

Medication Errors and their Management Methods by Nurses

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ABSTRACT

Nursing errors, especially medication errors, are a global problem that causes deaths and increases in treatment costs annually. In order to ensure patient safety, the issue of identifying and preventing errors is of particular importance. The aim of this study was to determine the level of drug errors in hospital nurses in Yasuj. This was a descriptive-analytic study. The statistical population included all nurses (161 people) employed in Yasuj Shahid Beheshti Hospital, 19 questionnaires, and researcher made by reliability and validity (CVR = 0.71, CVI = 0.79). Cronbach's alpha = 0.81). Data were analyzed by SPSS software version 16. According to the findings of this study, 86.6% of nurses had drug errors. The delivery of the drug was delayed or sooner than the prescribed time with 302 errors (23.89%) and the lowest frequency was given to the wrong patient with 12 (0.95%). There was a meaningful relationship between sexes with the number of drug errors. According to the findings of the research on the high medication errors and the consequences of drug errors by nurses, it should be mentioned that the development of continuing education programs to increase the knowledge of the personnel on the principles of proper administration of the drug, as well as the creation of appropriate space and providing incentive strategies Honest report of errors by staff is essential.

Keywords: Methamphetamine, Substance, Parents, Personality, Millon clinical multiaxial inventory, Traits

INTRODUCTION

Patient safety is one of the main components of the quality of health services, which means avoiding any injury and injury to the patient during the course of treatment and care (1-4). One of the most common factors that threaten the safety of patients is medical errors and this is a major concern in health care delivery systems (5). Errors in medical terms like other occupations are inevitable, but the important thing is that the mistake of providing health services is a harmful phenomenon and in some cases irreparable (6). The medical team's mistakes cause deaths and serious injuries to thousands of people each year, and increase medical costs (7). All medical practices are somewhat medical-error-prone, but as nurses have widespread communication over multiple and long-term patients, they will be more likely to be in error (8, 9), and the same higher probability of error, , Reduce people's trust and increase their complaints (10). One of the most common mistakes made by nurses is drug misconduct (11), and the implementation of medication orders as a major component of nurses' function is an important part of the care and treatment process (12). Therefore, when drug errors occur, more nurses perform the other members of the health team and staff is questioned (13). Based on the results of continuous studies conducted by the American Institute of Medicine, each year, drug errors have affected at least 1.5 million people (14). According to statistics, drug mistakes are among the most common accidents in the nursing profession, as the results of the study by Kazaoka and et al showed that 42 percent of nurses

at least committed drug mistakes (15). Several studies have shown that in third world countries and developing countries, including Iran, there are medication errors among health care providers, especially nurses, that the expert's guesses and the results of studies suggest higher medication errors than other countries (18-16). Common errors identified in drug administration include: failure to check the health status and vital signs of the patient prior to drug therapy; non-compilation and review of the history of the patient's drug use; failure to evaluate the side effects of drug sensitivities; mistake in prescribing medicine; failure to comply with the correct drug time; observance. Failure to take the correct way to prescribe a drug, to take more than the prescribed dose, to mistake the concentration of the drug, and to give the patient another medication because of the patient's lack of identification. These drug mistakes can lead to inappropriate drugs or harm to the patient (19), and because drug safety has become a major concern in patient safety globally (20-22). It is clear that managing the existing errors and dealing with them reduces the number and effects of errors (23 and 24). In fact, clinical error management involves identifying, controlling errors, and ensuring patient safety (25). For this reason, the problem of managing errors in hospitals is essential in order to ensure patients' safety (26). Nurses can simply ignore the mistakes and disregard them, or report to them and consult with their doctor, colleagues or relevant authorities about their proper management (27). One of the ways to manage errors is to report them, which

managers need to provide a good ground for doing so without unfavorable treatment (5 and 28). The study by Kaldjian et al., Entitled Nurses' Attitude and Practice Review on the Report of Errors, showed that nurses were willing to report 97% of minor errors and 93% of hypothetical errors leading to major injury (29). The degree of disclosure and error reporting varies from 24 to 94 percent in order to manage them in some studies, according to study conditions and error definitions (30). In view of the precautions, and because nursing errors, in addition to the harm done to the patient, can also damage nursing profession itself (31). Therefore, it is necessary to take the necessary measures to prevent errors and to prepare appropriate strategies. In order to manage them, the first step is to identify the type and extent of errors, as well as to identify the management methods used by nurses. Therefore, this study was conducted to determine the level of drug errors in Shahid Beheshti Hospital and to manage the error.

Analysis methods

This is a descriptive-analytic study that was conducted in year 2016 to determine the incidence and type of drug errors during six months based on self-report in nurses of Yasuj Shahid Beheshti Hospital. The sampling was done in a census form and included all nursing personnel of 182 people who had formal, contractual, contractual and project recruitment. Of these, 161 (88.46%) completed the questionnaire completely.

Sample entry criteria included

being employed in clinical settings, having a postgraduate degree, undergraduate or postgraduate nursing, and a minimum record of one year of service. Ethical principles such as presenting a written letter of recommendation based on the ethics committee's permission to the hospital authorities, obtaining consent, emphasizing the volition of the company in the research, the statement of the principles of confidentiality, such as the lack of registration and name of the family, and ensuring confidentiality of information was made. A collection tool was a researcher-made questionnaire that had two parts. The first part examines qualitative and quantitative demographic characteristics such as age, sex, marital status, hours of work per month, service area, history of illness and the second part contains 19 cases of medication errors for each case and eight options were considered. Initially I have three options, "I have not" and "number of cases" to check the type and frequency of errors that I have "I have" scored one and "I have not" zero score and to calculate, the result Multiplication score of each question was considered in the number of cases. In

the following, there are five options in the field of dealing with and managing error, including reporting to the supreme authority, informing the partner and consulting with the doctor, neglecting and covering, making corrections and reporting to the patient and with him. For each of these methods, three I've done the "done", "not done" and "number of items" options. I have done the "I've done" one point and "I have not done" the zero score and for calculating, the result of multiplication of the score of each question was considered in the number of cases. It is worth noting that after obtaining qualitative and qualitative content according to 5 faculty members, for quantitative evaluation of face and content validity, with the opinion of 12 nursing and medical ethics experts, according to the table, $CVR = 0.71$, $CVI = 0.79$ Calculated. The internal reliability of the instrument was also calculated by completing the tool by 10 out of the nurses (Cronbach's $\alpha = 0.81$). For data analysis, descriptive statistics and Kolmogorov-Smirnov, Mann-Whitney and Kruskal-Wallis tests with SPSS version 16 were used. The significance level in this study was considered 0.05. For analyzing the data, descriptive statistics and Kolmogorov Smirnov, Mann-Whitney, Kruskal-Wallis and Pearson correlation coefficients were used with SPSS version 16 software.

Findings

In this study, 161 nurses with an average age of 30.02 ± 4.87 years, with a work experience of 5.63 ± 5.01 years, who worked 181.1 ± 21.7 months per month, were present. In terms of work responsibilities, 154 (95.7%) were nurses and the rest were nurses and their shift was night shift (60 people, 37.3%). Most nurses (153 people, 95%) had no employment other than nursing and, according to themselves, in terms of physical and mental health, more people (145 in 90.1%) were ill and 16 (9.9%) had underlying illness they had. Based on the results of this study, 86.96% of the subjects had at least one drug error during the past six months and 13.04% of the subjects did not commit any drug misconduct. The most common mistakes made by the nurses were the following: giving the drug later or earlier than the prescribed time, with 302 errors (23.89%), mistakes in the drug stenosis rate with 124 errors (9.81%), incorrect dose calculation with 112 errors (8.86%) and giving more or less of the prescribed amount with 111 errors (8.78%). The least error that nurses have committed: In the order of giving the drug to the wrong patient, 12 cases (95%), giving the medication without specifying its method in the order of the physician 21 cases (1.66%) and incomplete administration of drugs 23 cases (1.82%) (Table 1).

Table 1. Frequency distribution of drug errors among nurses of Yasuj Shahid Beheshti Hospital in 2014

Title Error Drug	number of errors (Percent)
Giving the medicine later or sooner than the prescribed time	302(23.89)
Mistake in the rate of drug infusion	124(9.81)
False calculation of required drug amount (dosage)	112(8.86)
Give the drug less or more than the prescribed dose	111(8.78)
Give medicine to a patient without prescribing a doctor	95(7.52)
Failure to comply with the appropriate time (before or after food)	76(6.01)
Mistaken because of the badness of the doctor's prescription orders	72(5.7)
Failure to take necessary measures for drugs that require special attention (taking pulse, blood pressure, etc.)	52(4.11)
Not administering a prescription	43(3.40)
Disregarding the proper position of the patient according to the type of medication	37(2.93)
Mixing two or more medications regardless of drug interactions	35(2.77)
Mistake in taking medication in Cardex drug	35(2.77)
Mistake due to bad linearity of drug orders in medication card	34(2.69)
Give the patient a wrong medication	30(2.37)
Do not dilute the medicine to be diluted	25(1.98)
Error in the administration of drugs (venous, subcutaneous or muscular-chewable)	0020
Incomplete medication administration	23(1.82)
Give the medication without specifying the procedure on the doctor's instructions	21(1.66)
Giving medicine to the wrong person	12(.95)

In the present study, considering that based on the results of Kolmogorov-Smirnov test, the drug error variable ($P = 0.0001$) was less than the significance level of 0.05 and therefore, the mentioned variable was not of normal distribution, therefore, to compare the rate of nurses' medication errors in terms of qualitative demographic characteristics of the two regimes has been used by the Mann-Whitney test, the results of which are presented in According to the

data of this table, descriptive statistics indices indicate that the amount of drug errors in the age group of 36 and older, male nurses, married nurses and having a history of management is apparently more than others. Mann-Whitney test, confirming a statistically significant difference in the amount of drug errors among sex groups showed that drug errors were significantly higher in male nurses ($P < 0.05$).

Table 2. Comparison of nurses' drug errors in terms of qualitative demographic characteristics of the two states

Variable	group	Number ((percent	Standard deviation \pm average	Average rating	More than the middle	Less or equal to the middle	Mann Whitney Test	
							p-value	The statistics
age category	Up to 35 years old	140(87)	7.46 \pm 7.78	79.70	59	81	%36	-%92

	36 years and older	21(13)	10.48 ±10.48	89.64	13	8		
Sex	Male	46(28.6)	10.02 ± 9.94	91.08	23	23	%03	-1.75
	Female	115(71,4)	6.98 ± 7.27	76.97	49	66		
marital status	Single	57(35.4)	6.51 ± 6.45	75.67	22	35	%28	-1.08
	Married	104(64.6)	8.59 ± 8.97	83.92	50	54		
Management experience	has it	15(9.3)	10,60 ± 9.30	98.67	9	6	%12	-1.56
	does not have	146(90.7)	7.57 ± 8.10	79.18	63	83		

In order to compare nurses' medication errors in terms of multivariate demographic characteristics, Kruskal-Wallis test was used. The results are presented in Table 3. The results are presented in Table 3. Based on the data from this table, descriptive statistics indices indicate that the amount of drug errors in nurses with undergraduate degrees,

custodians and nurses working in internal affairs and departments were apparently more than others. Kruskal Wallis test did not show statistically significant differences in the level of drug errors between educational level, employment status and service area ($P < 0.05$).

Table 3. Comparison of drug nurses' error in terms of multivariate qualitative demographic characteristics

Variable	group	Number (percent)	Standard deviation ± average	Average rating	Kruskal Wallis Test		
					The statistics	df	p-value)Two domains(
Level of Education	Assistant	2 (1.2%)	7.50 ±7.78	87.50	0.81	2	0.67
	Bachelor	156 (96.9%)	7.94 ±8.28	81.37			
	Masters and higher	3 (1.9%)	3.67 ±4.04	57.67			
Employment Status	Official	19 (11.8%)	8.37 ±11.01	73.82	3.62	3	0.31
	A treaty	51 (31.6%)	9.45 ±9.07	90.91			
	A plan	55 (34.2%)	6.71 ± 6.95	75.54			
	Contractual	36 (22.4%)	7.06 ± 6.84	79.10			
Service area	Emergency	33 (20.5)	9.67 ± 7.33	97.64	6.69	4	0.15
	Surgery	43 (26.7%)	6.70 ± 6.50	77.84			
	intensive care	35 (21.7%)	8.55 ± 10.12	82.96			
	Internal	41 (25.5%)	9.67 ± 14.05	71.28			
	surgery room	9 (5.6%)	3.60 ± 4.35	71.39			

Based on the results of this study, nurses reported a total of 1264 reported drug errors, compared to 416 cases of maladministration. Among the methods of error management, the method of informed consent

and consultation with the doctor with 214 cases, the highest frequency and manner of reporting to the patient and his companion with 11 cases were the lowest (Table 4).

Table 4. Frequency Distribution of Error Management Methods in Nurses of Shahid Beheshti Hospital in Yasuj in 2014

management Error type	Report to the supreme leader	Inform patient and consult doctor	Disregard and cover	Action to correct	Report to the patient and his companion	Total
Drug error	115 (27.65%)	214 (51.44%)	13 (3.13%)	63 (15.14)	11 (2.64%)	416 (100%)

To investigate the correlation and relationship between drug errors and management practices, Spearman correlation test has been used. The results are presented in Table 5. As can be seen, there is a positive correlation between medication errors of nurses and management practices in the way that the highest correlation was found between drug errors and management practices for correction ($r = 0.475$), which increases with both errors almost one The case is added to the error management and the weakest correlation with the reporting method is to the patient and his or her companion ($r = 0.006$).

Table 5. Relationship between nurses' drug mistakes and management practices

management Error type	Type of		Report to the supreme leader	Inform patient and consult doctor	Disregard and cover	Action to correct	Report to the patient and his companion
Drug error	1264	R	0.225	0.454	0.198	0.475	0.006
		P	0.004	0.001	0.012	0.001	0.942

The study has shown that among nineteen drug errors, the most common mistakes made by nurses include the delivery of medication later or sooner than the prescribed time, with 302 errors (23.89%), mistakes in the rate of infusion of the drug with 124 Error (9.81%), misdiagnosis of medication with 112 errors (8.86%), and giving more or less medication with 111 cases (8.78%). The least error that the nurses committed in order to give the drug to the wrong patient were 12 cases (0.95%), giving the medication without specifying the method in the order of the physician 21 cases (1.66%) and incomplete administration of medications 23 cases (1.82%), which is consistent with the majority of similar investigations, and it is obvious that the similarity of errors makes it easier to find common solutions to reduce and prevent them. In a study conducted by Rahmani et al; in 2011, the most common mistakes were misdiagnosis (9.1%), misdiagnosis (3.3%) and drug withdrawal (3.1%), respectively. And the least error was related to the scribble handwriting (0.05%) (32). In the study of Manjoghi et al., This was a common practice in drug misconceptions including mistakes in prescribing drugs, inappropriate timing of medication, inappropriate adherence to medication, more than prescribed medication, mistakes in calculating medication, and giving medication to another patient. The reason is the patient's lack of knowledge

(27). In a similar study conducted in Urmia University of Medical Sciences in 2011, the most common drug error based on self-reporting the drug was stated later or earlier than the prescribed time (20.6%), which confirms the results of this study (33). Pazokian et al; In their study misdirected to prescribe medication, failure to comply with the proper timing of the medication, failure to follow the correct way of prescribing the medication, taking more than prescribed medication, making a mistake in calculating the medication, and giving the medication to another patient due to lack of knowledge of the patient. The most frequent drug error (34). In the study of Mohammadnejad et al, the most common mistake was the mistake in calculating the amount of the drug and then the wrong drug (16), which is similar to the article in Brazil, which is the most commonly mistaken drug mistake in the amount of drug and then forgotten It has determined the prescription of the drug (35). There are differences in the number of errors for each nurse as well as the percentage of the most common errors that can be due to lack of human resources and non-compliance with the standards of matching the number of nurses based on the patient. Considering the nature and type of errors studied in this study, the errors probably occurred. Mostly due to lack of adequate knowledge of the principles of prescribing medication, an immediate delay in the five steps of

drug delivery is due to the inappropriateness of the number of nurses admitted to the bed, and sometimes lack of knowledge of the care required for each drug, With the implementation of training programs and the provision of trained human resources, drug errors can be largely prevented. The findings of this study have shown that there is a significant relationship between the mean of drug and gender error ($p = .03$). In other words, men have been suffering from drug errors during the service delivery process. In a study conducted in Shahid Beheshti University of Medical Sciences in 2011, there was a significant relationship between the amount of drug errors and gender and the mean medication errors in males was higher than in males (36). However, the magnitude of errors based on demographic characteristics does not follow the same pattern and many factors inside and outside the workplace are influential in this regard, but their role can be played by completing studies and taking into account all aspects, And the conditions affecting demographic characteristics. Of the total drug errors (1264 cases), 416 cases of data errors were handled in one form of error management. This means that the nurses undertook to manage 32.91% of the errors and did nothing to manage 67.09% of the errors. In the study of Kabirzadeh et al., 38.8% of the subjects reported their error reporting and 56.1% did not manage their error management (37). Also, Salimi et al., Entitled Nurses 'Experience from the Error Reporting Process, stated that error reporting was essential for patient safety, but the reported level of nurses' errors was lower than the actual rate, suggesting that nurses did not act for management It is suitable for errors (38). Totally, 63-84% of nurses do not manage their mistakes due to the negative reaction of their managers and colleagues (39). Differences in this regard may be due to the lack of knowledge of medical personnel about nursing errors or for various reasons such as fear of the consequences of reporting and error management, considering the need for proper management of errors in order to prevent and mitigate errors and seek. It is important to maintain and enhance patient safety. The results of this study showed that nurses had the most managerial actions in regard to errors, informed and consulted with their colleagues with 214 cases (51.44%) and the least of which was direct information to the patient and her companions with 11 cases (2.64%). have been. According to the results of Salimi and colleagues, most nurses prefer to deal with their departmental error to manage their error (38). In their study, Sanago et al., Entitled Examining Nursing Students' Experiences of Clinical Mistakes and How to Interact with It, showed that the greatest error occurred in the drug error and the most action that they chose to deal with error was hiding and hiding (40) In the Manjoghi study, the most commonly used personnel management practices for revealing nurses' mistakes was to disregard the mistakes with the responsible officer

and in non-contributing nurses, and quietly overcome the error (27). Based on the results, the error rate is less than the actual number and the nurses manage a smaller number of reported errors, but the important thing is that the personnel use different methods of managing and dealing with errors, which depends on several factors Including the type of line, the degree of damage caused by it and the type of dealing with the authorities and the patient and the companions. In this study, the least amount of report was reported to the patient and his family, which can be somewhat influenced by the cultural atmosphere of each region. Among the error management methods, between the medication errors and the management practices of the report, the supreme commander ($P = 0.004$), informed the doctor and counseling with the doctor ($P = 0.001$), disregard and cover ($P = 0.12$) and corrective action ($P = 0.001$), which is the most correlation between the method of action for correction and drug errors. This means that the nurses' use of the modalities of action as a way to manage errors in drug errors is more than other methods. There is also no correlation between the managerial mode of reporting to the patient and his accompanying drug errors. The researcher did not find a similar study to examine the correlation between error management techniques and errors in a broad study of diverse texts and databases, and to discuss studies in this area, which only resembled in limited areas. In the study of Manjoghi et al., There was a significant difference between the amount of error and the use of management methods for the superiors ($P = 0.001$) and the sharing with the physician ($P = 0.001$), the subsequent shift ($P = 0.01$), the issue was directly related to the patient ($P = 0.888$) and was silly and unobtrusive ($p = 0.001$). In the study of Shams et al., A significant relationship was found between the amount of drug errors and their management, and, in terms of increasing the number of drug errors, their reporting rate also increased (41). What is certain is that nurses have used different error management techniques for errors, and more error-handling practices are related to the way of informing and consulting with doctors and colleagues (51.44%), which can be due to better use Physicians' information for correcting the consequences of the error, as well as the greater trust that staff members have in their colleagues, as well as the lowest frequency of direct communication with the patient and his companions (2.64%), which can be due to injuries and complications Errors and subsequent inappropriate encounters and possible consequences.

Conclusion

Based on the results of the study, a high percentage of nurses committed a drug error. Therefore, due to the irrefutable effect of nursing errors such as drug errors on patient safety and the probability of disturbing general trust towards nurses, adequate

and complementary studies should be conducted. Identify more errors and find solutions to reduce them. Regarding the design constraints, it can be said that due to the planning of the present research based on personnel self-report, it seems that the personnel do not need to cooperate in this regard for various reasons, which the researcher has to solve for this problem as well. Full of confidentiality of all information and no need to insert name and surname, to collect questionnaires, special containers in different parts for collecting questionnaires, that there is no need to deliver the question The letter was not completed by the personnel for a specific person, which was the amount of personnel and reported nursing errors, confirming the nurse's trust is not.

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