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Patient safety culture from nurses' perspectives at Qazvin University of Medical Sciences

Maryam Azadi[1,3] , Jalil Azimian[2,3] , Maryam Mafi[3] , Farnoosh Rashvand[2,3*]

[1]Student Research Committee, Qazvin University of Medical Science, Qazvin, Iran
[2]Social Determinants of Health Research Centre, Qazvin University of Medical Science, Qazvin, Iran
[3]School of Nursing and Midwifery, Qazvin University of Medical Science, Qazvin, Iran

Correspondence to:
Farnoosh Rashvand, Email:
n.rashvand@yahoo.com

Abstract

Introduction: The most important priority for healthcare providers is to provide high quality and safe services to patients and nurses' role in ICUs is very important due to the complexity of their profession and the importance of care for critical patients. Therefore, identifying the weaknesses and strengths of the patient safety culture is a step towards the advancement of safety culture.
Objectives: The aim of this study was to determine the safety culture of nurses in the intensive care units of Qazvin University of Medical Sciences.
Patients and Methods: This study is a descriptive-correlation one which was conducted on 214 nurses working in the intensive care units who had the inclusion criteria. To collect data "Hospital Survey on Patient Safety Culture; HSOPSC" was used. This questionnaire has 42 questions that examine the safety culture in 12 composites. The questionnaires were distributed among all the nurses working in the target departments of different hospitals and detailed information about the questionnaire was given. After data collection, the data were analyzed using SPSS v23.
Results: The mean percentage of positive responses to the safety culture questionnaire in intensive care unit was 75.39%. The strengths of the patient safety culture were related to teamwork expectations within units (67.3%), management support for patient safety (62.6%), and teamwork across units (62.6%) and the lowest score for the patient safety culture was related to the non-punitive response to errors (3.3%) and staffing issues (4.2%) and also communication openness (23.8%).
Conclusion: The status of the safety culture in intensive care units of Qazvin is acceptable. However, the attention of nursing managers in some areas in planning and policymaking to promote the patient safety culture seems necessary.

Introduction

Medical errors have become a major problem and a very important topic for healthcare systems throughout the world (1,2). Over the past two decades, this view has been the subject, suggesting the healthcare systems do not have sufficient safety (3,4). Although in recent years, services provided to patients have progressed significantly due to development of the technology (5), medical errors are recognized as one of the most important issues that have drawn great attention to medical assemblies. This interest is due to the fact that; a large number of patients die annually because of medical errors (6).

A study conducted on nursing students in Tehran showed that 17.9% of them have experienced medical errors at least once during their work experience (7). These errors increase the risk of mortality and costs for both the patient and the healthcare systems (8,9). The results of a study in the United States showed that around 170,000 medical errors occurred in 2009, which imposed more than one billion dollars on healthcare system (8). Studies in Iran also showed a high prevalence of medical errors. For instance, in a study in Shiraz in 2013, Khumarnia et al examined the prevalence of medical errors in 10 hospitals throughout the year. The results of their study demonstrated that 4379 medical errors occurred during this period (9). Given this reason, a significant proportion of hospitalized patients in different departments of a hospital experience medical errors due to the lack of proper patient safety culture and related protocols (10).

In fact, it can be said that patient safety culture is an important and necessary strategy for improving a lot of deficiencies that patients have in terms of safety. This type of culture has a profound impact on patient safety and the quality of care. If we create a safe environment in which medical

Core tip

In a study on 214 nurses working in the intensive care units, we found the highest score for the patient safety culture was related to teamwork within units.

errors are detected, taking care of the patient will be affected (11). A high safety culture in employees is the first step in improving the healthcare systems (12) since the safety culture in an organization can play a major role in achieving its goals and promoting patient safety (10). The concept of "safety culture" is not confined to healthcare systems while, is widely discussed among other industries, including oil, gas and energy and transportation. In this view, safety culture is a broad term that is representative of the values of an organization (13). Accordingly, the individuals and groups' values, attitudes, behavior patterns (14), and the principles that are addressed as the basis of the organization's management system (11). Therefore, the "safety culture" can be defined as follows; The safety culture of an organization is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment, and the style and proficiency of, an organization's health and safety management (13). However, this behavior can be determined by the behaviors that are accepted at the workplace as well (11).

Among the members of the healthcare teams, nurses play a significant role in increasing the patients' safety and related factors because of the nature of their profession (15,16). For this reason, many studies in recent years have addressed the various composites of this issue among nurses. One of these is the perception nurses about the patient safety culture and the related factors. In a study in Ilam in 1395, Borji et al examined the safety culture among 150 nurses working in Ilam. The results of this study showed that nurses in some cases had difficulty with the patient safety and require more information (12). The results of another study, on 340 nurses, reported that the safety culture is poor among nurses in many composites (13).

Objectives
According to the issue of the patient safety, this study aimed to assess the patient safety culture in the hospital using a Cognitive-Cultural Approach to identify the priority composites of the intervention, and make suggestions for improving the patients' safety culture.

Patients and Methods
Study patients
This cross-sectional descriptive study was conducted in 2017. The study population included all the nurses working in intensive care units (ICUs, NICUs and CCUs) of teaching hospitals affiliated to Qazvin University of Medical Sciences.

According to a study conducted by Shams-e-Aldin et al, the overall perceptions of patient safety were reported to be 12.9±3.8 (17). Therefore, considering the type I errors, α=0.05 and d=0.145, the sample size was calculated using the following formula to be 214. The inclusion criteria for this study were; all the nurses working in intensive care units with at least one-year work experience, which were recruited through a convenience sampling method. However, those nurses who were unwilling to participate in the study were excluded.

$$\frac{Z_{1-\frac{\alpha^2}{2}\times\delta^2}}{d^2} = \frac{1.96^2 \times 3.8^2}{0.283} = \frac{55.44}{0.283} = 195.53 = 195$$

d=0.14 × δ = 0.14 × 3.8 = 0.532
195 + 10% ×195 = 195 × 19.5 = 214

A demographic checklist, including age, marital status, gender, mean age, hospital work experience, work unit experience, educational level, employment status, type of units, and a standard instrument "Hospital Survey on Patient Safety Culture; HSOPSC" were used for data collection. This questionnaire was designed by the US Agency for Healthcare Research and Quality (AHRQ) in 2004 and has been widely used to evaluate the hospital staff's perspective about the safety culture around the world. The questionnaire consists of 42 questions that examine the patient safety culture in 12 composites. It also includes two questions about how the respondents generally think about the patient safety in their unit and how many medical errors they have reported during the past 12 months. Likewise, there are six questions about the unit, hospital work experience, work unit experience, current work experience, weekly working hours, organizational status, and how to interact with patients. Answers are based on a five-item Likert-scale from strongly disagree to strongly agree. The questionnaire was translated to Persian by Moghri et al and confirmed to be at a desirable level using a confirmatory factor analysis method (15). Responding strongly agree/agree and most of the time/always to positive questions were considered as positive answers as well as responding strongly disagree/disagree and rarely/never to negative questions. Additionally, the score for each composite is equal to the mean percentage of the positive responses of that composite. Composites with a positive response rate of above 75% are considered as strengths and composites with a positive response rate of less than 50% regarded as composites requiring improvement.

Ethical approval
The study approved by ethics committee of Qazvin University of Medical Sciences (IR.QUMS.RES.1396.195) and has been conducted in accordance with the Tenets of the Declaration of Helsinki (1964) and its later amendments. Informed consents were obtained. This

study is extracted from Master's thesis of Maryam Azadi for critical care nursing at Qazvin University of Medical Sciences.

Data analysis

The results were analyzed using descriptive statistics (percentage frequency) and inferential statistics (Kruskal–Wallis test) performing SPSS version17. The significance level was considered to be less than 0.05.

Results

Of all 214 participants, 87.4% were female. The highest age frequency of the participants was in the age group of 26-30 years (36.4%). The mean age of the nurses was 30.68 ± 4.96 years. The mean age of female nurses participating in the study was 30.32 ± 4.98 years since the mean age of men was 33.19±4.08. Around 37.4% of them were single and 62.6% were married. About 39.3% of them were employed by official contract, 14.5% by seasonal contract and other types of employment. Additionally, 91.1% of the participants had a bachelor degree and 8.9% had a master degree and higher. The work experience of 0.5% of nurses was less than one year, 91.6% was between 1 to 10 years and 7.9% was over 10 years at their current unit. The current work experience was between one to 5 years in 40.2%, between 6 to 10 years in 36%, between 11 to 20 years in 49%, and over 21 years in 0.9%. Most of the nurses (67.3%) were working in the ICUs. The mean score, standard deviation and percentage frequency of patient safety culture composites are summarized in Table 1.

In terms of the relationship between the demographic characteristics, there was no significant relationship between gender, marital status and educational level with organizational culture composites (Kruskal–Wallis test). The highest frequency of reported events (between 1 to 2 errors) was reported to be 46.3%. The highest percentage of frequency of overall patient safety score was related to acceptable grade (72.4%). The result about the dependence of the composites of patient safety culture on gender,

marital status and educational level is presented in Table 2.

Discussion

The results of this study showed that the safety culture status in intensive care units of Qazvin is acceptable. Several studies in Iran showed different results in comparison with the current study. For example, Moghri et al stated that general hospitals affiliated to Tehran University of Medical Sciences did not have a proper safety culture (15). In the study of Nasiripour et al, all hospitals studied regarding the observation of patient safety education and research indicators were in poor condition (16). Also, in the study of Shahr-Abadi et al, the status of all composites of patient safety from the perspective of the nurses of the three selected hospitals in Hamedan was evaluated as inacceptable (all of these studies are contrary to the findings of our study) (18). In these studies, all units of the hospital have been evaluated, however, in the present study, only intensive care units have been examined which can be a very effective factor in the difference in outcome. On the other hand, Bostanabadi et al declared that the general condition of patient safety culture in the NICUs of Tabriz is not in an acceptable condition (19). However, in a study conducted by Mazhari et al to assess the patient safety status in Tehran hospitals using patient safety devices, it was shown that the level of patient safety was at a desirable level (20). The findings of this study were in line with the results of the present study.

In the present study, the desirability of safety status from nurses' perspective is related to the frequency of error reported by nurses in the past year, which it was very low and less than half of the nurses reported only one to two errors during this time. The results of the study by Salavati and Fanoosi, showed that the prevalence of medical errors was low from nurses' perspective, since, more than half of the nurses, over the period of study, reported no medical errors, or just one or two (21). Additionally, in the study of Baghayee et al, one quarter of the participants believed that no event had been reported in their unit, and similar

Table 1. The mean score, standard deviation and percentage frequency of patient safety culture composites

Patient Safety Culture Composite	Mean (SD)	Positive (%)	Neutral (%)	Negative (%)
Frequency of events reported	9.66±2.25	69 (32.2)	115 (53.7)	30 (14)
Overall perceptions of patient safety	12.56±2.03	101(47.2)	91 (42.5)	22 (10.3)
Supervisor/manager expectations and actions promoting patient safety	13.66±2.57	134(72.6)	69 (32.2)	11 (5.1)
Organizational learning continuous improvement	10.01±1.76	106 (49.5)	92 (43)	16 (7.5)
Teamwork within units	14.26±2.62	144(67.3)	56(26.2)	14 (6.5)
Communication openness	8.75±1.53	51(23.8)	116 (54.2)	47 (22)
Feedback and communication about error	9.86±1.74	85(39.7)	101 (47.2)	28 (13.1)
Non-punitive response to error	6.46±1.75	7(3.3)	63 (29.4)	144 (67.3)
Staffing	8.47±1.94	9(4.2)	50 (23.4)	155 (72.4)
Management support for patient safety	9.66±1.93	85 (39.7)	105(49.1)	24 (11.2)
Teamwork across units	13.53±2.42	134(62.7)	59 (27.6)	21 (9.8)
Handoffs and transitions	12.78±2.51	96(44.9)	79 (36.9)	39 (18.2)

Table 2. The mean score and standard deviation and percentage frequency of patient safety culture composite

Patient Safety Culture Composite	Type of employment	Hospital work experience	Intensive care unit work-experience	Intensive care unit
Frequency of events reported	0.559	0.730	0.507	0.007
Overall perceptions of patient safety	0.301	0.015	0.147	0.003
Supervisor/manager expectations and actions promoting patient safety	0.658	0.300	0.117	0.052
Organizational learning continuous improvement	0.321	0.309	0.358	0.001
Teamwork within units	0.647	0.695	0.698	0.5
Communication openness	0.620	0.343	0.574	0.002
Feedback and communication about error	0.412	0.228	0.616	0.066
Non-punitive response to error	0.268	0.378	0.653	0.186
Staffing	0.296	0.238	0.178	0.381
Management support for patient safety	0.540	0.078	0.133	0.008
Teamwork across units	0.028	0.503	0.397	0.905
Handoffs and transitions	0.255	0.735	0.550	0.101
Total	0.624	0.037	0.358	0.025

to our study, nearly half of the participants reported only one to two reports per year (22). In the study by El-Jardali, more than half of the participants did not report any medical errors in the 12 months of the study (23), while in the study by Bodur et al, it was much higher and nearly 84% (24).

In the present study, the highest score for the patient safety culture was related to teamwork within units and the lowest score for the patient safety culture was related to the non-punitive response to errors. The findings of some other studies have also confirmed the findings of our study, including the study by Moghri et al in Tehran hospitals. They showed that strongest composites of patient safety culture in selected hospitals were related to teamwork within hospital units (15). In the study of Baghayee et al, the teamwork within the hospital units was considered as a strong component with a mean positive response of 80%. In this regard, Salavati et al also demonstrated that, the strongest composite was related to teamwork within the organization, and the weakest composite was feedback and communication about error, which is not in aggrement with the results of the present study (21). However, in the study of Shahr Abadi and et al, the strongest composite of the safety culture was related to learning and feedback, and the weakest one was related to management support for patient safety (18). In the Noord Study in the Netherlands, emergency nurses stated teamwork within hospital units and communication openness as the best composites of patient safety (25). Additionally, in study by Bostanabadi et al, the highest score was related to the supervisor/manager expectations and actions promoting patient safety, which is not in line with our study; however, the lowest score was related to the "non-punitive response to error" area, which is in line with the results of our study (19).

The results of our study showed, a significant relationship between the organizational culture with the educational level of participants whom there was a significant difference in terms of the mean score of teamwork within the organizational units, the feedback

and communication about error, management support of patient safety. In other areas of patient safety culture, there was no significant difference between nurses with bachelor and master's degree. Studies that accurately examine the relationship between the composites of patient safety culture and the educational level of nurses are very limited. But some studies, such as Weinberg's study, have examined the relationship between nurses' educational level and care provided to patients, and stated that higher safety and better nursing care are directly related to the educational level of nursing staff (26). Besides, the results of this study showed, no significant relationship between the overall patient safety culture and work experience in ICU, gender, age, type of employment, marital status and nurse-to-bed ratio. But the total work experience of nurses was significant in terms of their overall perceptions of patient safety. There are different results in other studies. In this regard, Wang et al in China did not observe any relationship between the level of nursing education, age and gender (27). Likewise, Oliveira in Brazil evaluated the factors affecting the nurses' safety culture in taking care of patients and showed that nurses' employment status, work load, professional training, group work, job insecurity, and bad organizational behaviors were considered to be effective to have a meaningful and acceptable safety culture (28).

Conclusion
The status of the safety culture in intensive care units (ICU, CCU and NICU) of Qazvin is acceptable. Also, the highest score for the patient safety culture was related to teamwork within units and the lowest score for the patient safety culture was related to the non-punitive response to errors from the nurses' perspective.

Limitations of the study
Using self-report only for data collection is main limitation of our study.

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