

# The investigation of causes and influencing factors regarding non-reported medical errors among nurses working in hospitals in Zahedan

Mahdieh Sarhadi<sup>1</sup>, Hojat Sheikhbardsiri<sup>2\*</sup>, Razieh Sarhadi<sup>3</sup>, Hosin Moine<sup>4</sup>

<sup>1</sup>Department of Nursing, Zahedan University of Medical Sciences, Zahedan, Iran

<sup>2</sup>Department of Nursing, Sirjan University of Medical Sciences, Kerman, Iran

<sup>3</sup>Department of Economic, Zahedan University of Economical Sciences, Zahedan, Iran

<sup>4</sup>Department of Health, Iranshahr University of Medical Sciences, Iranshahr, Iran

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**\*Corresponding author:** Hojat

Sheikhbardsiri, Department of Nursing,  
Sirjan University of Medical Sciences,  
Kerman, Iran.

Email: hojat.sheikhbardsiri@gmail.com

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## Abstract

**Introduction:** Medication errors are considered as important threatening challenges for health systems in all countries. They are also perceived as one of the most threatening factors for patient safety. Health education centers are intensively predisposed to a spectrum of medical errors occurrence due to students who learn in these centers. Therefore, this study was conducted to survey the reasons for not reporting errors regarding nursing students and nurses.

**Methods:** In this descriptive-analytical comparative study 94 nursing students and nurses who worked in Khatamolambia hospital of Zahedan participated in 2014. Data were collected using the questionnaire of not reporting medical errors. SPSS software was used for the analysis.

**Results:** The results showed that the mean score for being afraid to report consequences, management factors reporting, and medication errors were (73.28±7.58), (14.30±3.38), and (8.63±2.49) for nursing students respectively, in addition, the scores of (34.9±9.84), (12.9±3.59), and (8.82±2.52) were obtained for nurses respectively. The results of parametric T-test regarding the two groups showed that there was a statistically significant difference between both groups ( $P \geq 0.05$ ).

**Conclusion:** Medical errors are considered as one of the most important issues in health care environments. So, the use of these methods depends on adopting a systematic approach to survey predisposition factors and removing them as well as designing a system to increase error reporting rate by nursing students and nurses to decrease and control such errors.

**Keywords:** Nursing students, Medical error, Not reporting and nurses

## Introduction

Patient safety is one of the most important health aspects in health service system (1). Studies show that clinical errors are among the most important issues of health care environment (2) which are a hazard to safety. Secondly, they lead to more deaths in comparison to accidents, cancers, and AIDS every year. Health care officials assert that medical errors are considered as fundamental problems of care in every ward (3). 10 to 18% of all reported injuries in hospitals is attributed to medication errors (4). Adverse medication incidences are considered as the most prevalent type of medical errors which are recruited as an indicator to determine patient safety in hospitals due to their high prevalence and the probable risks that they have for patients (5). Medical errors occur in different professions of health care, such as physicians, nurses, and pharma-

cists. It should also be noted that, medication errors occurrence is more common among health care professions (4,6). In addition, about one-third incidence of adverse medication reactions is related to observe medication errors which can be prevented (7).

As no official documents for nursing errors are available in Iran. The Ministry of Health and Medical Education (MoHME) has announced that millions of dollars per year are spent to reduce the costs of medical errors and make patients free from medical errors. This matter is highlighted by the number of medical complaint files filled out against physicians and nurses (8). Nursing errors, like those errors which occur during medication and patient care, are also known and prevalent problems of the health care system. Therefore, this problem is mainly authorized on the subject of health care since it can lead to



irreparable results. Actually, nursing errors not only injure patients, but also the nursing profession can be damaged (9). Therefore, since it is a known and action-oriented profession, the knowledge and art of nurses are clinically appreciated. Prescription is part of the clinical nursing which is associated with high risk of error incidences (10). The primary and natural result of such errors is prolonged hospitalization as well as increased related costs which may lead to severe injuries or even death (4,11). Based on the report regarding prevention medication errors published in 2006, these errors injure 1.5 million American per year. Additionally, they incur 3.5 billion dollars for low efficiency, wages, and additional medical costs (7).

In a study showed that, 30% of injured patients died or became disabled due to medication errors (12). The results of most studies indicate that the report of medication errors among nursing students and nurses is less than the actual rate (4,8), but these studies show high rates of medication errors (4,13). There are many reasons for the lack of reporting on medication errors. These can be concluded as the lack of a recording system accurate reporting errors, fear, complicated reporting process, and management barriers (14). In contrast, some studies point many advantages and ethical bases for declaring and reporting of errors, but nursing students may be susceptible on the subject of error declaring to protect themselves against punishments as well as management disciplines (15). The conducted studies on medication errors regarding nurses show that most of these errors are not reported mainly on account of being afraid of punishment by instructors, employers, correspondent officials and relatives of patients. Under blame conditions and culture, not reporting and hiding errors, will be naturally common even in severe cases. So, nothing would be learned from the occurred errors, while conducted actions cannot be recruited to prevent similar errors (12). Based on some studies, 38% of medical error incidence is related to nurses (16). Consequently, the first step to prevent medication errors is reporting important factors accurately which can prevent an increase in medication errors (17).

Due to the leading role of nurses and nursing students in respect to pharmacotherapy as well as patient safety, and since these errors can lead to irreversible effects for patients (9), knowing different types of errors can be effective regarding patient safety, prevention of probable injuries to patients, and decreasing miss-error effects. It also helps to shorten the length of hospital stay, decrease financial costs for the organization and patients. Finally, similar errors incidence can be prevented and they can be recruited as valuable sources (7,18).

These reports can be considered as a solution to many occurred errors as well as preventing further occurrence. Executive managers and instructors must not only consider negative results, they should try to punish and enforce them, but also they must try to remove report barriers, compensate losses and side effects of clinical errors mor-

ally and legally as well. Since the professional behavior of students is forming and as there is not a systematic debug approach in healthcare, so learners adopt personal procedures when they face with the mentioned problems (2). So as far as students will become tomorrow nurses, the present study aimed to survey the reasons for not reporting medication errors in nursing students as well as nurses. We believe that investigating the reasons for not reporting medication errors can lead us to appropriate solutions to decrease their incidence and control the errors accurately. We hope that, the results of this research be as practical as possible in respect to intervention studies.

## Methods

This descriptive-analytical, comparative type study was carried out in 2014. The participants included 188 nursing students of Medical Science University as well as nurses who worked in Khatamolanbia hospital of Zahedan province. Available sampling was used and the samples were obtained among students from semesters four to eight. The sample size included 94 nursing students and 94 nurses that filled onset from to participate in the study. The inclusion criteria for participation in the study included one year work experience in a clinical ward, a passing score in pharmacology course, and an experience of the drugs to the patient in hospital units. In order to collect data, a questionnaire in three sections was used. The first part included demographic characteristics of nursing students and nurses who worked in hospitals. The second part encompassed seventeen phrases about the reasons for not reporting medical errors from the nurses' perspectives. The questionnaire covers three domains namely being afraid of reporting consequences (10 phrases), factors related to reporting process (3 phrases), and management factors (5 phrases). Participants were required to write their answers in respect to a Likert Scale (completely agree, agree, no comment, disagree and completely disagree). A score of 1-5 was considered for each response. In a similar vein, Kuhestani *et al* arranged this questionnaire related to the reasons for not reporting medical errors from students' perspective. They assessed its content validity and reliability. It should also be mentioned that the internal consistency as well as Cronbach's alpha (88%) were evaluated. (4). Hosseinzadeh *et al* used this questionnaire from nurses' perspectives. The content validity and Cronbach's Alpha (89%) were assessed (8). To analyze the data, statistical descriptive methods (frequency, mean, and standard deviation) were used to show the demographic characteristics as well as determining importance variables. The analytical T-test was used as well. SPSS software (version 16) was used to analyze data.

## Results

Nursing students included 68.1% women and 31.9% men, while nurses included 74.5% women and 25.5% men. The range of participant's age in nursing students' group was

between 20-24 years and the mean age was  $21.91 \pm 0.99$ . Regarding nurses, the age range was between 24-57 years and the mean age was  $32.1 \pm 7.37$ . The minimum work experience was 1 year for nursing students, while the maximum was 30 years and its mean was  $8.93 \pm 7.10$ . Regarding students semester the findings can be categorized as, fourth semester (3.2%), fifth semester (18.1%), seventh semester (31.9%), and eighth semester (31.9%). In terms of employment status, 18.1% trial, 23.4% employment contract, 21.3% employment contract and 37.2% formal employees. Considering the place of work 4.3% worked in internal ward, 11.7% in surgery ward, 25.5% in ICU ward, 1.1% in burning ward, 12.8% in neurosurgery ward, and 17% in emergency ward and 10.6% worked in wards, such as dialysis, neonatal, neurology, oncology, Progressive Cardiac Care Unit (PCCU) and, CCU (Table 1).

Regarding medical errors incidence, the results showed that 46 nursing students (48.9%) were involved in medical errors, while 21 students (22.3%) informed the supervisor in charge. In addition, 15 students (16%) threatened patients' life. 44 persons (46.8%) concentrated on their medication errors. 31 persons (33%) felt guilty after medication error and only 27 persons (28.7%) were intended to discuss it. On the other hand, 44 nurses (46.8%) involved in medication errors, but 31 persons (33%) informed the related person in charge. 11 cases (11.7%) threatened pa-

tients' life. 49 persons (52.1%) concentrated on their medication errors. 56 persons (59.6%) felt guilty due to their medication error, while 44 persons (46.8%) intended to discuss it. The results showed that the mean of fear score for reporting medication errors regarding nursing student was  $73.2 \pm 7.58$ ,  $14.30 \pm 3.38$ ,  $8.63 \pm 2.24$  respectively, and regarding nurses' groups it was  $34.9 \pm 9.84$ ,  $12.9 \pm 3.59$  and  $8.82 \pm 2.52$  respectively. The result of parametric T-test in both groups showed that there is no statistically significant difference in both groups ( $P < 0.05$ ; Table 2).

Evaluation of reported medication errors in the both groups showed that adverse reactions of coach, little importance of some medication error reporting, afraid of department personnel awareness as well supervisor and their blaming and training consequences incidence have the most authorities respectively regarding nursing students. Adverse reaction of hospital chief-managers depending on severity and importance of error, concentration on guilty person, afraid of side effects and informing ward correspondent as well his blame, negative insight of patient and justice issues as a result of medication errors respectively have the most authority regarding nurses.

## Discussion

International Council of Nurses states that patient safety is necessary to improve the quality of nursing care, and

**Table 1.** Relative and absolute frequency distribution of two groups based on gender and academic semester

Variable of group		Nursing students		Nurses	
		Number	%	Number	%
Gender	Woman	64	68.1	70	74.5
	Man	30	31.9	24	25.5
	Total	94	100	94	100
Academic semester	Four	3	3.2	-	-
	Five	17	18.1	-	-
	Six	37	39.4	-	-
	Seven	7	7.4	-	-
	Eight	30	31.9	-	-
	Total	94	100	-	-
	Employment	Trial	-	-	17
Employment contract		-	-	22	23.4
Contract		-	-	20	21.3
Formal		-	-	35	37.2
Total		-	-	94	100

**Table 2.** Comparing mean scores of fear for reporting consequences, management factors, and reporting process regarding both groups

Variable	Group				Result of T-test
	Nursing students		Nurses		
	Standard deviation	Mean	Standard deviation	Mean	
Afraid of reporting consequences	7/58	73 /28	9/84	34/9	$P \leq 0.001$
Management factors	3/38	14/30	3/59	12/9	$P \leq 0.001$
Reporting process	2/49	8/63	2/52	8/82	$P \leq 0.001$

all nurses have a fundamental responsibility to consider patient safety within all care aspects. This includes informing patients and co-workers regarding risk probability and decreasing risk methods, protecting patient safety and reporting adverse incidence to the related correspondent (19). So, the necessity of improving safety and patient care quality in hospitals and care centers are highlighted by accredited organizations in terms of complying with international standards (16). The results of the present study showed that 48.9% of nursing students and nurses were involved in medication errors. The results of different studies on nursing students and nurses show relatively similar results. In a study by McCarthy *et al*, 48.5% of nursing students reported that they were involved in medication errors at least once at a time (20), while the rate of medication errors incidence in nursing students of Arak university and Sanandaj university was reported at 10% and 16% respectively. The results of a study also showed that nurses with a 5 year work experience had an average of 2.2% errors within a year, while nurses with more than 20 years work experience had an average of 2 errors within 12 months (17).

Our findings also indicated that 22.3% of nursing students and 33% of nurses reported on medication error. The results of various studies which have been conducted in respect to this field among nursing students and nurses are different (21). In a study by Balas *et al*, which was conducted on 393 nurses in the university of Pennsylvania, the findings showed that 30% of nurses reported at least one error (22). In a study by Mohammad Nezhad *et al*, 46.6% of students reported at least one occurring medication error, to the supervisor or the nurse ward (21). The large differences on the subject of medication errors regarding self-reporting within different studies can be attributed to the lack of an accurate observation on pharmacotherapy process, a determined recording system, and an accurate self-reporting on errors (19).

Fear is considered as one of the main personal obstacles which inhibit error reporting of nurses. The reasons for not reporting medical errors can be classified as being afraid of managers to receive their blame and punishment, unpleasant reactions of co-workers and managers, negative perspectives of care providers in respect to errors, lack of an efficient error reporting system, and the legal persecution (8,23). Our findings showed that the most relevant reason for the lack of an error reporting is related to reporting consequences in both groups. This finding is consistent with the results of a study by Musarezaie *et al* (12). The results of a study conducted by Tol *et al*, showed that fear of the consequences of reporting is considered as one of the most important reasons for not reporting errors related to nurses (24). Although, both groups gave high scores to this matter; but the results highlighted that there was a statistically significant difference between the two groups. This can be attributed to different work conditions within the two groups. In a study by Ghasemi *et al*

fear of punishment, lack of a supportive demeanor on the side of the correspondent nurses, and belittling the importance of medication errors are the most important reasons for not reporting medication errors (25). The Results of different studies indicate that the lack of adequate support systems in nursing personnel including the most common reasons for not reporting in the area of environmental factors. Not surprisingly we cannot see volunteer reporting of errors as there is not a supportive system for nurses in case of legal persecutions. Additionally, problems, such as managers' blame and being labeled as an unskillful nurse on the perspective of other co-workers play a part in this matter. As there is not an efficient error reporting system, and an unwillingness to report errors even in respect to sever cases, nothing can be learned under such culture and conditions (12).

Conducted studies on nursing students show that nursing students especially when they experience their first clinical exposure tolerate high levels of stress which can be related to the fear of medication error as well as the fact that they are under supervision by their supervisor.

Salehian *et al* also refer to stress experiencing in clinical situations, due to factors such as fear of the inability of students, lack of cooperation with the instructor and student personnel (26).

The results of the present study showed that both groups gave higher scores to management factors domain which is in line with the findings of Hosseinzade *et al.* and salavati *et al* (8,23). They concluded two factors that played a part as the reasons for not reporting errors on the side of nursing students. These were the lack of a positive reaction by correspondent nurses, and lack of concentration on error making (23). In a study by Stratton *et al*, the unpleasant reaction of correspondents and the irrelevant punishment were considered as the most important management factors for not reporting medication errors regarding nurses (13).

Inappropriate instructors' reaction regarding errors can be considered as the other reason for stress occurrence (13). This matter has been by so many nursing students in a study by Salehian *et al* (26). The results of the present study regarding reporting process showed that both groups considered the least score to this domain. In most conducted studies on nurses, paying little attention to medication errors is considered as a main reason for not reporting medication errors. This matter is in line with the results of the present study (12). Nursing students allocated the highest score to unimportant factors as the main reason for not reporting medication errors. Moreover Musarezaie *et al* in their study concluded that time-consuming, little importance of some medication error, lack of knowledge and collective agreement in respect to medication error definition, lack of a system to record and report occurred errors respectively are mentioned as the most inhibitor factors to report errors which related to reporting process (12).



## Conclusion

Providing medical care is the most common care which consumes goods in healthcare units. Prescribing medications is an important part of patients' healthcare process which is considered as a main task for nurses. Medication errors occurrence can lead to severe problems for health systems. Therefore, controlling medication errors is exclusively important since its negative consequences on patient safety must be averted as this matter is of utmost importance for the health system. All the efforts to decrease and control such errors will not be successful unless using a systematic approach for predisposing factors, and try to remove them as much as possible. We should also notice that designing a system to increase error reporting level is mandatory. So, there must be a go on the side of officials and instructors who are responsible for health and care systems. They must concentrate on effective factors to decrease medication errors occurrence by training staff as well as educating students properly. Besides, training classes and workshops related to the error reporting process must be held. Providing a supportive atmosphere by managers which support error reporting without any fear for the following consequences based on a record and report system to prevent adverse incidences of medication in patients can be greatly appreciated. Nursing instructors should provide a proper and safe atmosphere for reporting errors by nursing students. It should be noticed that students report their errors if they feel that they are safe from reporting any errors and this has no adverse consequences for them. At the end, the limited sample size cast a doubt on the generalisability of the findings of this study. Besides, conducting similar studies with a larger sample size and involving more hospitals is recommended.

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## Ethical issues

This study was approved by Zahedan university of medical sciences and people ensured about confidential issues.

## Authors' contributions

All authors equally contributed to the writing and revision of this paper.

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