Attitude of Nurses toward the Patient Safety Culture: A Cross-Sectional Study of the Hospitals in Tehran, Iran

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A R T I C L E I N F O	**A B S T R A C T**
Article type: Original Article **Article history:** Received: 28-May-2017 Accepted: 25-June-2017 **Keywords:** Attitude Nurses Patient Safety Culture Patient Safety	**Introduction:** Patient safety is a major component of healthcare quality, which is defined as the avoidance of causing harm to patients in providing healthcare services. The present study aimed to investigate the attitude of nurses toward the patient safety culture in the teaching general hospitals affiliated to Tehran University of Medical Sciences, Iran. **Materials and Methods:** This cross-sectional study was conducted in 2014. Data were collected using the adapted version of the safety attitude questionnaire (SAQ). Sample size consisted of 385 nurses, who were selected randomly. In total, 325 participants completed the questionnaire. Data analysis was performed in SPSS Version $_{19}$ using descriptive statistics, t-test, and analysis of variance (ANOVA). **Results:** Mean age of the participants was 36.21 ± 6.9 years, and 92% and 8% of the respondents were female and male, respectively. In terms of the occupational status, 92.1% of the participants had a contractual job or permanent official employment. Mean percentage of the positive attitude toward the patient safety culture was 59.2 ± 18.1, 55.6 ± 17.0, 53.8 ± 24.2, 49.5 ± 16.5, and 43.0 ± 22.4 in the dimensions of management perception, teamwork, job satisfaction, safety climate, and work conditions, respectively. In addition, a significant difference was observed in the dimension of management perception and employment status of the nurses ($F=4.4$; $P=0.01$). **Conclusion:** According to the results, attitude of the nurses in the selected hospitals was poor toward the dimensions of the patient safety culture. Therefore, it is strongly recommended that specific training interventions be performed to enhance the work conditions and safety climate in these hospitals.

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Introduction

Unsafe healthcare services lead to patient harm and financial burdens. According to statistics, 5-1 % of the healthcare expenditure is due to unsafe clinical services, which in turn causes injuries in patients. Unfortunately, the contribution of unsafe healthcare services to risking the lives of various patients is 20 times higher in developing countries compared to developed countries. In some countries, the proportion of the patients affected by the infections associated with unsafe healthcare services is reported to be more than 25% (1). One of the key factors in improving patient safety in healthcare centers is the adherence to the patient safety culture, as recommended by the Institute of Medicine (2-4).

According to a literature review study in this regard, the main indicators of the patient safety culture in healthcare organizations include mutual trust and open communication, feedback and communication about

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errors, safety orientation, organizational learning, management commitment, and non-punitive response to errors (5, 6).

Promoting the patient safety culture is an important goal in the establishment of clinical governance (7). Positive safety culture among nurses could results in the proactive identification of the errors and risks that are inevitable in the healthcare system. As such, there is growing interest in enhancing the attitudes of healthcare professionals toward the patient safety culture in various organizations across the world (5).

Changing the culture of blaming healthcare providers for their errors and mistakes is considered to be the major challenge against developing a safe healthcare system. To improve this aspect of the healthcare culture, it must be noted that errors in care provision are not personal failures, but rather an opportunity to increase the quality of care and prevent patient harm (8).

Assessment of attitudes is a reliable measure for evaluating the efficacy of patient safety programs. Several studies have focused on the attitude toward the patient safety culture in Iran (Agha Rahimi, Tabibi and Shajarat) using the Hospital Survey on Patient Safety Culture (HSOPSC), which has been developed by the Agency for Healthcare Research and Quality (AHRQ) (9-11). However, the safety attitude questionnaire (SAQ) is considered to be the most efficient instrument in this regard, which has been validated and widely used in studies (12). SAQ reveals the associations between the patient safety culture and patient safety outcomes indicators, such as fewer medication errors, lower ventilator-associated pneumonia rates, lower bloodstream infection rates, and standard mortality rate (13).

According to a report by the AHRQ, the requirements for developing the patient safety culture include recognizing the values, beliefs, and norms in healthcare organizations, as well as supporting, rewarding, and expecting the attitudes and behaviors regarding the patient safety culture. Therefore, healthcare organizations must be aware of the beliefs of their workers regarding the patient safety culture and pay special attention to the patient safety aspects in order to recognize the strengths and weaknesses of the patient safety culture in their organizations (14).

Nurses play a key role in coordinating patient safety activities since they are close contact with patients and are involved in the decision-makings of the healthcare teams regarding patient safety (15). Assessment of the attitude of nurses toward the patient safety culture in hospitals reveals the dimensions that need to be improved, thereby allowing the implementation of proper interventions to endorse the patient safety culture. Given the importance of the attitude of nurses in determining patient outcomes, this cross-sectional study aimed to assess the attitude of nurses toward the patient safety culture in the teaching general hospitals affiliated to Tehran University of Medical Sciences in

Tehran, Iran. Findings of the research could lay the groundwork for planning the interventions to change these attitudes and promote the patient safety culture. Furthermore, by providing baseline data on the attitudes toward the patient safety culture using the SAQ, it would be possible to identify the scope for benchmarking against the international data and evaluate the differences in the attitudes toward the patient safety culture (16).

It is noteworthy that to address the challenges of unsafe healthcare in the region, the patient safety-friendly hospital initiative (PSFHI) was launched by the Eastern Mediterranean Regional Office of the World Health Organization (WHO EMRO) in 2007. PSFHI was aimed at improving patient safety by developing coordinated standards for hospitals to follow by encouraging the participation of hospital managers, practitioners, and patients in this effort (17). Since 2010, the initiative has been taken in 10 hospitals in Iran, and the Iranian Ministry of Health and Medical Education aims to expand the program to 50 more hospitals (18).

Evaluating the attitude of healthcare providers toward the patient safety culture in the hospitals that have not participated in the PSFHI despite their intention to implement the program could yield the baseline data for the assessment of these efforts and provide the evidence to justify the substantial scale-up.

The present study aimed to evaluate the attitude of nurses toward the patient safety culture in the teaching general hospitals affiliated to Tehran University of Medical Sciences.

Materials and Methods

1. Study Design and Participants

This cross-sectional study was conducted in the teaching general hospitals affiliated to Tehran University of Medical Sciences in Tehran, Iran in 2014. The hospitals that met the inclusion criteria (i.e., general academic hospitals and those not participating in the PSFHI) were selected for the study. Study population consisted of the male and female nurses employed in these hospitals. Sample size was determined to be 385 nurses, who were randomly selected. In total, 325 participants completed the questionnaire, with the response rate estimated at 84.4%. Nurses who were permanently employed in the hospitals, had more than three years of work experience, and expressed their willingness to participate were enrolled in the study.

2. Data Collection

Among various questionnaires that were reviewed prior to the study (13), SAQ and HSOPS are most commonly used to assess the attitudes toward the patient safety culture in hospitals.

In the current research, SAQ was used as the only measure of evaluating the attitude toward the patient safety culture and improving the subsequent patient

outcomes, such as reduced healthcare-associated infections (19, 20).

SAQ has been translated into several languages and applied in many countries, including the United States, the United Kingdom, China, and Taiwan (19, 21, 22).

This questionnaire SAQ has a high internal consistency in each domain (composite reliability: 0.7-0.9), with the Cronbach's alpha estimated to be 0.7, 0.8, 0.9, 0.8, and 0.7 in the dimensions of teamwork, safety climate, job satisfaction, management perception, and work conditions, respectively. With the exception of 'stress recognition', all the dimensions in the SAQ are highly correlated (correlation-coefficients: 0.67-0.93) and have good factor loadings ($\grave{A}$=0.69-0.88) to the hospital safety culture (22, 23).

After translating the SAQ into Persian, the questionnaire was sent to a number of the nurses employed in the selected hospitals to confirm the face validity, as well as 10 experts to confirm the content validity.

In addition, in order to conduct test-retest reliability, the questionnaires were completed by 20 nurses at two-week intervals in the selected teaching general hospitals. Cronbach's alpha values for all the items in the SAQ were calculated to be greater than 0.7.

The final questionnaire consisted of five dimensions, including 'teamwork' (six items), 'safety climate' (seven items), 'job satisfaction' (five items), 'management perception' (10 items), and 'work conditions' (four items). After coordination with the hospital management, four trained interviewers (one per each hospital) were oriented on the objectives of the research and delivered the questionnaires to the participants. Self-administered questionnaires were in a place preferred by the respondents in the hospital settings.

After collecting the data, the questionnaires were revised, and the incomplete questionnaires were sent back to the hospitals in order to be completed.

Following that, the obtained data were entered into a database. Items in the SAQ were scored based on a five-point Likert scale (5=Strongly Agree, 4=Agree, 3=Neutral, 2=Strongly Disagree, 1=Disagree).

Moreover, negative statements in the questionnaire were scored in a reverse manner.

Scoring of the SAQ in the current research was consistent with the previous studies in this regard (22).

Since the final variable was the percentage of the positive attitude, each item was scored by changing the five-point Likert scale to a 100-point scale, as follows: 1=zero, 2= 25, 3=50, 4=75, and 5=100. Finally, the scores of the items in each dimension were summed up, and the acquired score was divided by the number of the items in the dimension in order to create a new variable within the score range of 0-100.

If the mean score was $\geq$75, the given dimension indicated a positive attitude. Mean and standard deviation of the positive attitudes were calculated as well.

3. Data Analysis

Data analysis was performed in SPSS version 19 using descriptive statistics, and the mean percentage of the positive attitudes of nurses toward each dimension of the patient safety culture was estimated. In addition, two-tailed t-test and analysis of variance (ANOVA) were used to determine the statistically significant differences between the mean positive attitudes toward the dimensions of the patient safety culture and demographic variables. In all statistical analyses, P-value of less than 0.05 was considered significant.

4. Ethical Considerations

Study protocol was approved by the Research Committee of Iran National Institute for Health Research (No. 91133). Written informed consent was obtained from the nurses, and the participants were assured of their anonymity. Moreover, all the stages of the study were in line with the ethical codes of the Declaration of Helsinki.

Results

1. Demographic Characteristics

Mean age of the participants was 36.21±6.9 years, and their mean work experience was 9.7±6.5 years. Among the nurses, 92% were female, 64.6% were married, and 91.1% had bachelor's degree. In terms of the occupation status, 92.1% of the participants had a contractual job or permanent official employment. Demographic characteristics of the participants are shown in Table 1.

Table 1: Demographic Characteristics of Participants

Variable		Frequency N (%)
Age (year)	24-34	149 (45.8)
	35-44	129 (39.7)
	45-55	47 (14.5)
Gender	Male	26 (8.0)
	Female	299 (92)
Marital Status	Married	210 (64.6)
	Single	112 (34.5)
	Widow/Widower/ Divorced	3 (0.9)
Education Status	Bachelor's Degree	296 (91.1)
	Master's Degree	29 (7.3)
Employment Status	Permanent Employee	146 (44.9)
	Contractual Job	154 (47.4)
	Contract Labor	25 (7.7)

2. Attitude toward the Patient Safety Culture

The highest mean percentage of the positive attitude toward the patient safety culture was obtained in the dimension of management perception (59.2±18.1), followed by teamwork (55.6±17.0), job satisfaction (53.8±24.2), safety climate (49.5±16.5), and work conditions (43.0±22.4). Table 2 presents the mean values of the positive attitudes toward the different dimensions of the patient safety culture.

According to the results of t-test and ANOVA, there were no statistically significant differences between the mean positive attitudes in these dimensions and mean age, gender, and workplace of work. However, a significant difference was observed between the

dimension of 'management perception' and the employment status of the nurses (F=4.4; P=0.01). Accordingly, scores of the positive attitude toward the management perception were higher in the permanent employees compared to those with a contractual job.

Table 2: Mean Positive Attitude toward Dimensions of Patient Safety Culture among Nurses

No.	Dimensions	Mean (%)±SD
	Teamwork	55.7±17.09
TW1	Nurses' input is well received in this clinical area.	60.0±25.2
TW2	In this clinical area, it is difficult to speak up if I perceive a problem with patient care.	46. 7±25.1
TW3	Disagreements in this clinical area are resolved appropriately (i.e., not *who* is right, but *what* is best for the patient).	51.4±27.5
TW4	I have the support I need from the other personnel to care for the patients.	61.5±24.06
TW5	It is easy for the personnel here to ask questions when there is something that they do not understand.	61.1±24.6
TW6	The physicians and nurses here work together as a well-coordinated team.	53.9±27.5
	Safety Climate	49.5±16.5
SC1	I would feel safe being treated here as a patient.	42.4±28.2
SC2	Medical errors are handled appropriately in this clinical area.	45.9±25.6
SC3	I know the proper channels to direct questions regarding patient safety in this clinical area.	55.0±23.1
SC4	I receive appropriate feedback about my performance.	50.0±27.2
SC5	In this clinical area, it is difficult to discuss errors.	39.7±22.5
SC6	I am encouraged by my colleagues to report any patient safety concerns I may have.	59.8±22.6
SC7	The culture in this clinical area makes it easy to learn from the errors of the others.	53.0±21.7
	Job Satisfaction	53.8±24.٢
JS1	I like my job.	69.3±27.0
JS2	Working here is like being part of a large family.	59.8±28.9
JS3	This is a good place to work.	46.8±29.3
JS4	I am proud to work in this clinical area.	50.4±30.0
JS5	Morale in this clinical area is high.	42.2±31.0
	Management Perception	59.2±18.1
PM1	Unit management supports my daily efforts.	60.9±25.6
PM2	Hospital management supports my daily efforts.	47.2±27.5
PM3	Unit management does not knowingly compromise patient safety.	71.2±21.0
PM4	Hospital management does not knowingly compromise patient safety.	65.7±22.5
PM5	Unit management is doing a good job.	67.6±22.9
PM6	Hospital management is doing a good job.	52.0±26.6
PM7	Problems of the personnel are dealt with constructively by our unit management.	62.1±25.3
PM8	Problems of the personnel are dealt with constructively by our hospital management.	48.3±28.3
PM9	I get adequate, timely information about the events that might affect my work from the unit management.	64.2±24.4
PM10	I get adequate, timely information about the events that might affect my work from the hospital management.	50.2±29.4
	Work Conditions	43.0±22.4
WC1	Levels of staffing in this clinical area are sufficient to handle the patients.	29.5±29.4
WC2	This hospital does a good job of training the new personnel.	44.o±28.1
WC3	All the necessary information for diagnostic and therapeutic decisions is routinely available to me.	49.7±24.7
WC4	Trainees in my discipline are adequately supervised.	49.0±27.8

Discussion

According to the results of the present study, the obtained scores in all the dimensions of attitude toward the patient safety culture were lower than the international standards (60%) (22). In general, the mean scores of all these dimensions were lower compared to the majority of the studies using the SAQ (24-26) and only higher than one study in this regard (27).

Lower scores in the dimensions of SAQ in the current research could be due to the fact that PSFHI has not been implemented in the selected hospitals. Furthermore, these hospitals are large teaching general care centers, which combine healthcare services with the education of medical students. As a result, students with poor training skills are engaged in the processes of

patients, and this might increase the risk of errors and decrease disclosure.

Of note, the previous studies in this regard have been mainly performed in the small tertiary hospitals that offer high-precision care.

In the present study, the highest rate of positive attitudes toward the patient safety culture belonged to the dimension of 'management perception'. This finding is consistent with the studies by Mahfoozpour and Lee (28). In Taiwan (22), which reported the highest percentage of the positive attitudes of healthcare providers toward the perception of management. It is notable that the obtained score in this dimension could be attributed to the perception of the unit management rather than the hospital management. It seems the unit management is more supportive of the patient safety culture, which should be present in the entire hospital.

According to the results of the current research, the dimension of 'teamwork' in the SAQ had the second highest score, which was lower than the values reported in the study by Mahfoozpour (28). Similar to the other studies that have assessed the positive attitude of healthcare providers toward the dimension of 'teamwork' in the hospitals of Lebanon, Egypt, Palestine, Saudi Arabia, and Turkey (29-32), more than 50% of the positive attitude in the participants belonged to this dimension, showing that a well-coordinated healthcare team supports the patient safety culture and decreases patient harm.

In the current research, the lowest mean score of attitude toward the patient safety culture belonged to the dimension of 'work conditions'. This is in line with the findings of Gutierrez-Cia in Spain (33), Lee in Taiwan (22), and Marino in Brazil (34), which indicated the lowest score to be in the SAQ dimension of 'work conditions'. Moreover, this finding is in congruence with the results obtained by Tabibi in Iran (10), which demonstrated that the lowest positive percentage of nurses' attitude was in the dimension of 'work conditions'. Therefore, it could be concluded that the most significant determinants of the positive attitude toward the patient safety culture are inadequate staffing and training, respectively. In addition to the adequacy of the nurse-to-patient ratio, training and availability of the necessary information during the decision-making process could improve this dimension (22, 35). Many professionals encounter errors due to their heavy workload, which exhausts them and lowers their precision in the provision of care (36).

In the current research, the second lowest mean percentage of positive attitude toward the patient safety culture belonged to the dimension of 'safety climate', which is consistent with the results obtained by Marino in Brazil (34). Therefore, it is of paramount importance to ensure the safety climate to allow negotiation and mutual learning, as well as providing appropriate feedback in order to eliminate errors. Furthermore, relevant interventions could change the attitudes toward

the safety climate; such examples are group discussions and role-playing in the situations where there is the possibility of errors and using the bottom-up approach to explore the solutions offered by healthcare providers (37).

Some of the recommended interventions to enhance work conditions in healthcare organizations include adequate staffing and training programs for nurses (35, 38). In this regard, healthcare managers should convince the Ministry of Health to recruit sufficient healthcare workers by incorporating it into their agenda. Some studies have confirmed the efficacy of methods such as simulation for teaching safety principles, computer-based curricula, training programs for nurses, and sharing nursing experiences on the possibility of controlling hazardous events in this regard (39, 40). Therefore, innovative teaching of relevant strategies about patient safety should be endorsed, implemented, and evaluated. In addition, healthcare managers should incorporate patient safety skills training into in-service education.

To improve the safety climate, using the Just Culture Model is recommended to provide an environment in which nurses are authorized to express their opinion in order to prevent patient harm without facing punishment during hazardous situations. In this model, an organization devotes substantial effort to learning from mistakes and takes responsibility to install the systems and processes designed to prevent adverse circumstances (41, 42). In general, it is essential for the hospital safety committees to develop an action plan in order to actively raise the safety culture standards, which could be realized by appropriate evaluation plans used after implementation. Another factor to be considered in these evaluation plans involves examining the perceptions of patients toward the patient safety culture.

Consistent with effective interventions as setting accreditation standards (43, 44), the results of the present study could be integrated into the accreditation of hospitals undertaken to accurately assess their performance level regarding the establishment of standards and to implement methods to continuously improve these standards. Moreover, our findings could be used to identify the areas of the patient safety culture that need to be improved, while determining the targets for relevant interventions, evaluating the success of patient safety interventions, tracking the changes over time, fulfilling regulatory requirements, and benchmarking. In general, findings of the studies in this regard could be used to assess the cultural impact of patient safety initiatives, verify the status of the attitudes toward the patient safety culture, and raise the awareness of nursing managers regarding the necessity of these interventions in hospitals.

The following step would be conducting a qualitative study so as to explore various aspects of the patient safety culture from the perspective of the stakeholders and explaining the mechanisms underlying these

differences, while developing proper guidelines for promoting the safety culture in developing countries and strengthening the network of patient safety in the Eastern Mediterranean region.

In the current research, we applied the Cronbach's alpha to demonstrate the reliability of the SAQ-C. For the insufficiency of this single method, it should be confirmed by other reliability indicators as well (e.g., intraclass correlation-coefficient). Considering that nurses represent the largest group of active healthcare providers in the process of patient care, all the personnel participating in our study were selected from this target group. However, it would have been better if we had included other healthcare providers (e.g., physicians) to compare the scores of attitude toward the patient safety culture.

In the present study, a quantitative method was adopted to assess the attitude toward the patient safety culture, which might be considered a limitation.

Therefore, it is recommended that both quantitative and qualitative approaches be used in the further investigations in this regard (44).

Conclusion

According to the results, the attitude of nurses toward the patient safety culture was poor in the five dimensions of SAQ. Our findings could be used to identify the areas of the patient safety culture that need to be improved. Furthermore, it is particularly important to design specific interventions to enhance the work conditions and safety climate in the selected hospitals.

Acknowledgement

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