

Patient Safety Culture and Factors that Impact That Culture in Tehran Hospitals in 2013

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Abstract

Background: Sufficient evidence is lacking about patient safety culture in Iran. It is only by focusing on the culture of safety within healthcare and treatment institutes that improvements may be made in patient care services.

Objectives: The present study aimed to examine patient safety culture and factors that affect that culture in two hospitals in Tehran city.

Patients and Methods: A cross-sectional study was conducted in two government teaching hospitals (135- and 650-bed hospitals) in Tehran city in February of 2013 using a proportional stratified sampling method. The participants completed questionnaires with questions concerning their demographics and patient safety culture.

Results: Overall, the study participants rated patient safety culture within their healthcare institutions at 64.7%. The highest and lowest patient safety culture subscales were 73.8% and 50.1% for "teamwork within units" and "staffing," respectively. According to the findings, hospital size ($P < 0.001$) and hospital area ($P < 0.001$) had a significant relationship with patient safety culture.

Conclusions: Given that "Staffing" was the lowest rated element in patient safety culture, improving this element could help to increase patient safety culture in hospitals in Tehran.

Keywords: Hospital, Patient Safety Culture, Iran

1. Background

Patient safety refers to a collection of actions aimed at preventing medical errors and damage to patients during therapy activities (1). Patient safety culture has now become an international health service phenomenon (2). It is considered one of the main elements required to provide quality services and health management (3). Medical errors occur frequently and include false diagnoses, medication errors, surgical false, patient falls, and patient infections (4, 5). A previous study showed an inverse association between patient safety culture and adverse hospital events (6-8).

The authorities believe that 98,000 deaths occur in the United States as a result of medical errors (9). Statistics from Canada and the United Kingdom also indicate high rates of medical errors due to their inadequate patient safety cultures (10).

These types of medical errors, in addition to causing patient death and disability, can also have huge financial costs for healthcare systems (11). Safety culture is the out-

come of a combination of attitudes, perceptions, competencies, and patterns of behavior within working groups that determine the style, commitment, and health and safety management skills within organizations (12).

These common, valuable characteristics are essential for starting ongoing, fundamental changes in patient safety in the healthcare field (13).

Several factors like stress, shift work (14-16), work time activity, workload (17, 18), and job satisfaction (19-21) can affect patient safety. However, despite the long-term focus on improving safety culture within healthcare, the resulting impacts on patient outcomes remain unknown (22). In fact, few studies have been conducted in Iran about the relationship between the culture of patient safety and medical error reduction.

2. Objectives

Given the current gap in research, the present study attempted to analyze patient safety culture in Iran in 2013 and the factors that affect that culture.

3. Patients and Methods

3.1. Study Design and Inclusion and Exclusion Criteria

This survey is an analytical, cross-sectional study. The understudy population consisted of all medical staff within two government teaching hospitals (135- and 650-bed hospitals) in Tehran city, the capital of Iran. The inclusion criterion required staff members to have at least one year of service and a willingness to participate, while the exclusion criterion excluded staff members who were uninterested in participating. This study was conducted in February 2013 using a proportional stratified sampling method.

3.2. Instruments

A patient safety culture instrument was used in this study. The questionnaire was comprised of 41 Likert questions (5- completely agree, 4- agree, 3- average, 2- disagree, 1- completely disagree) and 12 sub-items (“teamwork within units,” “supervisor manager expectations,” “organizational learning,” “management support,” “overall perceptions,” “feedback,” “openness of communication,” “frequency of events,” “teamwork across,” “staffing,” “handoffs transitions, and non-punitive responses”) (23). In this study, the patient safety questionnaire was translated from English into Persian and then back translated into English by four independent translators. We compared the original and back translated versions and made slight adjustments in cases where differences were observed. To modify the patient safety questionnaire to the Persian version, a pilot study was conducted with a small group of employees with different occupations ($n = 30$). Taking the scholars’ opinions into consideration, the questionnaire was sent to a group of specialists. Next, using the Delphi method and CVR index, questions with a high validity ($CVR > 0.70$) were selected. Furthermore, a CVI index (24) was calculated for each question ($CVI > 0.70$). As a means of evaluating the patient safety questionnaire, we used Cronbach’s alpha (α) to assess the internal consistency of the different domains of the patient safety questionnaire (Cronbach’s $\alpha = 97\%$). This instrument was also validated by Moghri et al. in their study on the Iranian population (10).

3.3. Ethical Considerations

Approval for this study was obtained from the institution’s ethics committee. The participants were briefed about the aim of the study. They were also assured of their privacy and informed that they could withdraw from the study. The study was approved by the ethical committee of the Baqiatallah University of Medical Sciences (code number: 5271065, Date: 2013/11/05).

3.4. Statistical Method and Sample Size

The data were analyzed using SPSS version 18 (SPSS Inc., Chicago, Ill., USA). The categorical data were presented as frequencies and percentages. A chi-square and Pearson or Spearman correlation were used for statistical testing. A probability value of 0.05 or less ($P \leq 0.05$) was set to know the significance level. The sample size was 404 subjects with $\alpha = 5\%$, a statistical power of 90%, $d = 0.08$, and $P = 0.5$ in the following formula (Equation 1).

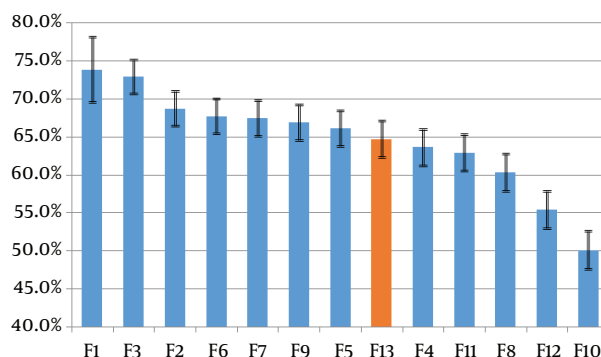
$$\left(Z_{\frac{\alpha}{2}} + Z_{\beta} \right)^2 \frac{P(1-P)}{d^2} \quad (1)$$

4. Results

A total of 406 cases were completed in this study (i.e. 437 samples were included and 31 samples were excluded, yielding a response rate of 93%). Within this sample, 54% were male and 46% were female. The mean (\pm SD) age of participants was 36.34 (\pm 6.88). Of these participants, 42.6% had achieved lower diplomas or diplomas, 18.3% had associate degrees, and 39.1% were either licensed or held upper degrees.

Table 1 indicates the frequency distribution of the hospital size, hospital area, and participants’ years of service. The overall rating for patient safety culture was 64.7% (Table 2). As indicated in Table 2 and Figure 1, of all the patient safety culture elements examined, “Teamwork” rated the highest at 73.8% and “Staffing” rated the lowest at 50.1%.

Figure 1. Error Bar for Patient Safety Culture Elements



F1, Teamwork within Units, F2, Supervisor Manager Expectations, F3, Organizational Learning, F4, Management Support, F5, Overall Perceptions, F6, Feedback, F7, Openness of Communication, F8, Frequency of Events, F9, Teamwork Across, F10, Staffing, F11, Handoffs Transitions, F12, Non-Punitive Responses, F13, Total

5. Discussion

Overwhelming evidence confirms that a significant number of patients suffer from harm while receiving

Table 1. Frequency Distribution of Patient Safety Culture Elements According to Demographic Variables^{a,b}

		n	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	Total
Hospital Size	650 bed	237	74	70	73	63	66	68	68	59	66	49	60	53	64
	153 bed	169	77	72	73	66	68	69	70	60	69	53	65	58	67
	P value		0.021	0.050	0.597	0.018	0.026	0.220	0.051	0.639	0.0005	0.001	< 0.001	0.002	< 0.001
Hospital Area	Internal	22	72	68	76	59	63	69	67	63	65	47	61	54	64
	Surgical	62	74	69	73	67	66	69	69	60	69	45	62	57	65
	Midwifery	60	73	68	74	63	67	69	66	59	67	48	61	54	64
	Pediatrics	12	74	71	64	56	68	66	67	60	61	51	62	47	63
	Organs	14	76	71	73	66	66	66	70	56	60	50	58	50	63
	ICU, CCU, ...	34	77	75	75	64	66	69	69	61	69	53	63	55	66
	Psychiatric	49	75	67	75	61	64	67	67	61	65	52	61	54	64
	Rehabilitation	15	82	81	73	71	66	74	74	62	74	62	62	57	70
	Pharmacy	14	76	75	71	70	73	70	79	54	72	54	63	61	68
	Laboratory	39	75	74	74	63	71	69	72	61	67	54	62	54	66
	Radiology	12	71	66	63	62	61	56	65	47	67	48	61	52	60
	Anesthesiology	33	75	67	73	64	66	69	63	54	67	52	62	52	64
	Other	27	74	72	72	64	68	68	69	60	65	50	60	57	65
P value		0.138	< 0.001	0.027	0.005	0.025	0.157	0.019	0.140	0.009	< 0.001	0.876	0.342	< 0.001	
Year of Services	≤ 1	14	76	73	75	65	69	71	68	59	68	50	61	53	66
	1-5	91	74	69	73	63	67	66	67	57	66	51	62	56	64
	6-10	88	75	70	74	64	66	69	67	57	67	50	61	53	64
	11-15	76	73	70	74	66	66	67	68	62	69	50	61	55	65
	16-20	77	75	72	76	63	68	71	73	63	67	51	62	57	66
	> 21	50	76	70	71	62	66	68	69	57	66	51	62	53	64
P value		0.494	0.698	0.271	0.128	0.533	0.171	0.078	0.032	0.396	0.951	0.965	0.225	0.373	

^a Categorical data analyzed using chi-square tests: F1, teamwork within units, F2, supervisor manager expectations, F3, organizational learning, F4: management support, F5, overall perceptions, F6, feedback, F7, openness of communication, F8, frequency of events, F9, teamwork across, F10, staffing, F11, handoffs transitions, F12, non-punitive responses
^b Values are expressed as %.

Table 2. Prevalence of Elements of Patient Safety Culture and Correlations Between Each Item^a

	Prevalence ^b , %	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
Teamwork within Units (F1)	73.8												
Supervisor Manager Expectations (F2)	68.7	0.173**											
Organizational Learning (F3)	72.9	0.459**	0.232**										
Management Support (F4)	63.6	0.182**	0.416**	0.195**									
Overall Perceptions (F5)	66.1	0.300**	0.316**	0.356**	0.202**								
Feedback (F6)	67.7	0.258**	0.455**	0.320**	0.302**	0.316**							
Openness of Communication (F7)	67.4	0.280**	0.532**	0.318**	0.449**	0.327**	0.415**						
Frequency of Events (F8)	60.3	0.055	0.196**	0.143**	0.071	0.134**	0.418**	0.216**					
Teamwork Across (F9)	66.9	0.239**	0.453**	0.204**	0.756**	0.246**	0.346**	0.452**	0.091				
Staffing (F10)	50.1	0.190**	0.245**	0.101*	0.174**	0.213**	0.176**	0.180**	-0.005	0.243**			
Handoffs Transitions (F11)	62.9	0.187**	0.299**	0.100*	0.311**	0.087	0.221**	0.161**	0.057	0.450**	0.163**		
Non-Punitive Responses (F12)	55.4	0.186**	0.306**	0.174**	0.278**	0.342**	0.264**	0.389**	0.079	0.320**	0.244**	0.153**	
Total (F13)	64.7	0.511**	0.694**	0.502**	0.617**	0.574**	0.664**	0.694**	0.388**	0.693**	0.448**	0.448**	0.554**

^a Prevalence of a patient safety culture element.
^b **P value at the level 0.01; *P value at the level 0.05.

healthcare, such as by incurring permanent injuries or having longer hospital stays; some patients even die (11).

In the present study, the positive response rates for the 12 elements of patient safety culture were higher (64%)

than results obtained in the United States (61%) and Turkey (47.5%), which borders Iran. These patterns are also present in the twelve patient safety dimensions (25). “Staffing” and “Non-Punitive Responses” to errors were among the weak-

est dimensions of patient safety culture. This finding indicates that patient safety culture problems exist at the managerial level. It also indicates the importance of management supporting patient safety improvement initiatives within Tehran hospitals. This strong correlation is in line with findings from other studies concerning the importance of improving managerial support to improve patient safety (26). A strong correlation (Table 2) also exists between “Staffing” and “organizational learning” and “non-punitive responses” and between “openness of communication” can be increasing “staffing” and “non-punitive responses” with improving “organizational learning” and “ness.” Previous studies have shown an inverse association between patient safety culture and adverse events (6-8).

Through these study results from Tehran hospitals in 2013, it has been possible to study patient safety culture and the factors that affect that culture. This study has demonstrated the presence of a moderate patient safety culture (64.7%) that is both lower (27) and higher than other studies (28). In contrast to other studies, this study (29) revealed no significant relationship between staff members’ years of service and patient safety culture ratings. Like previous studies, all patient safety culture elements showed positive correlations with each other with one exception: there was no relationship between “frequency of events” and “management support,” “teamwork within units,” “teamwork across,” “staffing, handoffs transitions” and “non-punitive responses” (29-31). similar to previous studies, “staffing” scored the lowest among all the patient safety culture elements (28) and “teamwork within units” (32, 33) scored the highest in this study. Patient safety cultures within hospitals still require development. This can be achieved by openly discussing them, learning from mistakes, and developing practices and mechanisms to prevent mistakes. Hospital management must have a central role in developing safety culture at the system level within hospitals to ensure that nurses caring for patients do so safely (34). Previous studies have revealed that patient safety scores have deteriorated and that the number of reported events increases with longer working hours (35, 36). Therefore, managers should decrease long working hours. It must be talk about training. Previous studies have shown that information about patient safety must be provided to students, especially first-year students (37). Additionally, staffing, event reporting, communication, accreditation, and patient safety leadership and management were identified as major predictors of patient safety culture. Investing in practices that tackle these issues and prioritizing patient safety are both essential for improving patient safety in hospitals in Iran (38). Furthermore, the strength of organizational culture was negatively correlated with the variability of patient safety

culture (39), thereby identifying it a significant factor in medical management.

This study had several notable strengths, including the study’s sample size, random sampling, homogeneous study population, and validated tools for measuring patient safety culture. Concerning the study’s weaknesses, the following factors were not evaluated but may have been relevant: participants’ stress levels, workloads, job satisfaction, work time activity, family history of BP, and factors related to shift work.

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Footnotes

Authors’ Contribution: Mehdi Habibi, researcher, analyzer, author; Mohammad Gholami Fesharaki: researcher, analyzer, author; Maryam Mohamadian, medical consultant, author, translator; Somayesadat Anvari, medical consulting, author, translator.

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