

THE EVALUATION OF THE RATE AND THE TYPE OF MEDICATION ERRORS AMONG NURSESZAHRA POURNAMDAR¹, SADEGH ZARE^{2*}

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ABSTRACT

Objective: Since medication instructions are an important part of patients' treatment process, neglecting the correct principles of medication instructions application can result in numerous problems such as unsuccessful treatment or failure and the emergence of lawsuit and complaint issues. The survey and the determination of the medication error types is the first step in preventing them and since the medication errors are common among the nurses according to the various studies and due to their importance the researchers decided to perform a study aiming at the survey of the rate and the type of the medication errors common among the nurses.

Methods: This study is a descriptive research performed on 119 nurses from Zahedan training hospitals all of whom have been selected based on a random method in 2016. To gather the necessary information required for the current study, a two-part questionnaire was taken advantage of the first part of which was related to the demographic characteristics, and the second part was connected to the evaluation of the type of medication errors and reporting them. Finally, after the questionnaires were collected, the data were analyzed based on SPSS 19 software and descriptive statistics.

Results: The participants average age was 28.86±6.45; 101 individuals were women and 87 individuals had passed courses on ethics. Furthermore, 86 nurses had had an experience of medication error at least for 1 time. The highest mean score in the type of the medication error was related to "wrong infusion rate, wrong dosage, and administering several drugs without paying attention to the drug interferences."

Conclusion: In this study, the results indicated that the rate of the medication errors is a very high among the nurses. Therefore, to reduce the medication errors, there is a need for making serious decisions.

Keywords: Medication error, Nurses, Zahedan.

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INTRODUCTION

Rapid changes in health and treatment systems have faced the clinical professional personnel with multiple ethical challenges [1,2]. Nowadays, medication errors are among the main concerns in the healthcare providing systems and due to the prevalence of the possible risks for the patients it is used for determining the patient safety rate in the hospitals [3]. Moreover, this is in a manner that some state 10-18% of the hospital injuries as accounted for by the injuries originating from medication errors [4,5]. Medication errors usually are a consequent of not correctly performing the responsibilities by the nurses, clinical personnel, physicians, and the pharmacologist or the patient himself. Since medication instructions are an integral part of patient's treatment process neglecting the correct principles regarding the application methodologies can result in great many of problems such as failure in treatment and the statutory issues [6]. Getting an overall image of the medication errors is difficult in developing countries. In Iran, although there is no available compiled and codified statistics regarding the rate of medication errors, thus the experts of the field estimate that this rate can be very high; the increase in the number of the people's complains from nurses and physicians to the medical system organization and filing lawsuits to the courts can be confirmatory of such an estimation [7,8]. Medication errors control is of a great importance since besides being costly its today's negative outcomes have been well-recognized regarding the patients who are the most significant priority of the countries health systems [9]. Drug prescription is a team work and an important, sensitive and complicated process which can take place in any stages in the process [10]. Medication errors can occur in various stages of administering drugs to the patients such as

prescription, taking notes on physician's instruction, drug distribution and portioning, drug administration to the patients, or medication controlling cycle [11]. Medication errors are more in the venous injections in comparison to the other injection methods, even there are reports indicating the occurrence of severe injuries and death following intravenous injection mistakes including wrong drugs, wrong dosage, and wrong dilution rate [12]. The studies have shown that cases such as the lack of pharmacological information, incorrect drug calculations, violating the predetermined contracts, physicians' illegible handwriting, the existence of drug similarities and deficient and disturbed shapes and packaging, name similarities are among the factors contributing to the medication errors and factors such as shortage of time or the inadequacy of the tools and instruments, the insufficient number of personnel influence medication errors indirectly [13].

Mistakes and errors are inseparable from human deeds and performances, and they are part of human nature based on this the human role in the medication error occurrence has been completely accepted [14]. The survey and the determination of the errors is the first step in preventing them from happening and since according to the great many of the studies performed in this field medication errors are very common among the nurses and due to the importance of this subject matter the researchers decided to deal with the survey of the rate and type of the medication errors among the nurses.

METHODS

This study is a descriptive research which has been performed on 119 nurses in training hospitals in Zahedan all of whom have been

selected randomly in 2016. To collect the information required for performing this study a two-part questionnaire was used the first part of which was belonged to demographic characteristics (age, gender, work history and having passed courses on ethics) and the second part was related to the evaluation of the type of medication errors which have been experienced by the nurses during the last 3 months. This questionnaire contained 17 items, and the individuals were supposed to tick and choose the item which had happened to them. This questionnaire was used in Isfahan by Amir *et al.* [15] and its validity has been confirmed, and the reliability of the questionnaire was obtained 0.91 based on Cronbach's alpha method.

To gather the data, after acquiring a confirmation letter from Zahedan medical university research vice chancellorship regarding the research plan and obtaining a letter of recommendation and making the necessary coordination jobs with the hospital the researcher referred to the hospital. First, the objective of this study was explained to the participants and acquiring an oral consent the questionnaire was distributed in sufficient number among the participants. At the beginning section of the questionnaire a text was inserted which indicated that the respondent are consciously aware of their cooperation with the research plan and it read that "the participants cooperation in the current study implies that they are fully aware of their cooperation and that the information provide by them is regarded as confidential, and they will not be exposed to any risks by any means." After the questionnaires were completed, they were collected and reviewed by the researcher, they were again returned to the respondents in case of existing incomplete parts, and they were asked to complete them. Finally, after the questionnaires were gathered, the data extracted from them was analyzed by taking advantage of SPSS 19 and descriptive statistics.

RESULTS

The participants average age was 28.86 ± 6.45 ; 101 individuals (84.9%) were women and 87 individuals (73.1%) had participated in courses on ethics previously. 64 individuals (53.8%) had a work history ranging from 1 to 5 years, 38 individuals (31.9%) had a work history of 5-10 years, 11 individuals (9.2%) had a work history 10-15 years, and 6 individuals (5%) had a work history of more than 15 years. Furthermore, 86 individuals (72.3%) had prior medication errors at least for 1 time. The highest mean scores regarding the type of medication error were related to "the wrong infusion rate, wrong dosage, and administering several drugs simultaneously without being aware of their interferences."

The frequency of the nurses' medication errors is given in Table 1.

DISCUSSIONS

The results of this study indicated that 72.3% of the nurses have once committed a medication error. Lisby *et al.* reported the rate of medication errors among the treatment and healthcare personnel as 43% in Denmark which has been lower than what has been obtained by this study [16]. In the study conducted by Stratton *et al.*, 67% of the nurses who worked in the children sections reported that they had medication errors at least for 1 time [17]. The comparative analysis between the studies and results performed by the author of the current research indicated that medication error rate is very high among the nurses working in Zahedan training hospitals. The great difference in self-reported medication errors in Iran in comparison to the other countries can be due to the inaccurate supervision on the medication process and the absence of a definite and correct recording and reporting system. Drugs are the most common treatment commodity which is being applied in healthcare providing and treatment units. The abundance in drugs consumption and the necessity to make use of them can increase the error coefficient [4], and the medication errors can occur in each of the drugs prescription and distribution process; since prescribing drugs to the patients is a complex task and necessitates awareness, decision-making and correct performance by the staff working in the hospital departments and sections [18]. However, since a nurse can administer more than 50 drugs in a department or section of a hospital, she/he is more exposed to the risk of medication error [19] because it has been proved in some studies that there is a direct relationship between the nurses' length of working hours and the rate of the medication errors, and this is in a way that with the increase in the working hours the rate of medication errors also rise [20,21]. Therefore, it is suggested that the managers and the officials pay particular attention to the present subject and take serious steps in improving them. Updating nurses' information regarding the drugs, especially the new ones, can be considered as an important factor in reducing the medication errors.

The highest mean scores regarding the medication errors type were belonged to "wrong infusion rate, wrong dosage, and administering several drugs simultaneously without paying attention to the drug interferences". The results obtained in the study by Seydi which was conducted in the hospitals in Mashhad are also implying that the highest frequency of the medication errors in nurses was related to the wrong infusion rate and wrong dosage [22]. In the study performed by Dean *et al.*, the most common medication errors in British nurses have been omissions and wrong infusion rate; and wrong infusion rate and administering drugs without being prescribed by the physician have been reported in American nurses which conform to the results obtained by the present study [23].

Table 1: The frequency of the nurses' medication error type

Questionnaire of medication error types	Absolute frequency	Relative frequency
Wrong infusion rate (infusion drugs)	36	30.3
Administering wrong amount of drug (more or less than the prescribed dosage)	36	30.3
Administering the drug in the wrong time (early or late)	28	23.5
Administration of several drugs simultaneously neglecting the drug interferences	33	27.7
Not diluting the drugs which have to be diluted or incorrect solvent volume	14	11.8
Administering the drug to wrong patient	21	17.6
Not observing the drug precautions	18	15.1
Wrong injection speed rate (intravenous drugs which should be injected slowly)	25	21.0
The application of expired drugs	10	8.4
Intravenous drugs injected subcutaneously	9	7.6
Intravenous drugs injected intramuscularly	6	5.0
Intravenous drugs injected intravenously	12	10.1
Administering drugs without physicians' prescription	18	15.1
Neglecting the laboratory recommended rates and dosages	18	15.1
Administering sublingual or buccal drugs orally	11	9.2
Forgetting to administer the prescribed drugs	18	15.1
Ignoring the patients' electrocardiogram and heart monitoring	27	22.7

In a study performed by Prot *et al.*, 485 errors were observed which have been conducted by nurses and these included 36% of the errors happened at the time of administering drugs, 19% of the errors occurred in the drug administering method, 15% were related to the amount of the drug, and 10% have been pertained to the drug administering without being prescribed by the physician [24]. In the study performed by Haw *et al.*, it was indicated that the most common medication errors were wrong dosage (31%), wrong drug (21%), and forgetting to administer the drug (17%) [25]. In the study performed by Wolf *et al.*, the results were also suggestive of the most common medication error which was reported to be forgetting to administer the drug (19%), wrong dosage (17.16%), and wrong drug administration timing (16.93%) [26]. In the study performed by Cavell and Osborne, 31.5% of the medication errors were connected to the intravenous injections [27].

A considerable part of the medical errors are the ones which are committed by the nursing staff while offering healthcare services, in such a manner that during the recent years due to the increase in the morbidity count and hospital costs undertaking medication errors researches and studies have grown in importance [28]. Getting aware of the results obtained in the current study and the status quo of the nurses can be effective on the decisions made by the managers and officials to reduce the medication errors.

CONCLUSIONS

In this study, the results indicated that the rate of medication errors is very high among the nurses. Therefore, there is a need for making serious decisions regarding the medication errors reduction. In total, medication errors even very trivial ones cause side effects in the patients, so in order for such errors to be reduced and it is suggested that relearning classes concerning the pharmacological information should be hold and education process should be modified.

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