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Nursing errors and its effect on health care: Perception of risk factors from view of nurses in Qazvin

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ABSTRACT

Background and aims: In order to plan for preventing and decreasing the rate of nursing errors, understanding of nurse's perception of nursing errors could be very helpful. This study was thus designed to examine the critical care nurses perception of nursing errors from view point of critical care nurses.

Methods: This study was conducted in 9 hospitals in Qazvin province located in north of Iran. Using convenience sampling, all registered nurses who worked in critical care units were invited to participate in the study. Data were collected between January and March 2015 with using "predisposing factors of nursing errors questionnaire".

Results: Of 379 nurses participated in this study, 77.8% (N= 213) were women. The mean age of participants was 34±2.2 years and mean years of experience was 8.1±1.5 years. Totally, from view of nurses, most and lowest common cusecs of nursing errors were related to "management aspect" and "Team coordination" items respectively.

Conclusion: Nursing educational systems should pay more attention to nurses' perception to nursing errors and may consider their view during planning and education towards decreasing nursing errors in critical care setting.

Keywords: Nurses perception, Nursing errors, Critical care, Health care systems, Risk factors.

Original article

INTRODUCTION

Error is an inevitable aspect of all the professions particularly health and treatment-related jobs.[1] Medical errors directly impact patient outcomes and have high burden of cost and suffering from all involved.[2,3] Results of a study revealed that the total annual cost of measurable medical errors in the United States were about $1 billion in 2009.[2] Medical errors are common among all health care setting. In one study, in 2008, Northcott et al., reported that about 37% of households had experienced a medical error in Alberta, Canada.[4]

Nursing error is one type of health care team member's errors that can result in irreparable and irremediable damages (e.g. permanent disability or death).[5] A nursing error is defined as a discipline-specific term that encompasses an unintended 'mishap' made by a nurse and

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where a nurse is the one who is situated at the 'sharp end' of an event that adversely affected-or could have adversely affected-a patient's safety and quality care.[3] Most commonly nursing errors in hospital setting are falls, pressure ulcers, infections, medication errors, documenting errors, and equipment injuries.[6,7] The incidence of nursing errors in intensive care units is high because of characteristics of these wards and the nature of its patients.[8,9] Results of previous study revealed that in average, critically ill patients who admitted to intensive care unit experience 1.7 errors per day and nearly all suffer a potentially life threatening error at some point during their stay than patients in other hospital wards.[7]

The patient's safety and the improvement of quality of delivered care to patients are at the first priority for the nurses. Nurses play a vital role in preventing errors that may negatively impact critically ill patient health. In order to plan for preventing and decreasing rate of nursing errors, understanding of nurse's perception of nursing errors could be very helpful. However studies in this regard are limited. This study was thus designed to examine the critical care nurses perception of nursing errors and its risk factors from view point of critical care nurses.

METHODS

This study employed a descriptive design and was conducted in all hospitals, in Qazvin, Iran. Using convenience sampling, all qualified registered nurses (N= 410) working in 14 different wards (ICU, CCU and emergency) at the nine hospitals were invited to participate in the study. Consent was implicit by respondent's decision to return the completed questionnaire. Participants were assured that all data would remain anonymous, kept confidential and be stored safely. Ethical approval was obtained from Qazvin University of Medical Sciences prior to the collection of any data.

Data were collected from January to March 2015. Questionnaire packages containing a demographic variables questionnaire (self-designed), and the "predisposing factors of nursing errors questionnaire". This questionnaire developed by Mashouf et al., in 2014 and contains four items includes "unit's physical and environmental conditions (9 question)", "team coordination (7 question)", "training and skills of nursing staff (11 questions)" and" aspect of management (13 questions)". They reported Cronbach's alpha of 82% for their questionnaire.[10] Questionnaires distributed by the head nurse of each ward and researcher (AM) in all three work shifts (days, evenings, and nights). Participants answered individually during work hours and returned the test to the researcher after given some oral information about the questionnaire items.

Descriptive statistics, Fisher exact test, Wilks' lambda and one-way ANOVA were used to analyze data. All data were analyzed using SPSS statistical software and a variable was found to be statistically significant if $P<0.05$.

RESULTS

Of 410 nurses 379 nurses participated in this study, giving a response rate of 93%. Of these, 77.8% (N= 213) were women and mostly married (75%). The mean age of participants was 34±2.2 years and year mean of experience was 8.1±1.5 years.

Totally, from view of nurses in present study, most common cusec of nursing errors were related to "management aspect" and lowest common cusec were related to "Team coordination" items (Figure 1). In category 1 (unit's physical and environmental conditions), most common and less common causes

determined by nurses were "Improper behavior of patients and their relatives" and "Long distance between nursing station and patients rooms or beds" respectively (Table 1).

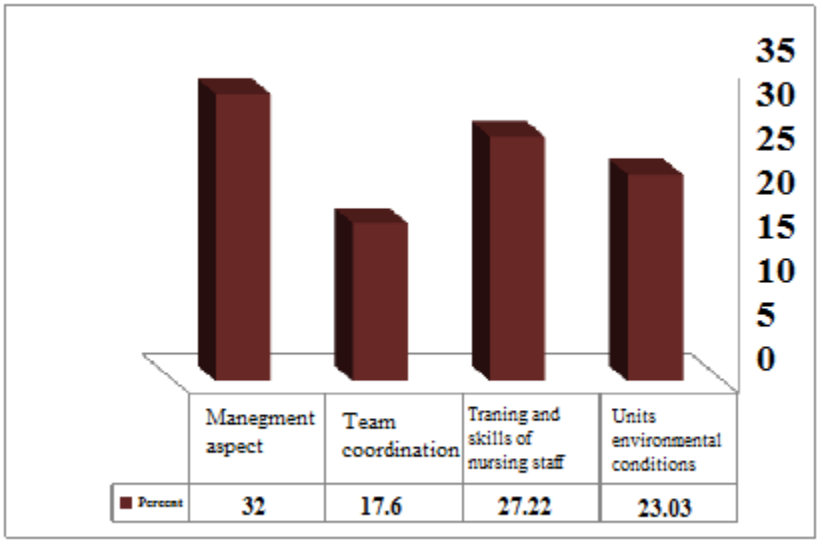

Figure 1: Mean and present of nurses response to each domains of questionnaire

Table 1: Nurses responses to items related to aspect of the unit environmental conditions

Items	No	Somewhat	Yes
1) Long distance between nursing station and patients rooms or beds	154(14.2%)	152(11.7%)	73(6.5%)
2) The lack of suitable space for report writing	137(12.6%)	151(11.5%)	91(8.1%)
3) Lack of sufficient time to evaluate and monitor patients	71(6.5%)	149(11.4%)	163(14.6%)
4) Not visibility of all nursing units from the nursing station	115(10.6%)	152(11.7%)	112(10.1%)
5) Small area of medication room	142(13.1%)	126(9.6%)	133(11.9%)
6) Low lighting	168(15.5%)	132(10%)	99(8.9%)
7) Inappropriate organization and placement of medical supplies	127(11.7%)	169(12.9%)	114(10.3%)
8) Much bustle and noise in the unit	87(8.03%)	142(10.7%)	158(14.2%)
9) Improper behavior of patients and their relatives	82(7.5%)	134(10.2%)	168(15.1%)

In category 2 (team coordination), most common and less common causes determined by nurses were "Inappropriate relationships between members of the nursing team" and "Inappropriate treatment of the members of the supervisory team at the time of nursing error detection" respectively (Table 2).

Table 2: Nurses responses to items related to aspect of team coordination

Items	No	Somewhat	Yes
1) Inappropriate relationships between members of the nursing team	90(15.6%)	187(15.2%)	101(11.8%)
2) Inappropriate relationships between physician and members of the nursing team	69(12%)	174(14.7%)	131(15.3%)
3) The lack of proper hierarchy between the personnel to control the unit	96(16.7%)	177(14.8%)	106(12.4%)
4) Inappropriate relationships between the nursing and nursing directors	88(15.5%)	183(15%)	108(12.7%)
5) Not involvement of patient in the care process	73(12.7%)	166(16.3%)	107(12.6%)
6) Inappropriate treatment of the members of the supervisory team at the time of nursing error detection	66(11.4%)	155(12.6%)	158(18.5%)
7) Improper division of duties beyond work abilities by the supervisor of the unit	92(16.1%)	146(11.94%)	141(16.5%)

In category 3 (training and skills of nursing staff), most common and less common causes determined by nurses were "Not use of staff trained and expert in the specialized care" and "Lack of enough acquaintance with the method of the application of the unit's supplies" respectively (Table 3).

Table 3: Nurses responses to items related to aspect of staff skill and training

Items	No	Somewhat	Yes
1) Lack of enough acquaintance with the method of the application of the unit's supplies	137(12.8%)	147(8.1%)	95(7.2%)
2) Lack of the personnel's control on the Tralee code and supplies of the unit	140(13.1%)	141(7.7%)	98(7.4%)
3) Lack of adequate skills in performing some procedures	111(10.4%)	160(8.8%)	108(8.2%)
4) Lack of access to scientific resources and results of the latest scholarly researches in the units	86(8.1%)	202(11.1%)	109(8.3%)
5) Lack of proper educational facilities and space in the workplace	71(6.6%)	181(10%)	127(9.6%)
6) Lack of personal motivation and interest to learn in the occupational area	91(8.5%)	159(8.7%)	129(9.8%)
7) Managers apathy towards education	99(9.3%)	158(8.7%)	122(9.2%)
8) Lack of proper education system in the hospital	92(8.6%)	154(8.5%)	133(10.1%)
9) Lack of acquaintance with the professional rules and regulations	113(10.6%)	163(9%)	103(7.8%)
10) Not use of staff trained and expert in the specialized care	65(6.1%)	163(9%)	151(11.5%)
11) Not attend in the appropriate educational classes based on the work environment	59(5.5%)	182(10%)	138(10.5%)

In category 4 (aspect of management), most common and less common causes determined by nurses were "Inappropriate organization of nursing personnel in the unit" and "Lack of policies and guidelines" respectively (Table 4).

Table 4: Nurses responses to items related to management aspect

Items	No	Somewhat	Yes
1) Inappropriate method of supervision and monitoring in the unit	108(10.2%)	145(8.9%)	123(7.95%)
2) Lack of continuous monitoring on the part of the units' authorities	98(9.3%)	183(11.2%)	107(6.9%)
3) Part-time use of untrained personnel	109(10.3%)	115(7.1%)	155(10.1%)
4)Low ratio of nurses to patients	33(3.1%)	108(6.6%)	238(15.3%)
5)Inappropriate organization of nursing personnel in the unit	80(7.6%)	149(9.1%)	150(9.6%)
6) Lack of policies and guidelines	158(15.1%)	147(9.1%)	93(6.1%)
7) Lack of standard devices and advanced medical supplies	116(11.1%)	160(9.8%)	103(6.6%)
8)Lack of proper error reporting and recording systems	113(10.7%)	170(10.4%)	96(6.2%)
9)Inappropriate treatment by managers at the time of nursing error detection	61(5.8%)	165(10.1%)	153(9.8%)
10) Lack of incentive programs on the part of the managers	76(7.2%)	143(8.8%)	186(12.1%)
11) Lack of exact job description for nursing personnel	99(9.4%)	137(8.4%)	186(12.1%)
12) High workloads for nurses	108(10.27%)	145(8.9%)	123(6.9%)
13) Failure to identify errors in intensive care units	98(9.3%)	183(11.2%)	107(6.9%)

DISCUSSION

Nursing errors in all hospital and clinical settings includes critical care units are inevitable.[11] But it is possible to reduce and minimize the incidence of errors by correcting planning and using an efficient system.[10] Results in the current study revealed that lack of ratio in staff to patients, lack of exact job duty for nursing personnel, nurses heavy work load, not using of specialist nurses who are expert in critical care, inappropriate behavior of the members of safety team at the time of nursing error detection, lack of related policies and guidelines, lack of standard devices and advanced medical supplies, improper behavior of patients and their relatives, inappropriate relationships between members of the nursing team were the most common predisposing factors of nursing errors determined by critical care nurses in present study.

Study about nurses' perception about nursing errors usually is limited to studies that examined nurse's perception about medication errors (one type of nursing errors).[11,13-15] and studies that examined nurses perception of all domains of nursing errors includes falls, pressure ulcers development, infections, documenting errors, and equipment injuries that are limited to few studies.[5,10,12] In one study in this regards, with using the same questionnaire Mashouf et al., examined perception of 126 nurses from nursing errors in Tabriz in 2014.[10] Similar to finding of present study, most common cause of nursing error determined in Mashouf et al., study were related to management aspect.[9] Managers (hospital and wards) have key role in preventing nursing errors.[10] They are usually responsible for guided and controlled use of protocols, policies and standards to prevent nursing errors by their nursing personnel. They are also responsible for managing occurred errors.[9] In other study in this regards in 2012, Baghaei et al., examined critical care nurses perception from nursing errors. They reported that the environment aspect as the most important predisposing factor of nursing errors, and the aspects of education, coordination and management have said as the next predisposing factors of nursing errors respectively.[12] Their finding is

in contrast with findings in present study. This difference can be related to difference in sample size of two studies (380 versus 201) or different types of instruments used in two studies. Questionnaire used by Baghaei et al., consisted of 14 questions which is not enough to examine nurses' perception in this regard.[12]

Nursing errors are serious health problem that threaten patient safety especially in critical care setting. Previous study reported that the nursing errors development is inevitable in clinical setting. Therefore, health care providers need to focus on optimizing the system to reduce errors.[16] For this reason, several strategy and intervention could be effective. For example, defining and categories errors (adverse event, near miss, never event, and sentinel event), list causes and types of most common nursing errors such as falls, pressure ulcers development and medication error (this works increase nurses' sensitivity to errors and decrease chance of occurrence), identifying populations with special vulnerability to nursing errors for example elder patients that are agitated are at higher risk of falls or patients who need to receive several types of oral and injection drug are at higher risk of medication errors, use of standard strategies and guideline for planning and interventions to prevent nursing errors for example use of a multidisciplinary pressure ulcer prevention program significantly decrease the rate of unusual pressure ulcers development among patients who are at risk of pressure ulcer or implement an standard hand washing protocol for all workers that are in contact with patients can decrease risk of infections, and provide an intimate clinical setting to nurses who reports their errors. Results of one study in this regards that examined nurses' perceptions and experiences with medication errors revealed that fear of consequences that may result in a medication error is reported, fear of being guilty if something happens to the patient due to a medication error, and fear of a reprimand if they reported a medication error had been made are three major barriers reporting medication errors by nurses.[17]

CONCLUSION

Nursing educational systems should have more attention to nurses' perception on nursing errors and may consider their view during planning and education towards decreasing nursing errors. Lack of staff to patients ratio, lack of exact job description for nursing personnel, nurses heavy workload, not using of staff trained and expert in the specialized care, inappropriate behavior of the members of safety team at the time of nursing error detection, lack of policies and guidelines, lack of standard devices and advanced medical supplies, improper behavior of patients and their relatives, inappropriate relationships between members of the nursing team of nursing errors development by nurses. Further study in this regards are recommended.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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