

Research Article**Medication errors challenge from the perspective of
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⁶ Baghiatallah hospital, Tehran, iran**ABSTRACT**

Background& aim: Medical errors are a significant portion of errors by nurses in providing care services to occur. The medication errors have a special place. Identify factors involved in this case and the reasons for people avoiding the report errors is of great importance

Method: This was a Cross-sectional study on 275 nurses and nursing students in Abadan School of Medical Sciences who were selected by convenience sampling. Collecting data from participants, based on a three-part questionnaire including demographic data, causes of errors and factors affecting the reporting of medication errors And analyze the data using software spss- 17 and descriptive statistics and statistical tests including Student t-test, Anova and χ^2 was done.

Result: The results showed a significant relationship between age, employment status, education level and errors (p 0 / 05). The most important cause of medication errors related to management factors (average 65/28) and about the reporting errors, fear the consequences of reporting (average 83/37)

Conclusion: Given that human errors are unavoidable But with proper planning And a comprehensive system of monitoring and supervising on the process Reduce errors and prevent dangerous side effects caused by it when it was happening

Keywords: medication errors, reporting, nurses, nursing student

INTRODUCTION:

Medical errors are the most important challenges that threaten the safety of patients in all countries. Medication errors are one of the most common known medical errors (1) that, as a global problem, can lead to serious injuries and even death of patients. This error is one of the five categories of medical error classified by the American Institute of Medicine (IOM) (2). Although exact statistics are not available on the incidence of medical and nursing errors in Iran; however, it seems unlikely that the prevalence of these errors is in a better status than health systems of Western countries. Increasing the number of cases of people based on their complaints of doctors and nurses referred to Medical Council Organization and

the courts can attest to this conjecture (3). Implementation of medication order is an important part of patient care and an the main duty of nurses (4). High rate of drug use and the need to use it could increase the error rate on its own (2). Accordingly, the role of human factors is widely accepted in medication errors (1). Medication errors occur in various treatment professions like a doctor, nurse and pharmacist but there is higher incidence rate of medication errors in nursing and other healthcare and medical professions (2 and 4) that mat occur at any stage of the prescription and distribution of pharmaceuticals (5). Reporting medication errors will prevent potential harm to the patient as well as a source of valuable information for the

prevention of similar medication errors in the future and, in general, will maintain patient's safety. (6) In a study, Koohestani and Baghchi stated that fear from the consequences of reporting and management factors were considered as two major obstacles for refusing to report medication errors (7). In a study on 1,300 nurses, Wakefield (1999) found that 14% of the participants in this study believed that supervisors use medication errors, if necessary, in order to punish nurses, which is considered as a justification for lack of reporting the medication errors (8). Medication errors have been reported very much among nursing students (9). Since there is no documented system for the registration of these cases, there is no accurate statistics in this regard (10). In a study, Macardi et al. (2000) showed that 48.5% of nursing students had medication errors (9) and the rate of such errors was reported to be 16.7% in a research conducted in Sanandaj (11). Given the importance of recognizing of the mistakes and their reporting and providing appropriate individual management solutions and in order to reduce the incidence of errors and reporting them, if any, the researchers decided to investigate the causes of lack of reporting the errors in both groups of employed students and nurses so that they achieve solutions to reduce these errors and healthcare costs, increase satisfaction of patients in the educational therapeutic environments. Undoubtedly, scientific approach to the problem will create a better organizational behavior in hospitals, especially in the medical team, the main body of which is made up by nurses.

METHOD:

The present study is a descriptive and analytical study. The research population included nurses and nursing students in Abadan School of Medical Sciences in 2016. Convenience sampling method was used in this research. Inclusion criteria included for obtaining a passing grade in the course of medicine and experience of drug administration in hospital, interest and informed written consent letter of students and for nurses, in addition to the interest and informed consent,

having associate degree in nursing, having the physical and mental health, working in the general and surgery wards, having work experience of at least six months in the hospital. Data collection was carried out on the basis of a three-part questionnaire. The first part of the questionnaire related to demographic characteristics (age, sex, education level, work shift, type of employment, work experience and place of work), the second part related to the causes of errors and included 21 items. The third part contained 19 items on the main factors of lack of reporting medication errors. The causes of medication errors will be examined in three areas of nurses-related factors (7 items), ward-related factors (6 items), factors related to nursing management (8 items) and factors affecting the lack of reporting errors in three areas, including fear of the consequences of reporting (11 items), factors related to the reporting process (3 items) and management factors (5 items). Questions based on a 5-point Likert scale will be scored from strongly agree (score 5) to strongly disagree (score 1). The lowest and highest scores were 40 and 200, respectively. In a study, Hosseinzade estimated the reliability 91% and 89% of the questionnaire for causes of medication errors and the factors affecting the lack of reporting, respectively using Cronbach's alpha (12). Also, the reliability of the lack of reporting part of 89% was determined in the study of Tol et al. using test-retest reliability method (13). The content validity of the above questionnaires in studies by Tol and Hosseinzade was secured based on a review of past research papers and a survey of 10 nursing colleagues and experts. Collected data were analyzed using SPSS v.16 and descriptive statistics (mean, standard deviation, frequency, and percentage), tables and appropriate statistical tests, including Student t-test, ANOVA). It should be noted that all ethical considerations such as obtaining a code of ethics (IR.AJUMS.REC.1395.84), obtaining informed consent from participants, confidentiality, possibility of withdrawing from the study, and publishing the results as a whole were considered.

FINDINGS:

demographic characteristics of subjects were as follow according to the results obtained in this study: the majority of participants were women (55.3%), less than 25 years of age (60%), single (70.2%), BA in nursing (47.3%), graduate

nurses(30.3%) and contractual nurses (30.3%), nurses with rotational shiftwork (69.7%), less than 10 years of work experience(73.5%), and all of the participants were from the general ward.

Table 1: Frequency and frequency percentage of demographic variables

Demographic variables	Number	Frequency percentage	Test type	P value	Demographic variables	Number	Frequency percentage	Test type	P value
Nurses shift Fixed Rotational shiftwork	47 108	30.3 69.7		0.25	Gender Female Man	55.3 44.7	152 123		0/22
Employment status of nurses Permanent Temporary Nursing graduates Contractual	27 34 47 47	17.4 21.9 30.3 30.3		0/004	Age Under 25 25-35 35-45 Above 45	60 30.5 8.4 1/1	165 84 23 3		0/008
Work experience Less than 10 10-19 More than 20	114 27 14	73.5 17.4 9		0.59	Marital status Single Married	70.2 29.8	193 82		0.36
					Level of Education Paramedic Bachelor of Nursing Master of nursing nursing student	6.5 47.3 2.9 43.3	18 130 8 119		0.0001

Table 2: Frequency of mean and standard deviation of causes of medication errors

	Causes of Medication Errors	(Percentage) Number	Completely disagree percentage) Number	Disagree(percentage) Number	No idea (Percentage)Number	Agree (Percent) Number	Strongly agree (Percentage) Number	Average scores
	Nurse-related factors	Being uninterested toward nursing profession	49(17/8)	65(23/6)	23(8/4)	127(46/2)	11(4)	2/94±1/25
Nurses' lack of knowledge of drugs		30(10/9)	81(29/5)	29(10/5)	115(41/8)	20(7/3)	3/05±1/2	30(10/9)
Nurses' economic problems		28(10/2)	91(33/1)	45(16/4)	97(35/3)	14(5/1)	2/92±1/13	28(10/2)
Nurses' family problems		28(10/2)	63(22/9)	55(20)	109(39/6)	20(7/3)	3/1±1/14	28(10/2)
Nurses' Mental problems		20(7/3)	53(19/3)	44(16)	129(46/9)	29(10/5)	3/34±1/12	20(7/3)
Lack of enough time		14(5/1)	52(18/9)	23(8/4)	143(52)	43(15/6)	3/54±1/11	14(5/1)
Additional Work-related fatigue		8(2/9)	25(9/1)	15(5/5)	150(54/5)	77(28)	3/95±0/98	8(2/9)
Total average		22/86±5/25						

Nurse-related factors	Causes of Medication Errors	Completely disagree (Percentage) Number	Disagree (percentage) Number	No idea (Percentage) Number	Agree (Percent) Number	Strongly agree (Percentage) Number	Average scores
	Noise in the ward environment	18(6/5)	56(20/4)	36(13/1)	111(40/4)	53(19/3)	3/64±3/3
	Drug room atmosphere (light, physical space, etc.)	12(4/4)	48(17/5)	37(13/5)	140(50/9)	38(13/8)	3/52±1/06
	Ward type	13(4/7)	56(20/4)	27(9/8)	143(52)	36(13/1)	3/48±1/09
	High workload in ward	11(4)	26(9/5)	22(8)	150(54/5)	66(24)	3/85±1/01
	Type of drug arrangement on the drug shelf	14(5/1)	29(10/5)	27(9/8)	151(54/9)	54(19/6)	3/73±1/05
	Wards drug protocols	15(5/5)	27(9/8)	47(17/1)	150(54/5)	36(13/1)	3/6±1/01
	Total average	21/83±5/94					
	Factors related to nursing management	Causes of Medication Errors	(Percentage) Number	Completely disagree (percentage) Number	Disagree (percentage) Number	No idea (Percentage) Number	Agree (Percent) Number
Factors related to nursing management	Lack of nurses compared to the patients in the	9(3/3)	17(6/2)	10(3/6)	108(39/3)	131(47/6)	4/2±1
	Supervision methods in wards	10(3/6)	66(24)	54(19/6)	118(42/9)	27(9/8)	3/3±1/05
	Manner of drug prescription	9(3/3)	33(12)	53(19/3)	150(54/5)	30(10/9)	3/57±0/94
	Illegible doctor prescription in patients' record	8(2/9)	27(9/8)	17(6/2)	125(45/5)	98(35/6)	4/01±1/03
	Lack of nurses compared to the patients in the	11(4)	30(10/9)	22(8)	145(52/7)	67(24/4)	3/82±1/04
	Supervision methods in wards	42(15/3)	44(16)	63(22/9)	108(39/3)	18(6/5)	3/05±1/19
	Manner of drug prescription	27(9/8)	52(18/9)	69(25/1)	111(40/4)	16(5/8)	3/13±1/09
	Total average	28/65±5/39					

Table 3: Frequency of mean and standard deviation of causes factors affecting lack of reporting

Fear of the consequences of reporting	Factors affecting the lack of reporting	Completely disagree (Percentage) Number	Disagree (percentage) Number	No idea (Percentage) Number	Agree (Percent) Number	Strongly agree (Percentage) Number	Average scores
	The effect of errors in the annual evaluation score	28(10/2)	87(31/6)	34(12/4)	105(38/2)	20(7/3)	3/15±2/74
	The effect of	20(7/3)	81(29/5)	38(13/8)	117(42/)	19(6/9)	3/12±1/

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	errors in reduction of salaries				5)		12
	Being blamed by authorities	10(3/6)	47(17/1)	34(12/4)	137(49/8)	47(17/1)	3/59±1/07
	Being blamed by the physician	10(3/6)	50(18/2)	33(12)	137(49/8)	47(17/1)	3/57±1/07
	Being blamed by colleagues	12(4/4)	89(32/4)	37(13/5)	101(36/7)	36(13/1)	3/21±1/16
	The incidence of side effects in patients	11(4)	35(12/7)	31(11/3)	159(57/8)	39(14/2)	3/65±1
	Labeling nurse as being incompetent	11(4)	48(17/5)	25(9/1)	149(54/2)	42(15/3)	3/59±1/06
	Manner of treatment among ward colleagues (lack of cooperation)	14(5/1)	92(33/5)	31(11/3)	105(38/2)	33(12)	3/18±1/17
	Creation of a negative attitude in the patient and his/her family	14(5/1)	39(14/2)	36(13/1)	148(53/7)	38(13/8)	3/07±1/05
	Total average	37/83±8/69					
Factors related to the reporting process	Neglecting reporting some medication errors	12(4/4)	71(25/8)	38(13/8)	131(47/6)	22(8)	3/28±1/08
	Lack of clear definition of medication errors	11(4)	59(21/5)	46(16/7)	123(44/7)	35(12/7)	3/54±2/56
	Forgetting to report medication Errors	21(7/6)	84(30/5)	36(13/1)	102(37/1)	31(11/3)	3/28±2/73
	Lack of positive feedback from the nursing authorities for reporting errors	13(4/7)	25(9/1)	35(12/7)	153(55/6)	49(17/8)	3/72±1/01
	Presence of misconceptions among nursing managers	14(5/1)	54(19/6)	50(18/2)	120(43/6)	37(13/5)	3/4±1/10
	Total average	10/11±4/29					
Fear of management factors	Authority focus only on the wrong doer nurse	17(6/2)	37(13/5)	29(10/5)	141(51/3)	51(18/5)	3/62±1/11
	Without considering other factors involved in the incidence of the error	12(4/4)	38(13/8)	35(12/7)	148(53/8)	42(15/3)	3/61±1/04
	The disproportionate response of authorities to the severity of mistakes	9(3/3)	32(11/6)	54(19/6)	143(52)	37(13/5)	3/6±0/96
	Total average	17/98±4/3					

DISCUSSION:

A significant portion of medical errors are errors made by nurses while providing care services (14). In the meantime, medication errors have a special place. Given the high prevalence of these errors, it is of great importance to identify factors involved in this case, to take appropriate measures in order to take reduce cases to a minimum level. Most importantly, the prevention of these errors depends on accurate reporting (15). So, we should investigate nurses' reasons in avoiding to report such errors. Based on the results of this study, management-related factors were the most effective factors in medication errors and the small number of nurses compared to patients accounted for the highest score. In their researches, HabibAbadi (2013) (16) and Tang et al (2007) (17), Blendon (2002) (18) also had emphasized this issue. Nickpeyma and Gholamnejad (2008) also reported this factor as one of three important factors affecting medication errors (19); while, Hossein-Zadeh et al. (2012) introduced ward-related factors as the most effective factors (12). It seems that increased responsibilities and roles of nurses and the low number of manpower will lead to increased fatigue among nurses and consequently a reduction in the quality of services. In the present study, there was no significant relationship between gender and medication errors. However, Haji Babaei et al (2011) (20), Mrayan (2007) (2) has observed otherwise. Perhaps it was due to the dominance of female participants in this study. There was significant relationship between employment status and nurses' medication errors so that the error rate was higher among contractual and temporary nurses. This finding was consistent with the study conducted by Ito (2003) (21). However, Zahmatkeshan et al.(2010) (22) have observed no differences among personnel. But there was no relationship between nurses' work experience and medication errors. Haji Babaei (2011) (20) and Zahmatkeshan (2010) (22) also found no relationship. However, Sheu (2008) (23) and Ito (2003) (21) suggested that more years of service reduces medication errors. Lack of any relationship in this case was maybe due to lack of continuous educational programs as

compared to other countries, or high number of busy nurses to participate in the programs. The present study also showed no significant relationship between shift work and medication errors. Zahmatkeshan (2010) (22), Soki (2006) (24) and Haji Babaei (2011) (20) also confirmed this lack of relationship. The error rate in participants under 25 years was higher than other age groups. This would be due to little work experience. It was also found that nurses with MA made lower rate of such errors compared with others that can be attributed to that fact that these nurses use updated resources. There are many reasons for lack of reporting or reporting undervalues. Pepper and Chiang (2006) in their study, referred to fear and difficulty of the reporting process and management barriers as factors preventing them from reporting the errors (25). The results of the present study in this case showed that the fear of the reporting consequences is most important reason for refusing to report medication errors in nursing. Koohestani and Baghchi (2009) (7), Mohammad Nejad et al (2013) (26) also in another study on nursing students have emphasized this case. However, Hosseinzadehet al(2012) (12) reported management factors as the most important factors that are inconsistent with the results of the present study. Considering that the participants of this study were ward students and nurses, mainly things like the fear of deficits score and fears of being labeled as incompetent among the students and the fear of the impacts of these errors in the evaluation scores and being blamed by the matron nurses can be raised as reasons justifying this finding. Among the factors related to this area, legal problems accounted for the highest average that is also referred in findings obtained by Hosseinzadeh (2012) (12), Tol (2010) (13) and Mirzaee et al (2014) (27). Among the factors related to the reporting process area, lack of a clear definition of medication errors accounted for the highest average. Previous national studies such study by Hosseinzadeh et al. (2012) (12) also confirmed this issue. However, the International studies such as the study of Tol et al. (2010) (13) have referred to other cases and expressed that this difference is may due to

differences in reporting system and its process at home and abroad. The limitations of this study included the use of self-reporting method to collect data. Although it seems that the use of an observer-oriented reporting will lead to acquisition of more accurate information, therefore, given the constraints to implementation and use of this method in other national and international studies, data collection was carried out accordingly in the present study.

CONCLUSION:

Considering that human errors are unavoidable, but with proper planning and comprehensive system for monitoring the processes, reduce errors and prevent its dangerous side effects. It is clear that the low rate of medication errors is favored by the authorities, but it should be noted that minimization of the interval between the errors and reporting should also be considered as an important criterion. Reporting medication errors in our country requires special attention because we can encourage nurses to report medication errors as much as possible by eliminating and minimizing obstacles to the reporting process. Reviewing ongoing procedures, such as writing detailed reports, performing procedure based on standards and good communication between medical teams will lead to a reduction in medication errors and increase in reporting rate (28).

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