection of the medicines sent to the clinic by the pharmacy" (Hemşirelik Yönetmeliği, 2010).

Table 2: Definition of Medication Errors

Medical Error	Definition
Prescription Errors	Errors experienced due to improper or unreadable physician requests
Incorrect Patient	Administration of the drug to another patient instead of the desired patient
Administration of Improper Medication	Administration of a drug other than the one requested
Improper Preparation	Preparation of the drug not in the desired way, but with the wrong solution
Administration of the Drug Through an Improper Technique	Using the improper technique when administering the drug
Administration of the Drug Through an Improper Route	Administration of the drug through a different route other than the desired one
Wrong Dose	Incomplete or excessive administration of the prescribed dose of medication
Wrong Time	Administration of the drug at the wrong time
Wrong Frequency	Administration of the drug with the wrong frequency
Wrong Ratio	Administering the drug too slowly or too quickly
Administration of Deteriorated Medication	Administering the drugs that have become deteriorated due to storage under inappropriate conditions or that have expired.
Follow-up Error	Failure to monitor the patient's condition after drug administration
Other Medication Errors	Errors other than the defined ones

It is observed that nurses avoid reporting medication errors due to reasons such as not attaching the necessary importance to incident reporting and refraining from the attitude of senior management. Some of the reasons argued in the literature on why the nurses avoid reporting medication errors are lack of knowledge on how to report errors, considering incident reporting as a workload and to avoid being punished (Gök & Yıldırım Sarı, 2016). In the systematic review by Hamed and Konstantinidis (2022), it was determined that incident reporting is essential in improving health care services and ensuring patient safety and errors were reported incompletely as nurses are concerned about negative consequences such as legal issues and being accused/sued. It was further revealed that reasons such as management's misconduct, inadequate reporting processes and lack of training on this subject

constitute an obstacle to reporting incidents (Hamed & Konstantinidis, 2022). A study examining the barriers to nurses' reporting medication errors revealed that 35% of the nurses do not consider drug administration errors important enough to be reported, 33% of the nurses forgot to report them and 40% stated that the incident reporting process takes too much time (Fathallah Mostafa et al., 2023).

Recent theories examining the causes of medication errors have shifted towards thinking that errors are the consequences of system failure rather than just blaming individuals (Khan & Tidman, 2022). For this reason, in order for incident reporting systems to be effective and functional,

- Those who will report the medication errors should not fear of being punished;
- The information of the person and institution reporting the incident should remain confidential;
- Incidents should be analyzed by experts in the relevant field in order to accurately determine the underlying causes of the incident to be reported;
- Time should not be lost before analyzing the reports and remedial actions should be initiated immediately, particularly in dangerous situations;
- Improvements should be system and process oriented rather than focusing on individuals (Keleş & Aloğlu, 2022).

6. Strategies Towards Nurses for to Reduce Medication Errors

Various interventions are suggested in the literature for to reduce or prevent drug administration errors. For the purpose of a systematic review and meta-analysis study, it was determined that improvement strategies such as training programs, providing detailed information on drugs, ensuring the participation of the pharmacist in the clinic, reducing the divisions during drug preparation and calculation and using infusion pumps in practice can be used to reduce drug errors. The meta-analysis result of the same study indicated that drug administration errors decreased by 64% after remedial interventions (Marufu et al., 2021). Factors that nurses should pay attention to in order to avoid drug administration errors can be summarized as follows:

- Charge nurses should organize frequent trainings in cooperation with the pharmacy in order to increase the level of knowledge about the department-specific drugs used;
- Drug prescriptions should be communicated electronically or in writing;
- The route of administration of the drug and additional explanations in drug prescriptions should not be indicated with abbreviations;
- Written procedures and checklists should be developed for IV drug administration and high-risk drug administration;
- Medication errors, if any, should be recorded, however no punitive approach should be applied;
- The patient should be informed about the drug administered, why the drug is prescribed and the route of administration along with the situations that may cause side effects;

Effective communication should be established with patients and team members (Aygin & Cengiz, 2011).

7. Conclusion

Drug safety is one of the essential issues in improving the quality of nursing services. Pharmaceutical safety is categorized among the main quality objectives of

international accreditation organizations and the Republic of Turkey Ministry of Health. Nurses and the managers of the health care institutions assume major responsibilities with regard to ensuring patient safety and preventing medication errors. Senior managers are required to make the necessary arrangements, ensure compliance with the determined standards, and control the execution of the regulations. They are advised to focus on the causes of errors in reported adverse events and make improvements in this regard rather than looking for the culprits to significantly impact safety, quality, and sustainability of healthcare provided.

Conflicts of interest

The authors declare no conflicts of interest.

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