Medication Errors in Hospitals: A Study of Factors Affecting Nursing Reporting in a Selected Center Affiliated with Shahid Beheshti University of Medical Sciences

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ABSTRACT

Background: Medication errors are mentioned as the most common important challenges threatening healthcare system in all countries worldwide. This study is conducted to investigate the most significant factors in refusal to report medication errors among nursing staff.

Methods: The cross-sectional study was conducted on all nursing staff of a selected Education & Treatment Center in 2013. Data was collected through a teacher made questionnaire. The questionnaires’ face and content validity was confirmed by experts and for measuring its reliability test-retest was used. Data was analyzed by descriptive and analytic statistics. 16th version of SPSS was also used for related statistics.

Results: The most important factors in refusal to report medication errors respectively are: lack of reporting system in the hospital (3.3%), non-significance of reporting medication errors to hospital authorities and lack of appropriate feedback (3.1%), and lack of a clear definition for a medication error (3%). there was a significant relationship between the most important factors of refusal to report medication errors and work shift (p:0.002), age (p:0.003), gender (p:0.005), work experience (p:0.001) and employment type of nurses (p:0.002).

Conclusion: Factors pertaining to management in hospitals as well as the fear of the consequences of reporting are two broad fields among the factors that make nurses not report their medication errors. In this regard, providing enough education to nurses, boosting the job security for nurses, management support and revising related processes and definitions are some factors that can help decreasing medication errors and increasing their report in case of occurrence.

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Introduction

Medication error is considered as a lack of success in any therapeutic process leading to the potential harm to patients (1), and at the same time mentioned as the most common important challenges threatening healthcare system in all countries worldwide (2).

Studies indicate that most of the errors occur at the time of prescribing or giving medication to patients. In other words, prescribing errors are made by physicians while nurses make an error most often at the time giving medications to the patients (3).

However, studies imply that although nurses prevent 48% of medication errors resulted from wrong prescription, errors occurred at the time of giving medications which consist 28% of the total errors usually are made by nurses. As far as the medication is given directly to patients there is no way preventing the errors (4).

In addition, medication errors have adverse consequences such as the rise of mortality rate among patients, the increase of length of stay, and the increase of medical expenses(5). Occurring such errors also makes patients lose their trust in the system of providing healthcare services and also has their dissatisfaction with the system as a result. It also can result in stress and ethical conflicts of nurses (6).

As medication errors have negative effects on the patients 'quality of care, the performance of nurses and healthcare centers at the time of occurring errors is very significant (7) and timely diagnosing the errors as well as taking appropriate strategies for deceasing their occurrences are very important. In this regard, health care organizations are advised to monitor errors by establishing and promoting organization-wide reporting systems to find possible sources of medication errors (8).

Regardless the importance of formal or informal reporting of medication errors by the nurses, several studies have been conducted to investigate barriers that prevent nurses from reporting. Among them, Management factors and fear of the consequences of reporting errors are two important categories (9).

Added to the barriers, other individual and organizational factors are reported as the barriers to report medication errors by nurses. These are: not knowing or diagnosing whether an error has occurred; the importance of the occurred medication error, the fear of authorities' reaction, the necessary time for gathering documents related to the errors, and weak feedback of authorities after reporting the errors (10).

Considering the importance of creating a secure environment for the nursing staff in which occurring rate of errors has decreased to the lowest possible level and inevitable errors are reported to senior officials without the fear of consequences, the study is done to investigate the most important causes and factors making nurses avoid reporting medication errors when occurring. The study is going to categorize the factors and to embark on suggesting strategies for appropriate organizational framework for reporting medication errors in hospitals.

Methods

This descriptive-analytical cross sectional study was conducted in 2013. The population was all the nursing staff working in the wards of “Taleghani Education & Treatment Center”. Because of small population and access to more views, all the individuals were asked for the purpose of study in a census form.

The tool for data collection was a teacher made questionnaire and it was consisted of two parts. The first part, including demographic data, was consisted of seven questions. The second part, consisted of nineteen questions, was going to measure the number of errors made by nurses and also the number of formal and informal reports of errors of nurses as mentioned in the conceptual model of the study (11) (Figure1).

This questionnaire was also used for another study the present team was conducted in 2012 (12), Face and content validity of the questionnaire was confirmed considering experts' views (3 experts of nursing, health education and epidemiology) and necessary corrections were made.

For measuring reliability, Test-retest was administered. That is, the questionnaire was distributed among twenty subjects of the population twice with the interval of two weeks. In both times the questionnaire was correlated with an 81% confidence (r=0.81).

After preparing the questionnaires and necessary arrangement with the authorities of the hospital, the questionnaires were distributed among nurses in three shifts (morning/ afternoon/ night). After giving them the necessary explanations about the objectives of the research and the way of answering the items, they were asked to answer the questionnaire in less than three days after receiving them which was the appropriate time. In addition, to increase response rate and to decrease attrition rate, every questionnaire was delivered along with a colorful folder and a pen.

At the next phase, the questionnaires were gathered and after initial control of completeness of questions, answers and coding, the data was entered into the SPSS 16. At the end, to organize, summarize and categorize the raw scores and also to measure frequencies, averages and percentages, descriptive statistics was used and for determining the relation between variables, related tests such as T-TEST, ANOVA, etc. with the significance of 5% were applied after assuring and checking normality of data.

Results

The findings indicate that from all the participants in the study (200 with the response rate of 90%), 170 (85%) were female and 30 (15%) were male. The average age
was 33.3±4.2 and the average of work experience was 6.4±1.5.

The findings also indicate that nursing staff who worked in different shifts was 86% and only 14% worked in one shift.

In terms of employment type, the highest frequent proportion belongs to employees with contractual employment which were 31%, the second place belongs to those with formal and temporary employment, each of which is 24% and the last employment type belongs to those with two years’ work commitments after graduation, the frequency of which is 21%.

**Figure 1.** Nurses Responses to Medication errors (Saghiri, 2010).
Table 1 shows the frequency of formal reporting of medication errors among nurses. The findings indicate that the smallest portion of formal reporting of medication errors among nurses respectively belongs to non-paying attention to proper position of patients regarding the kind of medication, using undiluted drug when diluted drug is needed, the intravenous injection of intramuscular medication, and error in the injection method in terms of the speed of injection. The most frequent cases of formal reported medication errors from the highest to the lowest are: giving post-operative analgesics without physician’s prescription, giving medication without physician’s prescription, not paying attention to effects of drug interactions, and intravenous injection of subcutaneous medications.

The findings in Table 2 indicate that the least frequency of informal reporting of medication errors among nurses investigated here belongs respectively to: not giving the prescribed medication to patients, giving patients sublingual or chewable medications orally, not diluting a medications that have to be diluted, mixing medication in micro set without paying attention to drug interactions. The most frequency of informal reporting of medication errors respectively belong to: giving postoperative analgesics without physician’s prescription, giving expired medications to patients, lack of attention to proper time of giving medications (before and after food), and error in injection method in terms of speed of injection.

Given the data in table 3, the most important factors in refusal to report medication errors among the nurses under investigation respectively are: lack of recording system for medication errors and reporting them to hospital.
authorities, lack of appropriate feedback, and lack of a clear definition for medication errors. The least important factors in not reporting medication errors among nurses respectively are: the fear of facing with legal authorities, the fear of losing job, and fear of consequences and adverse effects of medication errors.

It is worth mentioning that after analyzing the data there was a significant relationship between the most important factors of refusal to report medication errors and work shift (P: 0.002), age (P:0.003), gender (P:0.005), work experience (P<0.001) and employment type of nurses (P: 0.002).

**Discussion**

Because of the effect of medication errors on the increase of mortality rate among patients and increase of hospital expenses, investigation on the errors has gotten a high significance in recent years (13).

In this study, the most important factors in refusal to report medication errors among the nurses under investigation respectively are: lack of recording system for medication errors and reporting them to hospital authorities, lack of appropriate feedback, and lack of a clear definition for medication errors that may all lead to the above consequences.

These findings correspond with findings of Tol et al., (2010) which indicated administrative factors and the fear of consequences are important barriers to reporting medication errors(9).

The matter somehow has been emphasized in other investigations. For instance, Mayo & Duncan (2004) claim that 76.9% of nurses fear administrators and colleagues’
reaction (14). Luc LA (2008) also state that, given not reporting medication errors, the main worry is disclosing the error to the patient and his/her family and the fear of the legal consequences of the errors is at the second place (15).

Considering the findings and the importance of the security of patients, making a positive, effective and stable relationship between nurse managers and nurse staff is going to be necessary. Taking a systemic approach for exploring facilitating factors and tackling barriers and also designing a system for reporting errors especially medication errors are of great significance. Furthermore as nurses are considered as the second victims of all the medical errors regarding medication ones right after patients, it is important to pay sufficient attention to supportive, legal and emotional implications after occurrence of unwanted faults. In another word, accepting the errors are inevitable, reporting and tracking the potentially unwanted errors can help the nurses avoid commitment of medication faults and their probable related problems (16).

Given the findings, it can be stated that it is necessary for nursing managers in all job categories to provide a secure and appropriate condition for reporting nurses’ errors for it seems that nurses report their errors when they feel secure and when they are sure that the errors will not have adverse consequences for them (7), so it is highly recommended to encourage informal reporting through improving trustworthy and supportive atmosphere among nurses and physicians and also potentiality of formal reporting by designing special and related form and committees.

Regarding (formal or informal)reporting of medication errors, investigations conducted in the west show that reporting medication errors has been increasing in recent years (5, 13).This matter needs an urgent attention in Iran, since by tackling the barriers; nurses can be encouraged to report the errors and the consequent harms and problems may decrease afterward.

Revising of working processes such as exact recording and documentation, taking standard procedures, and a proper relationship among the members of medical team will decrease medication errors and rise the reporting of potential errors (17) all are recommended in to the managers of this hospital and all the others engaging with medication errors.
Findings also indicate that high workload, lack of human resources, non-supportiveness of the nature of physical environment, weak relationship between colleagues, and insufficient physical resources are barriers for reporting errors of physicians and nurses which can be the result of high work pressure and complexity of the process of reporting (18) so it is evident that making efforts to tackle the barriers and developing working and intragroup relationships can help reporting probable errors suitably. However, nurses believe that matters such as knowing that when an error occurs it has to be reported, applying encouraging method for voluntary and without the name of the nurse, and having a problem solving strategy instead of punishment are positive and effective factors in reporting medication errors (19), in this regard the hospitals can establish a flexible system emphasizing on the positive abilities of nurses and potential and applicable solutions for decreasing medication faults. Here some risk management methods may be useful such as root cause analysis considering the main causes of faults and Health FMEA predicting the major potential faults may occur in future.

Finally, there are different strategies for improving medication error reporting system such as establishing an error reporting system which does not have punishment programs, improving reporting and communication methods, and providing educational programs pertaining to the importance of medication errors (20) notwithstanding, the role of organizational culture in facilitating the medication error reporting system cannot be denied. Therefore, as Islamic culture is dominant in all Iranian organizations including hospitals, dissemination and improving sincerity and trustworthiness as well as ignoring the errors can be a big help to solve the problems.

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References