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Related factors in medication error based on nurses'self-report in Sanandaj, Iran

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ABSTRACT

Medication errors are one of the most common causes of preventable health care problems. Nursing personnel are the manager of hospital wards and have an important role in patients' safety.Therefore, the aim of this study was to determine factors involved in the incidence of medicationerror based on nurses'self-report inBesat Hospital, Sanandaj, Iran in 2014-2015.This was a descriptive analytical study. 100 nurses fromBesat hospital in Sanandaj were enrolled in the study. Data were collected by a questionnaire in two parts including demographic characteristics and a questions related to the medication error in 5 dimensions. Data were analyzed using SPSS software version16. Results showed that all of the subjects had medication error during last year. There was a significant relationship between age, sex, and work load, and medication errors. Most common medication errors included wrong client (26%), type of medication (19%), prescription (9%), dosage and timing (23%) respectively. Organizational and human factors showed more interference thanother factors. Therefore, identifying these factors could improve the health system by helping nurses tocorrectthose errors and reduce medication errors and quality of medical care, as well as patient safety will.

Keywords: Medication error, Nurse, Self-report

INTRODUCTION

In recent years, a variety of factors such as raising the trend of medication production have increased the risk of medication errors. There are many factors associated with medication errors. Errors related to medication are more or less limited to errors that occur when the patient receive the medication or is scheduled to receive it (1). These errors are mainly related to nursing care including error in theadministration ofmedication. Medical errors occur when one or more of the five principles of medication areviolated including choosing the right patient, right dosage, right medication, right time and right method of administration. The omission errors occur when the patient does not receive the medication at all (1). According to the results of a study conducted by Panjvini(2006), nurses in Sanandaj, Iran, committed 16.7% of medication errors. In most of the cases, the errors included giving the wrong dose of the medication omission in medication (2). Nurses make up the largest group of health workers. So the quality of health care depends to a great extent to nurses themselves (3). Nurses are the most responsible persons for giving medication. Medicine administrations consume more than 40 percent of the nurses' time (4). Medication errors may occur in all types of prescriptions and occur mainly in the preparation, delivery, and administration of medication. The human factor is the main cause of medication errors (5). According to recent studies, about one third to one half of all adverse medication events is preventable. Adverse medication events in hospitals are variable from 2.4 to 6.5 of every 100 patients leading to longer hospitalization, increased financial burden, and increased risks for death. Today, one of the fundamental concepts in the health care delivery is patient safety which is the most important priority in the health care systems of many countries. Nurse'sknowledge and experience is an important factor related to nursing which have a significant impact on the quality of nursing care including medication prescription (6).One of the reasons behind it might be deficiency of nurses' knowledge on medications and their need for training (7). Primary and natural result of medication errors which is the most common events in

nursing profession could increase the length of hospital stay leading to increased hospital costs and in some cases may initiate severe injury or even death (8). Factors such as inadequate communication between team members, environmental performance, increased workload (9), low precision, neglect, low work experience, less education are all effectivein committing nursing errors (10). More experienced nurses communicate better with nurse managers and have greater recognition on the work of the group (11). Effective group work should be coordinated, integrated, and performed by standard methods (12) Knowledge is one of the factors affecting the incidence in nursing errors and could be a great factor in avoiding these errors (13). Professional environmental performance may increase job satisfaction and quality of care. Environmental performance, include effective nursing management and nurse physician communication. International health service managers and consultants suggest that environmental performance effect hospital and patient's outcome (14). Many studies suggest that nurses' work condition is responsible for most of the errors. Nurses who work in the hospitals with inadequate human resources and have more working hours are more likely to commit errors (15). Nurses have the main role in hospitals and are involved in the patient'smedication.Errors are serious threat to the health and safety of the patient as well as the nursing profession as a whole. Given the importance of the nursing profession,a large number of medication errors are preventable; therefore, this study aimed at determiningthe relatedfactors in the incidence of medicationerrors based on the nurses' self-report.

MATERIALS AND METHODS

This is a descriptive analytical study to determine the relatedfactor in the incidence of medicationerrors based on a self-report of nurses in the hospital wards affiliated to Kurdistan University of Medical Sciences in 2014. Study participants were 100 nurses in Beast hospital in Sanandaj, Iran who were selected randomly in different shifts and then they completed informed consent and questionnaires. For ethical issues anonymous questionnaires were distributed with bar codes. Then they were distributed after obtaining necessary permissions from the ethical committee of the faculty of nursing. The questionnaire consisted of 2 sectionswas used to collect the data. The first section consisted of 17 questions on demographic information including age, sex, type of activity, duration of service, hospital ward and location, error during the years of service, reporting or non-reporting of mistakes and type of mistake. The second part consisted of 25 items related to 1-to-5 likert scale which checked out medical errors in 5 domains including items related to nursing (questions 1 to 10), items related to teamwork (questions 11-15), workload (questions 16-19), and environmental factors (questions 22-25). Validity of the tool was confirmed through content validity and its reliability was 0.84. Then the data were entered into SPSS version 16 and analyzed.

RESULTS

One hundred critical care nurses responded to the survey, representing a 92% return rate. Mean age was 25.8 years. Male nurses participant were 67.5% (n= 56), while female nurses participant were 32.5% (n = 27). Participants in the study were practicing for an average of 3.63 years. Nurses had Baccalaureate degree 98.8%. Regarding work setting the sample distributionwere as follows: ICU nurses 38.6% (n = 32), CCU nurses 26.5% (n = 22), and general nurses 34.9% (n = 29).As part of the demographic survey, nurses were also asked the number of medication errors they could remember over the course of their career. The mean number of errors recalled was 4.07 per nurse (SD = 3.9). However, most nurses (65%) recalled making 2 to 5 errors.

The ranked causes of medication errors as perceived by the participating nurses. Nurses ranked the listed causes from 1 to 10, with 1 indicating most frequent cause and 10 indicating least frequent cause. Mean scores were calculated for each item. The top 3 ranked perceived causes of medication errors were the following: (1) nurse miscalculates the dose, (2) physician prescribes the wrong dose, and (3) physician's writing on the doctor's order form is difficult to read or illegible (Table 1).

Table 1. Ranked causes of medication errors*

Item	Mean	SD
1. Medication errors occur when the nurse miscalculates the dose.	4.47	2.50
2. Medication errors occur when the physician prescribes the wrong dose.	4.98	2.89
3. Medication errors occur when the physician's writing on the doctor's order form is difficult to read or illegible.	4.99	2.48
4. Medication errors occur when there is confusion between 2 medications with similar names.	5.11	2.24
5. Medication errors occur when the nurse fails to check the patient's name band with the Medication Administration Record (MAR).	5.29	3.42
6. Medication errors occur when nurses are tired and exhausted.	5.48	3.16
7. Medication errors occur when nurses are distracted by other patients, coworkers, or events on the unit.	5.90	2.92
8. Medication errors occur when the nurse sets up or adjusts an infusion device incorrectly.	6.10	2.70
9. Medication errors occur when nurses are confused by the different types and functions of infusion devices.	6.30	2.95
10. Medication errors occur when the medication labels/packaging are of poor quality or damaged.	6.31	2.73

** Ranking: 10 indicates least frequent cause; 1 indicates the most frequent cause.*

Table 2, presents additional nurse responses to statements about reporting medication errors. Most nurses indicated that they knew what constituted a medication error (85.5%) and when to report an error using an incident report (77.1%). Reasons for not reporting errors included "afraid of manager reaction" (73.5%), "afraid of coworkers' reactions" (67.5%), and "not thinking an error was serious enough" (56.6%). However, the majority of nurses (73.5%) do not seem to fear disciplinary action (losing one's job) because of committing an error.

Table 2. Reporting medication errors

Items	Yes % (n)	No % (n)
- I am usually sure what constitutes a medication error.	85.5 (71)	14.5 (12)
- I am usually sure when a medication error should be reported using an incident report.	77.1 (64)	22.9 (19)
- Some medication errors are not reported because nurses are afraid of the reaction they will receive from the Nurse Manager.	73.5 (61)	26.5 (22)
- Some medication errors are not reported because nurses are afraid of the reaction they will receive from their peers.	67.5 (56)	32.5 (27)
- Have you ever failed to report a medication error because you did not think the error was serious to warrant reporting?	56.6 (47)	43.4 (36)
- Have you ever failed to report a medication error because you were afraid you might be subject to disciplinary action or even lose your job?	26.5 (22)	73.5 (61)

Most nurses indicated that they knew what constituted a medication error (85.5%), but when they asked in the first scenario about patient misses his midday dose of oral ampicillin because he was in x-ray for 3 hours, most nurses (71.1%) responded that they would not classify it as medication error, 73.5% would notify the physician; and only 21.7% would complete an incident report. This raised a question, "were nurses really aware what constituted a medication error?"

DISCUSSION AND CONCLUSION

Any practicing nurse knows that the causes of medication errors are both varied and complex. Because medication errors are such a concern to the public, healthcare organizations, and nurses themselves. This study was undertaken to ask nurses about what they believe constitutes a medication error, what is reportable, and what are the barriers to reporting?

All nurses in an organization may need help in identifying what is a medication error, when to report it, and to whom. This study calls attention to the need to clarify with nursing staff what constitutes a medication error. Interestingly, nurses were "usually sure what constitutes an error" (85.5% yes, 14.5% no) yet were not in high agreement with one another when given actual medication scenarios (i.e., 48.2% yes, 51.8% no). This study has identified a gap between the nurse's perceived knowledge and his or her actual knowledge. It is clear that nurses need specific information about what constitutes medication errors. The information gained from this study can be used in educational programs designed to promote the recognition of these errors.

Now that we know nurses differ in their perceptions as to what constitutes a medication error, do organizations have clear guidelines available as to what situations represent medication errors? Regardless of our personal opinions, traditions related to nursing's 5 rights of medication administration, or our unstated expectations, this study demonstrates that nurses are not "on the same page" as to what is a medication error and when to report to it.

This study identified related factors in the incidence of medicationError based on nurses'self-report. However, strong barriers to reporting did not include fear of disciplinary action but were more in line with interpersonal reactions from managers and staff. Therefore, discussions among staff and nurse manager'sabout medication errors is a must.

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