

Evaluation of Nursing Errors and Their Predisposing Factors among Nurses Working in Hospitals of Sabzevar, Razavi Khorasan Province in 2014

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Received 2016 October 19; Revised 2016 November 22; Accepted 2016 December 17.

Abstract

Background: Nowadays, one of the key priorities in nursing management is patient safety. The wide range of nursing errors has made patient safety a big deal. Although the removal of nursing errors seems somewhat unlikely, they can be minimized.

Objectives: The present study aimed to determine the rate of nursing errors and their predisposing factors in hospitals of Sabzevar, Razavi Khorasan province.

Methods: The present research was a cross-sectional, descriptive study. The subjects included 218 nurses working in hospitals of Sabzevar. The required data were collected through a questionnaire and then statistically analyzed using descriptive statistics, chi-square test, and Fisher's exact test.

Results: The results showed that 78.9% of nurses were women and the rest (21.1%) were men. The mean age and work experience of subjects were 37.6 ± 37.19 and 7.14 ± 5.64 , respectively. The highest rate of errors was related to nursing care, medication, reading the prescriptions, and vital signs in sabzevar hospitals. The findings revealed that the main factors causing nursing errors in hospitals of Sabzevar should found in managerial (30.34%), coordination (34.62%), environmental (60.7%), and training (43.06%) dimensions.

Conclusions: Reduction of workload, increasing the number of nurses, and the establishment of a precise monitoring system can play a major role in the reduction of errors and failures. Given the importance of each the factors causing errors, a strategy based on objective evidence should be adopted for eliminating the causes of nursing errors.

Keywords: Nursing Error, underlying Causes, Nurse

1. Background

Despite significant advances in technology and health care skills, many patients suffer from or die of medical errors (1, 2). A large part of medical errors occurs when care services are provided by nurses (3).

The breadth and complexity of nursing and midwifery functions are increasing and nurses and midwives play an extensive role in securing individual and social health (4). Nursing errors are defined as the occurrence of an error or adverse event in the process of proper care of a patient which can jeopardize the patient's safety. Errors of the medical staff are among the most common events in health systems of societies. According to several studies, tens of thousands of patients annually lose their lives as a result of medical errors and accidents in various situations (5).

Nowadays, "Keeping Patients Safe" is one of the basic concepts in health service delivery systems (6). On the other hand, nurses and all health care staff members, regardless of how skilled, committed, and accurate they are, may make mistakes in providing healthcare services (7)

and none of the members of health care provider team are innocent of any wrongdoing (8). Nursing errors are responsible for thousands of injuries, medical negative consequences, and deaths in the US, as almost 2000 deaths related to nursing errors occur in 10000 patients within a decade in this country. Administration of medicine seems to be the most serious task of nurses that making any mistake in it can be followed by adverse consequences for patients (7).

Since nurses have the highest medical and care connection with patients, it can be one of the most complicated management parts in human errors. Research findings on nursing errors focus on a few points (9) including the inevitability of error, multifactorial nature of the error, and the need for replacement of individual approach to errors by systematic approach (10).

A study shows that about 70% of errors leading to secondary damage are due to negligence or medical malpractice that 90% of them were preventable (11). However, more than 98000 people annually lose their lives in hospitals in the US due to human errors (12).

In a study conducted by Balazs et al. on 393 full-time

nurses in a hospital, it was shown that 30% of nurses reported at least one error during the study (13). Studies have shown that 38% of medical errors are caused by nurses (14).

The primary and natural outcome of nursing errors is the increased duration of hospitalization and costs. However, they may lead to severe injury or even death in some cases (15). The first step in the reduction of occupational errors is to identify their underlying factors (16). Therefore, the present study aimed to determine the rate of nursing errors and their predisposing factors in hospitals of Sabzevar, Razavi Khorasan province.

2. Methods

The present research was a descriptive-analytic study which was carried out in Sabzevar University of Medical Sciences in 2014 in order to determine the rate of nursing errors and their predisposing factors in hospitals of Sabzevar, Razavi Khorasan province. An author-made questionnaire was developed through the review of the literature and similar studies for data collection. The first part of the questionnaire included demographic information, the second part consisted of 19 items about different types of errors in 5 areas of drug therapy, nursing care, reading the prescriptions, vital signs, and reporting, and the third part involved 14 items in different dimensions of management, the environment, team coordination, and training. To assess the validity of the questionnaire based on content validity, the views and comments of 15 members of the faculty of nursing and midwifery, Sabzevar University of Medical Sciences about the questionnaire were elicited and applied to the final version. To confirm the reliability of the questionnaire, Cronbach's alpha 0.8 was used. Cronbach's alpha coefficient for this questionnaire was obtained 0.8, which is in an acceptable level. A written consent form was obtained from all respondents. After obtaining the necessary permits, questionnaires were distributed among 218 nurses based on the convenience sampling method. The obtained data and information were descriptive statistics, chi-square test, and Fisher's exact test in SPSS-16.

3. Results

The results showed that 78.9% of nurses were women and the rest (21.1%) were men. The mean age of nurses was 37.19 ± 31.6 , with a minimum and maximum of 21 and 50, respectively. The work experience of nurses was between 1 and 27 years with a mean of 14.61 ± 7.5 . Out of the 218 nurses, 29 nurses had an experience of management with a minimum and maximum of 1 and 20 years. In terms of educational attainment, most nurses (97%) had a bachelor degree in Nursing, 1.5% had a diploma in Paramedicine, and

1.5% of them had a master degree in Nursing. In terms of marital status, 78.1%, 20.6%, and 1.3% of nurses participated in this study were married, single, and divorced, respectively. About the number of children, 43.4% of nurses had no child, while 30.7%, 21.9%, and 3.9% of them, respectively, had one, two, and three children.

According to Table 1 the highest frequency of errors caused by nursing care, Reading the prescriptions, Drug therapy, care, Vital signs, and reporting was observed in sabzevar hospitals, respectively.

In studying the relationship between hospital and error incidence, Chi-square and Fischer's exact test were used. According to the results shown in Table 2 there is a significant relationship between the incidence of errors related to drug therapy, nursing care, vital signs, and reporting and hospital ($P < 0.05$), while such a relationship was not found between the incidence of errors related to reading the prescriptions and hospital (Table 3).

Chi-square test was used to study the relationship of gender and marital status with the incidence of error. The results showed that incidence of error has no significant relationship with gender and marital status. In addition, the results of independent t-test indicated that there is no significant relationship between age and incidence of error.

4. Discussion

The research findings showed that nursing errors occur in hospitals of Sabzevar at different rates. The highest frequency of nursing errors in Mobini hospital was related to vital signs which are probably the most important and critical duty of nurses. In addition, the highest frequency of nursing errors in Vaseiy, Joghatai, Neghab, and Emdad hospitals was related to reading the prescriptions, vital signs, nursing care, and drug therapy, respectively.

In studying the relationship between hospital and error incidence, Chi-square and Fischer's exact test were used. According to the results shown in Table 2 there is a significant relationship between incidence of errors related to drug therapy, nursing care, vital signs, and reporting and hospital ($P < 0.05$), while such a relationship was not found between incidence of errors related to reading the prescriptions and hospital ($P > 0.05$).

The results showed that there are factors which underlay nursing errors in all management, the environment, team coordination, and training dimensions. The high workload was mentioned by 84.6% of nurses as the most obvious reason for the occurrence of nursing errors. Then, the low ratio of nurses to patients (75%), poor environmental conditions (67.5%), poor physical conditions (53.9%), and assignment of responsibilities to nurses out of their

Table 1. The Mean Nursing Errors by the Type of Error

Type of Error	Reporting	Vital Signs	Care	Drug Therapy	Reading the Prescriptions
	37.78 ± 13.52	96.9 ± 68.39	61.77 ± 41.98	84.69 ± 45.52	59.87 ± 46.09

Table 2. Relationship Between Hospital and Error Incidence

Type of Error	Reporting		Vital Signs		Care		Drug Therapy		Reading the Prescriptions	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
	148 (67.88)	70 (32.11)	119 (54.58)	99 (45.41)	112 (51.37)	106 (48.62)	77 (35.32)	141 (64.67)	59 (27.06)	159 (72.93)
Test	Chi-square		Chi-square		Chi-square		Fischer's exact test		Fischer's exact test	
P Value	0.001		0.00		0.00		0.00		0.08	

Table 3. Frequency Distribution and Percentage of the Underlying Causes of Nursing Errors by Each Item

Items	Yes	Somewhat	No	Total	
Management	The low ratio of nurses to patients	161 (73.85)	42 (19.26)	15 (6.88)	218 (100)
	High workload of nurses	182 (83.48)	27 (12.38)	9 (4.12)	218 (100)
	Lack of supervision on the process of care	74 (33.94)	96 (44.03)	48 (22.01)	218 (100)
	Lack of a system for recording and reporting of errors	62 (28.44)	74 (33.94)	82 (37.61)	218 (100)
	Mistreatment of managers with nursing error	85 (38.99)	87 (39.90)	46 (21.10)	218 (100)
Team coordination	Poor communication between the health care team member	53 (24.31)	83 (38.07)	82 (37.61)	218 (100)
	Poor communication of managers with personnel	64 (29.35)	83 (38.07)	71 (32.56)	218 (100)
	Mistreatment of colleagues with nursing errors	81 (37.15)	90 (41.28)	47 (21.55)	218 (100)
	Assignment of responsibilities to nurses out of their duties	98 (44.95)	60 (27.52)	60 (27.52)	218 (100)
The environment	Unfavorable environmental conditions	144 (66.05)	64 (29.35)	10 (4.58)	218 (100)
	Poor physical conditions	113 (51.83)	73 (33.48)	32 (14.67)	218 (100)
Training	Lack of appropriate training facilities in the workplace	112 (51.37)	78 (35.77)	28 (12.84)	218 (100)
	Lack of access to suitable resources, pamphlets, and books on nursing	87 (39.90)	76 (34.86)	55 (25.22)	218 (100)
	Indifference of managers to training	62 (28.44)	89 (40.82)	67 (30.73)	218 (100)

duties (47.3%) ranked second to fifth in this regard. In addition, the underlying causes of nursing errors in hospitals of Sabzevar were found to be in management (34.30%), team coordination (62.34%), the environment (7.60%), and training (6.34%) dimensions, respectively.

Chi-square test was used to study the relationship of gender and marital status with the incidence of error. The results showed that incidence of error has no significant relationship with gender and marital status. In addition, the results of independent t-test indicated that there is no significant relationship between age and incidence of error. The results of Tang et al. showed that negligence of nurses (86%), the high workload of nurses (37.5%), and

low experience of newcomers (37.5%) are the most common causes of medication errors by nurses (17). However, Wolf reported that the most common causes of medication errors include poor clinical performance (51%) and lack of pharmacological information (26.5%) (11). According to the American heart association (2005), illegible handwriting of doctors, making mistakes in recording medical information of patients, and forgetting the administration of drugs are the most important causes of medication errors in cardiac intensive care unit of hospitals.

The first step in the reduction of occupational errors is to identify their underlying factors (18). The results of Moeen et al. suggested that removal of a series of impor-

tant cases, registration at the wrong time, the use of ambiguous or wrong words, and imprecision in writing the nursing report are the most important cause of nursing errors (19). Among the positive points of this study was to identify the causes of nursing errors, and of its weaknesses was not enough time to fill out the questionnaire on behalf of the nurses' It is suggested in other studies with larger sample sizes to be done.

Conclusion: Reduction of workload, increasing the number of nurses, and the establishment of a precise monitoring system can play a major role in the reduction of errors and failures. Given the importance of each the factors causing errors, a strategy based on objective evidence should be adopted for eliminating the causes of nursing errors.

Acknowledgments

The present research was approved by the HSR council of department of health with the ethics code of medsab.rec.93.72. The authors would like to sincerely thank and appreciate all esteemed professors, nurses, nursing managers, and students who helped us in this research.

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