Attitude toward the Patient Safety Culture in healthcare systems

Fereydoon Laal[1] (MSc); Babak Fazli[1] (MSc); Davoud Balarak[1] (MSc); Forouzan Dalir[2] (MD); Mahdi Mohammadi[1] (PhD); Ramazan Mirzaei[1]* (PhD)

[1.] Health Promotion Research Center, ZahedanUniversity of Medical Sciences, Zahedan, Iran.
[2.] Zahedan University of Medical Sciences, Zahedan, Iran.

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: 16-Feb-2016 Accepted: 08-Mar-2016 **Keywords:** Health and medical staff Hospital Patient safety culture	**Introduction:** Patient Safety Culture (PSC) involves a harmonious pattern of individual and organization behaviors based on common beliefs and values. This study aimed to evaluate the attitude of healthcare providers toward PSC in the hospitals and clinics of Zabol city, Iran. **Materials and Methods:** This descriptive cross-sectional study was conducted in 2015. Sample population consisted of the physicians, nurses, and paraclinical staff (radiologists and laboratory experts) engaged in different healthcare centers of Zabol city, Iran. Data were collected using the Hospital Survey on Patient Safety Culture (HSOPSC) questionnaire. Data analysis was performed in SPSS $V._{22}$ at the significance level of 0.05. **Results:** In total, 231 healthcare practitioners were enrolled in this study. Participants were divided into three groups of physicians, nurses, and paraclinical staff (n=77, 33.33%). Mean of age and clinical experience was 29.94 and 6.23 years, respectively. Among the main aspects of PSC, "general understanding of patient safety" had the highest mean score (13.53), and the lowest mean score was achieved in "non-punitive response to error" (8.89). In the aspect of "manager expectations and actions promoting safety", a significant difference was observed in the mean scores of the study groups (P=0.030). Moreover, our results showed a significant difference between the mean scores of physicians and nurses in the aspect of "openness and honesty in communication" (P=0.023). **Conclusion:** According to the results of this study, improvement of PSC is necessary for the efficient management of hospitals and clinics. This is attainable through collaborative and instructive workshops, developing educational programs, and designing incident reporting systems.

Introduction

Despite recent advancement in the treatment of different patients, human interactions in new healthcare systems, along with the use of complex technologies and modern therapies, have resulted in undesirable outcomes known as medical errors or incidents. These incidents, which may follow treatment procedures, have always been a major concern among medical professionals (1). Quality of care is one of the most significant issues in this respect. Today, patients tend to have more specific expectations, and hospital care services revolve around meeting the needs of the patients (2).

Patient Safety Culture (PSC) plays a pivotal role in the assessment of the safety and quality of hospital services (3). The World Health Organization (WHO) has proposed patient safety as a fundamental concept in the provision of care services, which is already being practiced in Sweden (4). PSC is based on the values, attitudes, understanding, qualifications, and behavioral patterns of individuals and groups manifesting the commitment, approaches, and skills in an organization in terms of safety management (5). Culture is defined as an individual's set of beliefs, notions, and values, which are reflected in one's behaviors (6).

PSC emphasizes the importance of patient safety for the personnel of healthcare organizations (7).

Therefore, healthcare services are paramount for hospital authorities, who play a pivotal role in

*Corresponding Author: RamazanMirzaei,Health Promotion Research Center, Zahedan University of Medical Sciences, Zahedan, Iran. Email: Rammir277@gmail.com

determining the quality of these services. High management standards, enhancing teamwork, and expanding cooperation in health care are associated with lower rates of mortality and hospitalization (8, 9).

Failure in communication and teamwork could lead to medical errors in the treatment and care of patients (10). In fact, safety culture is one of the aspects of "organizational culture" demonstrating the common beliefs, attitudes, values, and behavioral patterns of the healthcare personnel (11, 12). Some of the components of PSC focus on opennessin communication, teamwork, and mutual dependence/interdependence (13). The first step for developing an appropriate safety culture is to evaluate the quality of this phenomenon in healthcare organizations (14). Despite noticeable changes in the function of healthcare systems, patient safety, and patient-oriented services, medical organizations are still concerned with issues related to patient safety (15).

Patient complaints, improper patient care, medical errors, and treatment side effects are among the main problems in healthcare systems. Such issues and their associated complications could be life-threatening and costly in developed and developing countries (16, 17).

For instance, the risk of contracting nosocomial infections in some developing countries is 20 times higher than developed countries, while the rate of unsafe injection is more than 70% in developing countries (18). Researchers have confirmed that medical errors lead to 98,000 deaths per year in the hospitals of the United States (19-21). In Iran, rate of mortalities associated with medical errors has been reported to be 24,500 cases per year (22, 23).

Interestingly, experts have claimed that more than half of these incidents are preventable (24). Therefore, observance of PSC in healthcare institutions has a remarkable impact on the health and safety of patients (25). In sme of the Eastern Mediterranean countries, researchers have reported that medical errors lead to complications in 18% of hospitalized patients, and as much as 3% of these incidents are followed by mortality or permanent disabilities. In the United States, approximately 3.7% of hospitalized patients suffer from severe side effects caused by medical errors (19). According to the study conducted by Fadi El-Jardali in Riyadh (Saudi Arabia), "organizational learning" was the most positive aspect of PSC, whereas "non-punitive response to error" was the weakest aspect of this culture in state and private hospitals (26).

Furthermore, the results obtained by Abdi revealed that the overall score of PSC ranged between low and average, and the lowest scores were reported in the aspects of "non-punitive response to error" and "teamwork in different hospital departments". On the other hand, the aspect of "teamwork within departments" had the highest score (27). In another research conducted in 2014, Wang concluded that the improvement of PSC could reduce the rate of adverse treatment side effects in different patients (28).

Given the importance of PSC in the provision of healthcare services for the members of community, extensive research is required on this issue. Since limited research is available on the observance of PSC in Iran, this study aimed to evaluate the attitude of healthcare practitioners toward PSC in the hospitals and clinics of Zabol city, Iran using a validated questionnaire.

Materials and Methods

This descriptive cross-sectional study was conducted in 2015 in all the hospitals and clinics affiliated to Zabol University of Medical Sciences, Iran. Study population consisted of physicians, nurses, and paraclinical staff (radiologists and laboratory experts).

To select an appropriate sample population and ensure the validity of the calculated indices for statistical purposes, we determined the standard deviation of 10 (in accordance with previous studies), assurance coefficient of 95%, and precision of 2.5. Finally, 77 participants were allocated to each study group. In this study, we enrolled healthcare professionals with at least one year of clinical experience, and participants with two jobs and incomplete questionnaires (5%) were excluded from the study. Required data were collected using the Hospital Survey on Patient Safety Culture (HSOPSC), which was designed by the Agency for Health Research and Quality (AHRQ) in 2004. This questionnaire has been widely used across the world to evaluate the understanding of hospital staff about PSC (29).

Reliability and validity of the Persian version of HSOPSC has been confirmed by Maghari. To determine the validity and reliability of this questionnaire, we used the expert opinion of clinical management and test-retest method. Correlation-coefficient of HSOPSC was calculated to be 77.8% in all the cases (1). Data collection was performed via interviews with the participants after making necessary arrangements and explaining the objectives of the study. In addition to demographic data, HSOPSC consists of 42 items to assess PSC as the dependent variable.The above-mentioned questionnaire consists of some demographic questions in addition to 42 questions with the aim of evaluating patient safety culture as the dependent variable. Independent variables have 12 areas including: Communication Openness/Honesty in Communication, non-punitive response to errors, Organizational Learning/Constant Improvement, general understanding of patient safety, Manager Expectations and Action about Safety Development, which have 3 questions, reaction and communication to errors, incident report frequency, management's support of patient safety, staff's affairs, vital patient's information displacement between clinics and from one working shift to another shift, and teamwork among different hospital departments, which have 4 questions; each of these questions has 5 options.Items in HSOPSC have five options scored

based on a five-point Likert scale (option 1: totally disagree, option 5: totally agree). Some of the items in HSOPSC are scored in a reversed manner. In order to calculate the score of each aspect of PSC, we summed up the scores of all the items assessing each aspect, and to determine the total score of HSOPSC, the scores of each aspect were added. Total score of <105 was interpreted as poor PSC, while total score of 105-157.5 was indicative of average PSC, and total score of 157.5-210 was interpreted as favorable PSC.

Data analysis was performed in SPSS V.16 using one-way analysis of variance (ANOVA) and Tukey's post-hoc test at the significance level of 0.05.

Results

In total, 231 healthcare practitioners were enrolled in this study and divided into three groups of physicians, nurses, and paraclinical staff (radiologists and laboratory experts). There were 77 participants in each group (33.33%), including 98 males (42.4%) and 133 females (57.6%). Mean age of the participants was 29.94 years, and mean of clinical experience was 6.23 years. According to the collected data, 82 participants were single (35.5%), 143 were married (61.9%), and 6 cases were widowed or divorced (2.6%). In addition, length of work hours ranged between 42-60 hours per week in the majority of the participants.

Table1: Mean scores of different aspects of PSC* in healthcare providers of Zabol hospitals, Iran

PSC Aspects	Mean	Standard Deviation	Possible Maximum Score
Incident Report Frequency	9.99	2.21	20
General Understanding of Patient Safety	13.53	2.47	15
Manager Expectations and Actions about Safety Development	12.60	2.66	15
Organizational Learning/Constant Improvement	10.14	2.23	15
Teamwork within Departments	13.90	3.27	20
Communication Openness/Honesty in Communication	9.01	2.11	15
Communication and Reaction to Error	9.91	2.12	20
Non-punitive Response to Error	8.89	2.58	15
Staff Affairs	12.25	2.76	20
Management Support of Patient Safety	9.42	2.00	20
Teamwork in Departments	12.40	2.34	20
Vital patient's information displacement between clinicsand from one working shift to another shift	11.93	2.79	20
Safety Culture	134.02	12.40	210

*PSC: Patient Safety Culture

Maximum and minimum scores of PSC in male participants were13.69±3.24 and 8.95±2.40, respectively. As for females, these values were calculated to be 14.05±3.30 and 8.84±2.71, respectively.

According to the information in Table 2, a positive significant correlation was found between PSC and its associated aspects.

In this regard, "teamwork within departments" had the most significant correlation with PSC (r=0.670), while the least significant correlation was observed with the aspect of "staff affairs" (r=0.227).

Table2: Correlations between patient safety culture aspects and total patient safetyculture

PSC Aspects	General Notion of PSC	
	r	P-value
Incident Report Frequency	0.322	0.001>
General Understanding of Patient Safety	0.447	0.001>
Manager Expectations and Action about Safety Development	0.513	0.001>
Organizational Learning/Constant Improvement	0.448	0.001>
Teamwork within Departments	0.670	0.001>
Communication Openness/Honesty in Communication	0.438	0.001>
Communication and Reaction to Error	0.476	0.001>
Non-punitive Response to Error	0.316	0.001>
Staff Affairs	0.227	0.001>
Management Support of Patient Safety	0.499	0.001>
Teamwork in Departments	0.378	0.001>
Vital patient's information displacement between clinics and from one working shift to another shift	0.235	0.001>

Mean scores of different aspects of PSC in the three study groups are presented in Table 3.

In most of the PSC aspects, scores of physicians were higher compared to those of nurses and paraclinical staff.

On the other hand, paraclinical staff (radiologists and laboratory experts) achieved the highest scores in the aspects of "communication and reaction to error" (10.42) and "management support of patient safety" (9.46).

Furthermore, the nurses achieved the highest score (13) in the aspect of "staff affairs". A significant difference was observed between the study groups with regard to the scores of "manager expectations and actions about safety development" (P=0.03), "communication openness"(P=0.026), "communication and reaction to error" (P=0.033), and "staff affairs" (P=0.007).

Table3: Mean scores of different aspects of PSC in study groups

PSC Aspects	P-value	Physicians	Nurses	Paraclinical Staff
Incident Report Frequency	0.180	10.37±2.54	9.77±2.04	9.83±1.99
General Understanding of Patient Safety	0.331	13.75±2.60	13.64±2.22	13.19±2.56
Manager Expectations and Actions about Safety Development	0.030	13.14±2.97*	12.01±2.37*	12.64±2.51
Organizational Learning/Constant Improvement	0.362	10.42±2.23	9.92±1.97	10.09±2.47
Teamwork within Departments	0.524	14.22±3.29	13.62±3.27	13.85±3.27
Communication Openness/Honesty In Communication	0.026	9.40±2.27*	8.50±1.81*	9.12±2.16
Communication and Reaction to Error	0.033	9.67±2.11	9.63±2.06*	10.42±2.13*
Non-punitive Response to Error	0.643	9.07±2.49	8.92±2.55	8.68±2.71
Staff Affairs	0.007	12.14±2.85	13.00±2.75*	11.61±2.51*
Management Support of Patient Safety	0.959	9.44±2.11	9.37±1.89	9.46±2.02
Teamwork in Departments	0.930	12.48±2.54	12.33±2.23	12.38±2.26
Vital patient's information displacement between clinics and from one working shift to another shift	0.718	12.05±2.81	11.72±3.12	12.03±2.41
Total	0.149	136.21±13.80	132.48±10.27	133.37±12.71

*Significant difference between study groups

According to our findings, observance of PSC was poor in 2 participants (0.9%) (total score of <105), average in 220 cases (95.2%) (total score of 105-157.5), and favorable in only 9 participants (3.9%) (total score of >157.5).

Discussion

In the present study, the majority of the participants were female (57.6%), and mean of age and clinical experience in the study groups was 29.24 and 6.23 years, respectively. In the study by Agharahimi (30), most of the studied subjects had clinical experience of 1-5 years. In our study, physicians, nurses, and paraclinical staff were equally distributed in the study groups (n=77), while in the study by Agharahimi (30) and Chen (31), the number of enrolled nurses was higher than other healthcare practitioners.

According to the results of the present study, total score of PSC was 134.02 in the hospitals and clinics affiliated to Zabol University of Medical Sciences, which was indicative of the average observance of PSC. Furthermore, evaluation of the quality of care in these hospitals showed that the healthcare personnel had poor performance with regard to the aspect of "non-punitive response to error" in PSC. This is consistent with the findings of several internal studies, such as those conducted by Revaghi (32) and Maghari (30). This could be due to the fact that hospital staff are concerned about the consequences of their reported errors, and this viewpoint may lead to the negligence of the shortcomings in different sections of the executive system.

Punitive approach of healthcare practitioners is considered as an obstacle against error prevention. In the study by Maghari (30), the two aspects of "non-punitive response to error" and "staff affairs" were reported to have the lowest scores. Similarly, the findings of Chen and Li (31) in Taiwan reported the same aspects to have the lowest rate of positive responses. On the other hand, the highest mean scores achieved by the participants of the present study were

in the PSC aspects of "general understanding of patient safety" and "teamwork within departments". This is in line with the results obtained by Revaghi (32) and Al Ahmadi (33). In other words, the current systems and procedures for error prevention have been efficient in reducing the rate of patient safety errors in healthcare institutions.

In the studies by Revaghi (32) and Al Ahmadi (33), the highest scores of PSC were reported in the aspects of "organizational learning and constant improvement" and "teamwork within departments". In this regard, recent studies in the United States performed in 2007 (34) and 2008 (35) reported the highest score of PSC in the aspect of "teamwork within departments". This denotes the harmonious cooperation of healthcare providers in different hospital units. This aspect of PSC is of particular importance in the provision of care for different patients.

According to the findings of Scherer and Fitzpatrick (36), vital patient's information displacement between clinics andfrom one working shift to another shifthad the lowest score in the hospitals. In another research conducted by Fadi El-Jardali in Riyadh, "organizational learning" was reported as the most positive aspect of PSC, whereas "non-punitive response to error" was the weakest aspect in a hospital (26). In their study, length of work hours in the majority of the participants was 42-60 hours per week. Considering the occupational standards of healthcare practitioners, it seems that the length of working hours in the studied subjects was higher than the standard level, which might be due to the shortage of healthcare staff, especially nurses, in the hospitals of the country.

In the current study, total scores of PSC in 95.2% of the participants were within the range of 105-157.5, which is indicative of the average level of PSC observance by these healthcare providers. This finding has been confirmed in the study by EbadifardAzar, who reported average observance for PSC with the total score of 62 (37). In this regard, the findings of Abdiindicated that total scores of PSC ranged between poor and average, and the lowest scores were reported

in the aspects of "non-punitive response to error" and were achieved in the aspect of "teamwork within departments" (27). In general, most of the aspects of PSC needed to be improved in the participants of the current study, especially the aspects of "non-punitive response to error", "communication openness", "management support of patient safety", "communication and reaction to error", and "incident report frequency".

In similar studies performed in different hospitals and healthcare facilities, the main concern revolved around the punitive approach of healthcare providers toward error in the observance of PSC (38, 39).

In 2014, Wang reported that PSC improvement reduced the rate of adverse treatment side effects in patients (28).

Participants in the current research were also asked to express their opinion regarding the problems caused by the negligence of PSC. Low scores in the aspect of "communication and reaction to error" were found to be associated with the inadequate knowledge of the healthcare personnel about medical errors. Therefore, hospital staff must be sufficiently informed about the occurrence of medical errors and changes in this regard through related discussions and idea sharing. Moreover, hospital managers are required to prioritize the observance of patient safety by creating the proper atmosphere in the working environment of healthcare practitioners.

In the present study, the quality of datamight have been affected by the participants.

Therefore, adequate time was allocated to the interviews and completion of the questionnaires so that the participants could respond more accurately.

"teamwork in departments", while the highest scores

Findings of the current research yielded valuable information about the observance of PSC in healthcare organizations. Considering the importance of quality of care and patient safety in modern medicine, hospital managers and supervisors are required to take proper actions in order to enhance these parameters.

Conclusion

In the present research, observance of PSC was at an average level, and only a limited number of the participants had favorable knowledge and practice with regard to different aspects of PSC. Therefore, it is recommended that hospital managers improve the safety culture of care services through supporting the notion of patient safety and maintaining open communication and education in this regard. Moreover, it is necessary to provide sufficient sources, express the collectiveness of patient safety, and grant authority to hospital staff in order to realize and obviate the associated risk factors for patient safety and promote their skills accordingly. To do so, healthcare institutions need skilled and committed managers to practice the safety culture and eliminate medical errors.

This will enhance the general understanding of healthcare staff about patient safety, increase the rate of incident reports, and develop PSC in hospitals.

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