Risk management program on reporting of medication errors and learning in CCU

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ABSTRACT

Background: Risk management program is essential for monitoring problems, policies and procedures, reporting systems and tracking adverse events. **Aim:** this study aimed to determine the effect on the risk management program on reporting of medication errors and learning from error in cardiac intensive care unit. **Methods:** This quasi-experiment al study was performed in 2017 on the staff of the CCU in Tehran hospitals that were randomly assigned to experimental and control groups. Data collected by three questionnaires that used after assessing the validity and reliability of them. Risk management committee meetings held according to Carol risk management model then after two months measured variables by means of the above scales and analyzed using SPSS version 22. **Finding:** After performing program, finding showed that there are significant difference in report medication errors than before (P<0.001), and the learning from error than before the intervention, respectively (P<0.003). **Conclusion:** Based on the findings, the implementation risk management program in hospitals can reduce medication errors; increase the learning of the error and error reporting.

Keywords: Cardiac Care Unit, Learning, Medication Error, Reporting, Risk Management.

Introduction

Critical care unit is complex known ward that patients with severe disease used of advanced technology and special nursing care [1]. The units of direct observation and continuous, immediate access to the patient and provide a high level of technology and specialist nurses, qualified, capable and has the clinical experience of critically ill patients admitted in these ward for caring [2]. Therefore, maintaining patient safety in this ward with the aim of preventing medical errors before they cause death, injury or damage to the patient. Therefor they are a key priority in the health system [1]. In fact, safety and risk management are meant to minimize risks at acceptable levels [3].

As patient safety is one of the most important aspects of health care and harm to the patient or someone looking healthy is incompatible with the philosophy of health care [4]. Therefore, the prevention of medical errors, patient safety is a vital aspect to be considered, while medical errors, the challenges threatening the health system in all countries is important and the most common medical errors [5] Which increases the amount of death and hospital costs [6]. Although most medication errors didn't cause serious harm to the patient but many of them can be fatal, so even an error is significant .So they must be reduced as much as possible [7]. In Iran, it has been estimated that 55,000 medical errors occur each year resulting 10,500 deaths and 23,000 physical disabilities [8]. Most of studies (83.3%) reported prevalence of administration errors between 14.3%-70.0%. Prescribing error prevalence ranged from 29.8%-47.8%. The prevalence of dispensing and transcribing errors were from 11.3%-33.6% and 10.0%-51.8% respectively [9]. Results of a study by Munoz et al. (2010) showed that in total 757 patients and 5466 drug prescription, the highest error rate was in transcription (14.6%). The prescription error rate in this research was (4.79%). Another study found that (20%) of

medical errors were related to the medication error; with (39%) from drug prescription, (38%) from nursing mistakes in preparation and drug administration, (12%) pharmacist's error and (11%) in transferring the physician orders to the nursing records [8]. In order to prevent medication errors, assessment of errors and voluntary reporting by nurses is important, but on the other hand fear of punishment, negative perception of themselves and the complex and time-consuming reporting system in the workplace obstacles to voluntarily report errors [10]. Developing systems for reporting errors, the first step should be to identify the problems addressed, but shall not be limited to this stage. Report errors in the system would help to facilitate and track large scale as well as the analysis of results in hospital wards, private nurses, pharmacists and doctors will make use of the experiences of others. This reduces the cost of medical and hospital treatment is also reported errors can also help prevent unnecessary medical care and cost [11]. Risk management is vital as a process and decisions to minimize the negative effects and risks of sudden events that are happening in the organization. In other words, the treatment system, risk management is to maintain the safety and well-being of patients and staff [11]. Therefore, this is essential that hospitals to assess the knowledge of its staff in the risk management and risk management programs, especially that try to implement it in the clinical departments [5]. To prevent and reduce errors, identify, analyze, resolve the error and the evaluation should be done. Base of error detection is reporting events and errors by the host system. Because of the sensitive nature of personnel against errors, there are formal and informal communication channels to communicate with one error, equally important. Risk analysis categorized risk from potential to actual events. This is done by examining the severity of errors [11]. Because the causes of medication errors can be considered a high priority health system research, this study done to evaluate the effect risk management program on medication errors reporting and learn from them in CCU.

Methods

This quasi-experiment al study was conducted in 2017 on nursing staff that were in CCU hospital.

Setting
This study was conducted at a large teaching hospital affiliated to the Baqiyatallah University of Medical Sciences in Tehran, I.R. that formed CCU number two as a **control** group and CCU number one as experimental group (CCU1).

Sample
The sample included nursing staffs (n = 38) selected census and inclusion criteria such as graduation from nursing, with at least two years of work experiences on different shifts. Exclusion criteria include those who for whatever reason were not willing to participate in research.

Measurement
After the approval of the study by the Research and Ethics Committee of Iran University of Medical Sciences and authorities at each selected hospital, the data were collected using self-reporting (ethic approval number: IR.BMSU.340.178). Each participant was informed about the purpose of the study and signed a consent form prior to the Participation in Research.

Data collection tools, questionnaire contains four sections. One: The demographic variables included demographic information of nurses. Two: Structured researcher checklist of drug therapy process includes 74 questions, and scoring Scale of values was including Compliance and non-compliance, respectively. It is noteworthy that since the tool was used in the neonatal intensive care unit, after extensive literature survey and review and revision of existing instruments, to 16 experts, including nine members of the faculty of nursing and seven of nurses had a history of several years of clinical experience in the CCU, was asked to check the quality and quantity of tools to provide feedback on the following criteria. At the end of the qualitative and quantitative method to determine the validity of all questions received approval to participate in research. After data analysis phrases whose score was higher than 0.7 was approved, statements that score between 0.6 to 0.7 was revised and phrases that scores lower than 0.6 were excluded. Then to assess the reliability of checklist of errors, tools were given to 14 people from the cardiac intensive care nurses. The survey was conducted for test-retest interval of 14 days. The final questionnaire included 74 items were prepared. Three: Report medication errors were investigated by using the phrase 14 Wakefield et al (2005) designed and marking it as a percentage (0 to 100 in four parts with 25 percent) [12]. Content validity and formal structures of the tool designers assessed in the test-retest reliability of the study and after 3 weeks (r= 0.65) and internal consistency (α=0.73) is obtained. Pazokian et al (2015) in Iran confirmed construct validity and reliability of using re-test after two weeks (r=0.76) and internal consistency (α=084), respectively [13]. four: Learning from the errors were examined with 13 statements using Rybowiak et al consciousness of error (1999) as part of a six-point Likert scale (strongly agree to strongly disagree) scores [14]. The validity of this tool using factor analysis and the reliability confirmed test-retest(r=0.92), in Iran in 1393 Pazokian et al checked structural validity and reliability the tool by test re-test after two weeks (r=0.93) and internal consistency (α=0.85), respectively.

Intervention
At the beginning of desensitization, a researcher was present for a month pre sampling in different shifts and witnessed the medication process. After this period completed observational checklist of medications for individual nurses. Than completed the learning of the error and reported medication errors questionnaire by staff.

After completing the questionnaire, information was entered into software SPSS 22 version and the frequency and percentages of errors was found and were made a list of the most common errors. After preparing the basic data, meeting the risk management committee was formed with the aim of analyzing the errors and then finds a way to control and reduce errors. After explaining the educational strategies, advantages and limitations of each of the strategies of education for error management, with regard to facilities and the capabilities and limitations of the teaching method, in the first through chose poster and booklets in the second round. Using intelligence gathered from various sources university and the Ministry of Health and the original poster was designed. Posters for the content validity were 16 teachers and nurses who collected the comments and after coordination with the Supervisor applied. Finally, in coordination with the educational supervisor posters

were installed for one month in the CCU1. Then the error report and learn from errors gathered by questionnaire again.

Data analysis
The data were inserted in SPSS 22 version software and the results were compared before the intervention.

Results

Results showed that the average age in this study was 39.65 ± 6.68, and the two groups in terms of age, gender, work experience, education, and courses of medication errors were homogenous.

Finding showed that the two groups in terms of error reporting to be equal in both groups before intervention. After the program error handling significant difference was observed between the two groups (Table 1).

Table 1: Amount of medication error reporting in groups before and after implementing risk management program

Error reporting		Experimental group SEM±Mean	Control group SEM±Mean	Total	The test statistic significant level
Type of non IV medication errors	Before	10.58±2.14	10.84 ± 1.34	10/71±1/78	T test:0.454 df: 36 P- Value=0.653
	After	7/68±0/82	9/74±2/15	8/71±1/91	T test:0/3879 df: 36 P- Value=0/001 d= 1/262
Type of IV medication errors	Before	10/63±2/06	10/51±1/74	10/51±1/88	T test=0/170 df=36 P- Value =0/866
	After	7/36±0/76	10/15±3/48	8/76±2/86	T test=-3/409 df= 36 P- Value =0/002 d= 1/110
Total medication errors	Before	21/21±3/66	21/37±2/54	21/29±3/11	T test=-0/154 df=36 P- Value =0/787
	After	15/05±1/47	19/89±5/47	17/47±4/65	T test=-3/722 df= 36 P- Value =0/001 d= 1/20

Table 2: Amount learning from error in groups before and after implementing risk management program

		Experimental group SEM±Mean	Control group SEM±Mean	Total	The test statistic significant level
Rate of learning from the error	Before	52/26±4/64	51/89±4/09	52/08±4/32	T test=0/259 df= 36 P- Value=0/797
	After	61/37±5/10	52/58±5/18	56/97±6/75	T test=5/265 df= 36 P- Value=0/001

Group average difference=8.78
The standard error of difference=1.66
d= 1/755
r= 0/659

Finding showed that the two groups in terms of learning from errors to be equal in both groups before intervention. As well as there was observed a significant difference of error learning in the experimental group and control group after the risk management program (Table 2).

Discussion

This study aimed to determine the effect risk management program on reporting of medication errors and error learning in cardiac intensive care unit. When medication errors happen nurses may be reluctant to report their own errors. Results showed medication error reporting increased in experimental group compare control group after the implementation risk management programs**.** However, in the action is not taken to improve reporting errors measures to increase reporting errors, the error reporting not only will not increase, but given the circumstances and the fear of inappropriate behavior nursing staff, financial penalties, and disciplining, the fear of legal issues and to save face, the report faults also decreased. Therefore, despite the error in various stages of drug therapy, the reported errors with the errors not been made and a large difference can be seen in this context. The results of this study are consistent with studies in Tehran and Arak city in I.R. Another study was conducted in Tehran showed that less than half of the subjects had to report medication errors occurring [15]. In another study by Mohammadnezhad and et al on nursing students in Tehran took place despite the error, only less than half of the errors were reported taken [6] that the results are consistent with a study Cheraghi et al and study. Another study conducted in Arak on nursing students reported that less than half of the subjects did not report their errors [16]. But based on the results of the study, risk management program increase medication error reporting. The findings of this study are similar to previous studies. For example, in study in Qazvin city showed majority of nurses reported medication errors to supervisor and other college [17]. Nurses and colleagues in a study indicated that the majority of medication errors occurred in Bushehr, reported by nurses reached similar conclusions [18]. An observational study on barriers to reporting medication administration errors among nursing students in Arak mentioned two major reasons for not reporting the errors.1) Administrative barrier (lack of positive feedback, more emphasis on medication administration error than quality of nursing provided, etc.) and 2) fear were the top two reasons for not reporting medication errors among nursing students [19]. Finding of recent study confirmed that in a positive learning climate by using risk management program, the organization's employees and managers share the responsibility to develop learning successfully. However, a positive learning climate motivates many companies and individuals for valuable learning.

Conclusion and recommendations

Reporting of errors to prevent and reduce medication errors requires knowledge of healthcare workers with a variety of errors and factors related to the health care system that it is top priority, this occurs when the organization is positive climate that actually a sign and a stimulus is to make learning really important and valuable . This attitude in practice without fear of reprimand and punishment makes better education, tolerance and adaptation to error and in fact encouraged to learn more from their own mistakes and his colleagues.

Although most medication errors are minor and may not harm the patient, the medication errors represent the quality care by the personnel. According to the results of this study, Risk management program increase medication error and learning of it. So positive climate in organization and apply effective risk management strategies can be helpful to minimize medication errors in healthcare system, improve patients' safety and the quality of care.

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