

The survey of patient safety culture among nurses in hospitals affiliated to Zahedan university of medical sciences in 2014

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Received: 14 September 2014

Accepted: 1 December 2014

Published online: 26 December 2014

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Competing interests: The authors declare that no competing interests exist.

Citation: Sarhadi M, Sheikhbardsiri H, Navideyan A, Sarhadi R, Abdollahyar A. The survey of patient safety culture among nurses in hospitals affiliated to Zahedan university of medical sciences in 2014. *Report of Health Care* 2015; 1(1): 31-41.

Abstract

Introduction: Surveying and diagnosing patient safety culture is a key step to improve the health and patient safety culture, which generally is provided by surveying of providers and measuring globally. So the present study aimed to survey and evaluate patient safety culture among nurses in hospitals affiliated to Zahedan university of medical science.

Methods: This descriptive-analytical, cross-sectional study was conducted in 2014. In order to collect data, a questionnaire was developed to survey patient safety culture on 400 nurses in hospitals related to Zahedan university of medical sciences. The results were analyzed using SPSS software. The required tests such as T-test, ANOVA, and Spearman correlation coefficient were used.

Results: The results of the present study showed that the score of patient safety culture for each aspect of it was low. Findings also showed that items such as general perception to patient safety, management support, and organizational learning and permanent promotion in Khatam ol Anbia, Ali Ibn Abi Taleb, and Bu Ali hospitals had the highest scores, while hospital patient transfer and exchange of information, manager's actions, expectation to promote patient safety, and related issues to staffs had the lowest scores

Conclusion: Patient safety care is necessary for providing an appropriate and efficient healthcare. So the organizations which provide healthcare services must establish a comprehensive and regular system based on the processes of patient safety promotion to decrease errors. They should also be responsive to injured people through establishing a patient safety culture and maintaining appropriate organizational mechanisms.

Keywords: Patient safety culture, Nurses

Introduction

Patient safety is regarded as a main and important part of healthcare quality (1,2). It is also considered as a main human concern in healthcare field (3). Studies show that patients are in the risk of adverse incidents (4). Adverse incidents and medical errors are challenges which have involved health care systems of all countries. Therefore, an attempt is necessary to decrease their induced damages and minimize them (5). Although many efforts have been done by different health care organizations to minimize them, but clinical errors are still common and need considerable human resources and costs to be circumvented (3). There are many countries which have seriously concentrated on the task of preventing or decreasing medical errors to promote safety level due to the very high severity of their induced damages (5). Improving patient safety

is considered as a paramount importance and health care organizations have put it in their agenda since 21st century (6). Also, hospital leaders are increasingly impressed to develop safety culture of their organization (7). Patient safety is determined as avoiding or preventing of injuries and illness which effects of health care processes (8,9). Epidemic data indicate that patient safety is a worldwide problem (10) and safety improvement is considered as an international and common authority (6). It should also be noted that too much efforts have also been carried out since the publication of medicine report. However, studies show that 55% of patients are not satisfied with the quality of care and 34% reported that they or one of their family members experienced a medical error (11). Such errors can encompass medication errors, a surgery on the wrong site, using wrong technique, post-operative complications,



diagnosis delay, nosocomial infections, patient falls, pressure ulcer, and wrong treatment (6,12). The most common disorders in respect to patient safety are medication errors and patient falls (13).

Concerns about patient safety are not only limited to available statistics, but also it can be considered as a threat to human lives including patients and their families who sometime lose their lives due to unsafe care (14). In addition, unsafe services lead to adverse consequences for the patient and his family. These adverse consequences can be trauma, loss of ability, capability and gaining an idea of mistrust to health care system. Additionally, mental pressures on health care staff, patients, and society should also be mentioned. These directly impose a strong economic pressure on health care system (12,15). Evidence shows that from each 10 patients who receive care services, one is injured in developed countries; while the risk of health care services in developing countries is 20 times more than developed countries (16). Regarding the prevalence of medical errors, the recognition of patient safety culture on health is a requirement for change. This is compatible with those developments which are carried in respect to the quality of care. (17). The health issues regarding errors are different when comparing them to other industries and service sectors, since there is no possibility for human fallibility in care services. It should be mentioned that, industry sector systems are designed in a way which can prevent error occurrence. The potentiality of error prevention or decreasing human error consequences must be taken into account (6,12).

A conducive atmosphere for patient safety culture decreases the number of errors as well as the negative impacts on hospitals. The main criteria for a strong safety culture include the management responsibility to learn from errors, promoting patient safety, workgroup, detecting potential risks, using a reporting and analyzing system for occurred incidents at hospitals as well surveying hospital staff regarding patient safety culture (18). Achieving high levels of safety through preventing injuries to patients is considered as a main step to improve the quality of care in hospitals and in the decision-making processes (15). Factors related to organization characteristics such as the organization culture, leading styles, communication systems, patient and family cooperation, and procedures of human resource management play a pivotal role in patient safety (3). However, defining safety culture is hard due to its intrigue nature since safety culture is considered as an operational structure. The increasing studies highlight that there is a positive relationship between the organization culture and the safety results for both staff and patients (7). This means hypothesis, beliefs, norms, and common values for those individuals who work in an organization (19). Safety culture is a subset of the organization culture which is determined as a combination of safety as well as being applied on clinical activities (15,20). This is based on fundamental values and is directly related to human resources and safety in organization (21). Actually, safety culture refers to safety commitment which is

imbedded in traditions, beliefs, and values that belongs to all members of an organization (6,20,21). Moreover, it can create identity sense and the relationship between organization members and their emissions (22).

Therefore, safety culture is determined as a worldwide phenomenon which includes norms, values, and fundamental assumptions of the whole organization (23). This process includes the evaluation of risks, managing risks related to patients, reporting, incidence analysis, learning capacity, incidence tracking, and carrying out solutions to minimize the risk of their recurrence (16). One of the most common definitions for safety culture is expressed by the Health and Safety (H & S) committees of Britain. Based on their definition, safety culture produces values, insights, and perception as well as individual and group behavior patterns which determine the organization commitment (24).

Different studies have investigated different aspects of safety culture and its relationship with other factors regarding hospitals and various care groups. Some of these studies are mentioned here. For example, Canadian researchers surveyed the effective factors on predicting adverse effects in nosocomial environments (25). Egyptian researchers considered the perspectives of health care staff on patient safety regarding related cares to post-child birth issues (25).

Some studies found the relationship between safety culture and safety behaviors of health care staff members. For example, an organization in the United States showed how support of safety culture can improve the use of dangerous medications in health care staff. Taiwanese researchers showed how organizational safety can affect the safety behavior of patients in hospitals (25). The results of another study conducted in Egypt showed that 34% of adverse incidents led to patients' death (26). Australian researchers also reported the factors which had an effect on the safety behaviors of patients related to nurses, physicians, and other health expertise (25).

Expertise believe that hospitals must establish patient safety culture in relation to structural intervention in their staffs (27). In other hand if health care providers understand the steps of patient safety culture so well they will establish actions which effect patient safety as well services quality and increase efficiency of care cost control and lead to legal complainants (28). Although health care authorities emphasize greatly on patient safety but unfortunately few organizations have developed and evaluated their staffs' behaviors regarding patient safety culture (29). The safety culture of health care organizations is the most fundamental barrier to improve the safety of patients (30). Patient safety culture can analyze different levels of health care system which is regarded as an institution that can determine the strengths and weaknesses depending on the configuration of the way that health care expertise think and act based on it, meanwhile their carrier approaches are surveyed based on this way (31,32). So the first step to create a positive safety patient culture is surveyed current safety culture (30). By taking actions and providing safety

caution without conducting a suitable survey, we only encounter with an increase in the costs as well as incurring sudden and adverse risks (5). The evaluation of organizational culture leads to a wider and clearer insight into safety aspects of patients who need more attention (5). This also provides an opportunity for hospitals to identify their strengths and weaknesses related to safety culture and associated cases. Last but not least, it also provides an opportunity to compare an organization safety culture with other hospitals (30).

In addition, surveying safety culture can be considered as a useful tool to improve patient safety, identify organization safety culture, develop safety knowledge level, and finally detect opportunities for better performance (8).

This kind of surveying can exclusively evaluate current conditions in the workplace which may lead to the development of adverse effects and patient injury. This type of cultural evaluation can promote the knowledge level on issues related to patient safety, surveying the current condition of culture associated with safety, rapid interventions, and tracking its efficiency in the course of time (33).

This not only gives a perception about the perspectives and behaviors of hospitals regarding patient safety but also it enables us to identify the organizations' strengths and weaknesses (34).

In overall, it can be concluded that surveying patient safety culture plays a multi aspects role in hospitals. On the one hand, it can determine the patient safety condition which is dominant in hospitals as well as its strengths and weakness for managers. On the other hand, it can improve patient safety culture through prompting the staffs' level of knowledge regarding patient safety. Finally, it gives managers an ability to commit necessity interventions to improve safety and evaluate these interventions (12).

Evaluating safety culture within a health care institution or organization not only helps to detect the troubled parts in order to improve them but also it promotes the knowledge level of managers regarding staffs' perspectives and also the behaviors related to the safety of patients (5). Therefore, as hospitals are the most important centers which provide health care, determining the factors for the success of health by surveying these centers is of utmost importance (35). Additionally, there is little knowledge on the subject of safety culture in the educational hospitals of Iran so supporting the survey of safety culture can be regarded as the first step to improve patient safety and its related results (20), and since nurses are an integral part of the health care delivery system which enjoys an exclusive statue in respect to caring patient safely (8), so they can significantly affect the quality of care provided and finally get involved in care and patient (36).

Hence, this study aimed to survey and evaluate the patient safety culture regarding nurses who work in the educational hospitals of Zahedan university of medical sciences. We hope that hospitals' managers and officials use the results of this study to develop a safe environment for patients on the one hand and on the other hand, help policymakers to design an efficient health system in order to

develop patient safety objectives. Finally, the findings can be considered as a basis for a comprehensive study within the whole country.

Methods

This descriptive-analytical, cross-sectional study was conducted on 400 nurses who worked in hospitals affiliated to Zahedan University of Medical Sciences in 2014 (Khatam ol Anbia, Bu Ali and Ali Ibn Abi Taleb hospitals). The multistage sampling was carried out among nurses and health care workers in the above-mentioned hospitals. First, a sample was allocated to each hospital based on the number of nurses. Then, according to the list of workers in each hospital, a systematic random sampling method was recruited to select the target population. Before collecting the data a written consent form was distributed among participants of the study. The inclusion criteria encompassed at least six months of work experience in clinical wards, experiencing different shift-works, classifying in various employment statue groups (formal, contract, plan or agreement), experiencing direct and permanent contact with patients, being neither a chief-nurse nor a supervisor and complete physical and mental health. The exclusion criteria included those participants who were appointed to serve in hospitals or worked overtime in the hospitals. Also, the incomplete questionnaires were the other matter of exclusion.

An initial knowledge is necessary to obtain a standard and safe performance, in other hand a culture of safety is required and if a valid and confirmed measurement tool is recruited, then resulted data of staffs' attitude toward safety can be used as an surveying criteria for evaluating the performance of hospitals in developing patient safety (24). So many tools have been already designed to evaluate the patient safety, while almost all of them consider 5 aspects of patient safety culture including leadership, policy and procedures, related issues to staffs, communications and reporting (17).

In this study, the standard tool and questionnaire of Hospital Survey on Patient Safety Culture (HSOPSC) is used. This tool was designed by the Agency for Health Research and Quality (AHRQ) of the United States in 2004. This instrument has been used to survey hospital staffs' opinions regarding patient safety culture worldwide (5). This valid and reliable instrument has been developed based on literature reviews and the factor analysis and cognitive tests to survey patient safety culture in hospitals (18,37,38). This instrument was also validated and approved according to Iranian culture through confirmed factor analysis in Tehran university of medical sciences (18,37). In addition, it has been reapproved and revalidated within local studies (18,37), for instance in a study by Yaghoubifar *et al* (37), which was conducted in Sabzavar and by Ebadi Fard Azar *et al* (5), in a study conducted in Tehran.

This questionnaire includes 42 questions which surveys 12 aspects (workgroup in each unit, managers' expectations and actions to promote safety, organizational learning-permanent improvement, management support of patient

safety, general perception into patient safety, feedback and error reporting, open communication, frequency of reported errors, workgroup between groups, transactions in hospital, non-punishment reaction to errors and recruiting staffs) of patient safety culture. The questions of questionnaires are classified within aspects based on the questionnaire which is designed by AHRQ of the United States, meanwhile so that some of the questions with each other to formed a dimension of twelve dimension of patient safety culture (18).

Respondents were also questioned at the end of the questionnaire to express the state of patient safety in their units and also report the number of errors within the last 12 months (30). The questionnaire also contains some demographic questions related to the characteristics of nurses. Respondents were required to answer the questions based on a 5-point Likert type scale (0 means completely disagreeable and 4 means completely agreeable). Percentage of mean age of positive answers related to 12 aspects of patient safety culture is recruited to analyze data. First, the age percent of positive answers for all questions related to each aspect was decided and then, the calculated value was divided to the number of the whole questions. The total score for patient safety culture was also obtained through calculating the mean, the overall culture of patient safety was calculated through the mean age percent of positive questions for 12 aspects of patient safety culture. Finally, based on the questionnaire guideline, those aspects which were associated to the mean age percent of positive answers of at least 70% were considered as strong points of safety culture, between 50-70% were considered as neutral, and less than 50% were considered as weaknesses (19,37). Those aspects which associated with the mean age percent of positive answers less than 50% needed to be promoted (18). Descriptive statistic methods (frequency, mean, and standard deviation) were used to survey the demographic characteristics as well as the important variables. Analytical tests such as T-test, ANOVA, tracking tests, and Spearman correlation coefficient were used to analyze the data. SPSS software (version 16) was used for analysis.

Results

The results of the present study showed that 79 people (19.8%) who worked in the above-mentioned hospitals were men and 321 people (80.2%) were women. 365 persons (91.2%) were nurses and 35 persons (8.8%) were health care workers. 123 persons (49.2%) were bachelor and 203 persons (50.8%) were married in terms of the marriage status. 123 persons (30.8%) were planned workforce, 104 persons (26%) were conventional, 76 persons (19%) were contract, and 97 persons (24.2%) were formal workers regarding their employment status. Regarding the place of work it should be mentioned that 23 persons (5.8%) worked in the internal ward, 18 persons (4.5%) in the surgery ward, 48 persons (12%) in the Intensive Care Unit (ICU), 7 persons (1.8%) in the burning ward, 14 persons (3.5%) in the neurology ward, 1 person (0.2%) in the

dialysis ward, 68 persons (17%) in the emergency ward, 14 persons (3.5%) in the orthopedic ward, 21 persons (5.2%) in the pediatric, 1 person (0.2%) in the coronary care unit, 8 persons (2%) in the NICU, 8 persons (2%) in the PICU, 1 person (0.2%) in the infection ward, and 156 persons (39%) worked in other wards. The mean age of participants was (32.7±7.52) in Khatam ol Anbia hospital, (29.9±6.27) in Ali Ibn Abi Taleb hospital, and (36±7.64) in Bu Ali hospital. Regarding the mean of work experience it was (9.64±7.48) in Khatam ol Anbia hospital, (6.58±6.31) in Ali Ibn Abi Taleb hospital, and (12.9±8.14) in Bu Ali hospital. The demographic information of nurses based on their workplace is shown in [Table 1](#).

Surveying patient safety culture regarding the three hospitals showed that the aspects of the general perception of patient safety (65.8%), management support of patient safety (55.8%), and workgroup in hospital units had the highest scores. On the other hand, the aspects of information transaction and transference in hospital (25.8%), workgroup between hospital units (29.3%), and non-punishment reaction to error (30.2%) had the least scores regarding Khatam ol Anbia hospital. Besides, the aspects of management support (57.7%), workgroup in hospital units (48.4%), and organizational learning as well as permanent promotion had the highest scores, while the aspects of management actions and expectations to promote patient safety (36.1%), non-punishment reaction (37.8%), and general perception to patient safety (37.8%) had the least scores regarding Ali Ibn Abi Taleb hospital. Organizational learning as well as permanent promotion (69.9%), workgroup in hospital units (66.6%), and non-punishment reaction (65.8%) had the highest score while the aspects related to staffs (44.1%), workgroup between hospital units (47.5%), and general perception to patient safety (56.6%) had the highest scores regarding Bu Ali hospital. The mean age percent of positive answers regarding each hospital is separately shown in [Table 2](#).

The findings of the present study also showed that 37.5% of the people who worked in Khatam ol Anbia hospital considered the safety score for their workplace as very good, 31.7% as good, 25.8% as acceptable, 4.2% as poor, and only 0.8% considered it as very poor. 30% of the hospital staff regarded their workplace as very good and acceptable, 32.5% as good, and only 7.5% perceived it as poor.

The findings also showed that 14.4% of the people who worked in Ali Ibn Abi Taleb hospital surveyed safety score for their workplace as good and poor, 34% as acceptable, and 9.6% perceived it as very poor. 12.4% viewed their workplace as very good, 21.2% as good, 30.8% as acceptable, 22.4% as poor and only 13.2% surveyed it as very poor.

Regarding Bu Ali hospital the findings showed that 26.7% of the people perceived their workplace as very good, 33.3% viewed it as good, 36.7% considered it as acceptable, and only 3.3% surveyed it as very poor. Moreover, 23.3% of the people surveyed their workplace as very good, 30% as good, 33.3% as acceptable, 10% as poor and only 3.3%

Table 1. Relative and absolute Frequency distribution for research units based on hospital workplace

Variable group		Khatam ol Anbia		Ali Ibn Abi Talib		Bu Ali	
		Number	%	Number	%	Number	%
Gender	Men	27	22.5	40	16	12	40
	Women	93	77.5	210	84	18	60
	Total	120	100	250	100	30	100
Marriage status	Bachelor	43	35.8	144	57.6	10	33.3
	Married	77	64.2	106	42.4	20	66.7
	Total	120	100	250	100	30	100
Role	Nurse	111	92.5	232	92.8	22	73.3
	Health care worker	9	7.5	18	7.2	8	26.7
	Total	120	100	250	100	30	100
Place of work	Internal	4	3.3	20	8	-	-
	Surgery	11	9.2	7	2.8	-	-
	Neurology	4	3.3	10	4	-	-
	Neurosurgery	12	10	-	-	-	-
	Emergency	18	15	29	11.6	21	70
	Orthopedic	10	8.3	4	1.6	-	-
	Burning	7	5.8	-	-	-	-
	Pediatric	-	-	21	8.4	-	-
	Dialysis	-	-	1	0.4	-	-
	ICU	24	20	24	9.6	-	-
	NICU	-	-	8	3.2	-	-
	PICU	-	-	8	3.2	-	-
	CCU	-	-	1	0.4	-	-
	Other units	30	25	117	46.8	9	30
	Total	120	100	250	100	30	100
Employment status	Plan	20	16.7	103	41.2	-	-
	Agreement	27	22.5	68	27.2	9	30
	Contract	26	21.7	39	15.6	11	36.7
	Formal	47	39.2	40	16	10	33.3
	Total	120	100	250	100	30	100

surveyed it as very poor.

Regarding the aspects of patient safety culture based on the demographic information in Khatam ol Anbia hospital, the results showed that there was a statistical significant difference between men and women in terms of the aspects of manager actions and expectations to promote patient safety, organizational learning as well as permanent promotion, and workgroup in hospital units ($P \leq 0.05$). Considering the mean of these scores based on workplace, the findings showed that there was a statistical significant difference between intensive units and general units only in terms of non-punishment reaction to errors ($P \leq 0.05$). By the same token, the mean of these scores regarding nurses and health care workers based on T-test analysis showed that there was a statistical significant difference between the two groups regarding the aspects of organizational learning as well as permanent promotion, feedback and communications to error and workgroup in hospital units ($P \leq 0.05$). The results regarding Ali Ibn Abi Taleb hospital showed that there was a statistically significant difference between men and women regarding the aspects related to management actions and expectations in line with promoting patient safety, non-punishment reaction to error and good communication ($P \leq 0.05$). The results also showed that there was a statistically significant difference between men and women regarding the aspects of general

perception to patient safety, non-punishment reaction to error and patient information transaction ($P \leq 0.05$). The mean score for these aspects based on workplace showed that there was a significant relationship between intensive and general units of this hospital regarding the aspects related to management actions and expectations in line with promoting patient safety, organizational learning as well as permanent promotion, reaction and communications about error, workgroup in hospital units, non-punishment reaction to error, incidence reporting sequence and open communication ways ($P \leq 0.05$).

the results indicated that there was a statistically significant difference between the aspects of general perception to patient safety and management support between nurses and health care workers ($P \leq 0.05$).

The result of this survey regarding Bu Ali hospital showed that there was a statistically significant difference between men and women in terms of the aspect of management support for patient safety ($P \leq 0.05$). The results of the study based on marriage status showed a statistically significant difference between bachelor and married people regarding organizational learning as well as permanent promotion and workgroup in hospital units ($P \leq 0.05$). The mean scores based on workplace showed a statistically significant difference between both groups regarding the aspects related to management support for patient safety

Table 2. Percentage of mean age for positive answers to patient safety culture regarding the three hospitals

Aspects	Group		
	Khatam ol Anbia	Ali Ibn Abi Taleb	Bu Ali
	Mean % age	Mean % age	Mean % age
Manager's actions and expectations to promote patient safety	37.5	36.1	57.5
Organizational learning and permanent promotion	42.7	43.3	69.9
General perception to patient safety	65.8	37.8	56.6
Management support	55.8	57.7	65.3
Issues related to staffs	35.6	38.8	44.1
Incidents reporting sequences	40.8	41.2	57.8
Non-punishment reaction to error	30.2	37.8	65.8
Reaction and communications related to error	36.1	41.8	61.1
Good communication	31.1	42.1	58.8
Workgroup in hospital units	45.8	48.4	66.6
Workgroup between hospital units	29.3	38.9	47.5
Transactional information in hospital units	25.8	38.2	58.3

($P \leq 0.05$). Conversely, no statistically significant difference was observed between nurses and health care workers in terms of patient safety culture aspects ($P > 0.05$).

The results of ANOVA test regarding different employment groups in Khatam ol Anbia hospital showed a statistically significant difference between these groups regarding aspects of management support, conditions and task of human workforce, related reactions and communications to errors and communication ($P \leq 0.05$). The results of Post Hoc (Tukey) also showed a statistically significant difference between conventional and contract workforce in terms of management support, between formal or contract workforce regarding personnel aspect, between contract or formal workforce as well between contract and formal workforce regarding open communication way ($P \leq 0.05$). In a similar vein, the results of Ali Ibn Abi Taleb hospital showed a statistically significant difference between different groups regarding personnel aspect ($P \leq 0.05$). The result of tracking test (Tukey) also showed that there was a statistically significant difference between plan and formal workforce as well as conventional and formal workforce ($P \leq 0.05$).

The result of this test also showed a statistically significant difference between different employment groups ($P \leq 0.05$).

Surveying correlation coefficient between scores for patient safety culture aspects and variables of age and employment history which is conducted by recruiting of Spearman correlation coefficient test showed there is statistically significant correlation between organizational learning aspect and employment history, reaction and communication to error and aspects of age and employment history ($P \leq 0.05$).

The survey results also showed that there is statistically significant correlation between aspect of workgroup in hospital units and employment history ($P \leq 0.05$).

Regarding medication error incidence, the results based on hospitals showed that 53 (44.2%) nurses who worked in Katama-ol Anbia hospital were involved in medication error. 33 persons (27.5%) reported their medication error to the related authority. While 53 persons (21.2%) regarding

Ali Ibn Abi Taleb hospital were involved in medication error and 29 persons (11.6%) reported that their medication error was related to the person in charge. 6 persons (20%) regarding Bou-Ali hospital were involved in medication error and 2 persons (6.7%) reported that their medication error was related to the person in charge.

Discussion

Patient safety is one of the most important elements to promote safety and the quality of patient care. Health Department of Britain and medicine committee of the United State recommended that health care organizations must keep those safe care strategies which include organizational factors, such as ethical principles, safety sense in workplace, environmental factors like staff levels and management support, workgroup factors like workgroup job and leading and personal factors like self-confidence during work process (17). Today, many developed countries have understood that having access to the management system and advanced technology does not guarantee development rather actually promoting safety behaviors among staffs, values, beliefs and their perspective to safety as well organization's perspective to safety form safety culture which is regarded as a way for incidence prevention (24). Seven factors which play an important role in patient safety are: leadership, taking action based on evidences, workgroup, communication, training, and a patient-oriented culture (33). The chief manager plays a main role regarding the safety culture improvement in all organizations (19). The results of the present study in terms of actions and expectations aspect of manager and supervisor showed this aspect in respect to Ali Ibn Abi Taleb hospital obtained the least score. The result of the study is in line with findings of Fajardo-Dolci *et al* (22) and Salavati *et al* (30). This finding is not compatible with the findings of Nekoei-Moghadam and Amiresmaili (1), Jones *et al* (39), Izadi *et al* (16), Agharahimi *et al* (28) and Ebadi Fard Azar *et al* (5). In their study, this aspect gained the highest score for safety culture. In a study by Mahfooz pour *et al* (17), also surveyed statue of this field regarding 12.4% good workers, 43.2% mean and 37.2% poor respectively. The

results showed that despite the management has tried to allocate exclusive authority to patient safety in hospitals, but the findings indicate the management has not been interested to patient safety except occurring a tragic incidence (18). So, managers and supervisors must consider current system issues in order to provide a background for individuals and collective learning (30). A learning organization is defined as an organization which develops skills and creativity to transfer and acquire knowledge and reform the behavior in order to reflect new knowledge and insight (26). The results of the present study regarding organizational learning and permanent promotion showed that this aspect obtained the highest score in respect to Bu Ali and Ali Ibn Abi Taleb hospitals. This finding is consistent with the findings of Ebadi Fard Azar *et al* (5), Salavati *et al* (30), a part of the study by Nekoei-Moghadam and Amiresmaili (19), Yaghobi Far *et al* (37), Fajardo-Dolci *et al* (22), Aboul-Fotouh *et al* (26), Mahfoozpour *et al* (17) and Jones *et al* (39). Organizational learning in a study by Hannah *et al* (14) showed that the extent of learning may lead to the biggest and positive changes and narrowing the gap between nurses and official staffs. Recognizing knowledge and the culture level on the subject of patient safety in order to improve the quality of care is a necessity (22). The results of the present study regarding the general perception of patient safety showed that this aspect received the highest score in Bou-Ali hospital, while Ali Ibn Abi Taleb hospital obtained the lowest score. This finding is in line with the findings of Nekoui Moghadam *et al* (19). A negative perception towards patient safety indicates a need to improve performance (22). Management and supervisors' support lead to a better perception regarding patient safety (23). The findings of the present study on the subject of management support showed that this aspect obtained the highest score in Khatam-al-Anbiya and Ali Ibn Abi Taleb hospitals. This is in line with the findings of Baghaee *et al* (18) and Jones *et al* (39). In a study by Hannah *et al* (14), it was shown that this aspect had a significant difference regarding positive scores between nurses and official staffs. Managers and nursing leaders try to find some ways to protect and support their professional staffs by paying attention to their ideas as well as improving their role and having an effective relationship with all the staff (10). The results of the study by Mahfoozpour *et al* (17) showed the worst condition allocated to the aspect management support for patient safety, and a few of the questions about this domain scores were good, and most of them declared it as mean and in next step as poor. In a study by Aboul-Fotouh *et al* (26), this aspect obtained the lowest score. Studies show a significant relationship between aspects of management support and the safe performance of nurses. Actions such as developing reward systems based on the consequences, permanent screening, and accurate survey of staffs and efficiency promote the quality care. Lack of management support when staffs face with problems decreases their performance (3,22). Actually, this aspect shows how hospital management provides an atmosphere which leads to

an increase to patient safety (14). Management can support patient safety by keeping open communications, training the personnel, and giving more delegation to staffs to recognize and reform risks (5). Regarding this subject, the permanent responsibility of management must be in line with the promotion and facilitation of patient safety by providing the required tools to recognize those patterns which are more prevalent (10). Moreover, nursing management and staffs need to discuss patient safety issues which occur in their units as well as providing solutions to errors (10). Actually, organizations with a positive safety culture of relationship based on correspondent trust, common sense of safety patient importance, confidence the effectiveness of predictive actions and staff supporting (25,26). While for example, in the absence of critical communication of medication errors and adverse incidences such events are observed (8). Nursing shortage is a worldwide problem and some important factors are involved in it. These can be job stress and higher rate of errors. In a recent study conducted in the hospital of Pennsylvania University on the subject of nursing personnel satisfaction, it was shown that job dissatisfaction among nurses is associated with higher ratio of patients to staff and patients is associated with higher mortality (10). The results of the present study on the subject of issues related to staff of Bou-Ali hospital showed that this aspect obtained the lowest score. This is in line with the findings of Ebadi Fard Azar *et al* (5), Izadi *et al* (16) and Yaghoubifar *et al* (37). In a study by Baghaee *et al* (18), this aspect needed promotion and improvement. Conversely, this part of the present study is in contrast with the findings of Mahfoozpour *et al* (17). Mahfoozpour *et al* (17) showed that the perspective of most staffs regarding this aspect was good. Actually, the most challenging problem of the present study is the lack of motivated staffs (5). The complexity of clinical services and initial limitations of human force manager of care centers to standardize communication facilities, so they should provide an atmosphere which allow staffs to express their concerns about care issue and dedicate a common language which informs staffs of unsafe conditions (40). Safety culture allows health care staff to work in a non-blaming atmosphere where errors can be reported easily. This can also be considered as a learning resource (20). The results of the present study on the subject of non-punishment reaction to error showed that this aspect obtained the lowest score in Khatam-al-Anbiya and Ali Ibn Abi Taleb hospitals. This is in line with the findings of Ebadi Fard Azar *et al* (5), Nekoui Moghadam *et al* (19), Hannah *et al* (14), Yaghoubifar *et al* (37), Aboul-Fotouh *et al* (26), and Abdi *et al* (12). In a study conducted in 2008, findings indicated that this aspect obtained the lowest mean score (41). In another study by Baghaee *et al* (18), this aspect needed to be improved and promoted. So, management must consider errors as a learning opportunity and perceive staff as the main elements who promote safety. Therefore, management should consider errors as opportunities for learning, and viewed staff as a key element in promoting safety and they

while concentration on errors must be avoided. Blaming and punishing health care providers and developing a culture of fear and shame does not promote patient safety. It also leads to error hiding. The results of this part of the study regarding Bou-Ali hospital showed that this aspect obtained the highest mean score for this aspect. This is in line with the findings of Salavati *et al* (30). A study conducted in the United States showed that smaller hospitals obtained better scores regarding safety culture. Additionally, a more friendly atmosphere, less work pressure on personnel, and developing coordination and communication with different units of hospitals is much easier in such small hospitals. This leads to a domination of a more agreeable culture. The present study also shows that all safety culture have aspects enjoys more agreeable conditions on subject of at Bou-Ali hospital comparing to Khatam-al-Anbiya and Ali Ibn Abi Taleb hospitals.

Regarding this fact that staff cooperation and their workgroup within each unit requires care actions, over time people gradually understand it and adapt it (17). The results of the present study on the subject of workgroup in hospital units showed that this aspect obtained the highest positive mean score regarding all three mentioned hospitals. This finding is in line with the findings of Ebadi Fard Azar *et al* (5), Abdi *et al* (12), Salavati *et al* (30), Yaghobi Far *et al* (37), Baghaee *et al* (18), Mahfoozpour *et al* (17), Jones *et al* (39), and Hannah *et al* (14). Based on the reports of the AHQR of the United States in 2009, it was reported that workgroup in hospital units was the strongest aspect of safety culture regarding staffs who worked in the hospitals in the United States (42). Studies show a significant relationship between the rate of patient safety in reference to management support, workgroup in each units, general perception to safety patient, open communications, workgroup between units, and non-punishment interaction to errors. These factors increase the patient safety rate in hospitals. On the other hand, more organizational learning, permanent promotion, workgroup between units, non-punishment interaction to errors can facilitate error reporting by staffs (28). Workgroup based on fallibility of human leads to decrease in medical errors and more safety health systems (40).

The results of the present study on the subject of workgroup between hospital units showed that this aspect obtained the lowest score in Khatam ol Anbia and Bu Ali hospitals. This indicates the importance of coordination and cooperation to provide the best patient care (14). The findings of this study are in line with the findings of Fajardo-Dolci *et al* (22), but they are in contrast with the findings of Aboul-Fotouh *et al* (26). Mikušová *et al* (43) observed a significant difference regarding this aspect in his study.

The variations in the mechanism of communication in terms of patients' transference and the lack of standards can lead to some problems related to patient safety (5). The findings about the transference and transactional information showed that this aspect obtained the lowest positive mean score in Khatam ol Anbia hospital. It should

be noted that the AHRQ of the United States also introduced this aspect as the weakest domain in terms of safety culture for staffs (42). This is in line with the findings of Agharahimi *et al* (28), Salavati *et al* (30), Aboul-Fotouh *et al* (26) and Jones *et al* (39). Therefore, to increase patient safety during patient transfer between units, some strategies such as developing protocols and standards of patient transference between hospital units must be implemented (30). Patient safety has been the main subject of discussions and concerns globally, and its complexity must be taken into account. There are some important matters which play a part in developing a stressful environment for health care providers regarding patient safety. These matters which lead to medical error occurrence are the problem of decreasing costs, the huge amount of works to be completed by staff, bed circulation, and professional conflicts (28). Expression error as a method for decreasing the risk in organizations is very important. This begins with error reporting and in most hospitals it is conducted in line with the policy of quality improvement in different units (26). The results of the present study on the subject of medication errors reporting in nurses showed that 27.5% of errors were reported in Khatam ol Anbia hospital, while 11.6% and 6.7% of errors occurred in Ali Ibn Abi Taleb and Bu Ali hospitals respectively. The low frequency score for incidences means that such incidences are not reported in these hospitals (16,20). The results of several studies in this area have different results that it can be referred to studies such as Yaghobi Far *et al* (37) (11%), Fajardo-Dolci *et al* (22) (25.9%), Salavati *et al* (30) (33.7%) and Masror *et al* (13) (38.5%). So, it can be concluded that fear of mentioning errors as well as reporting them still exist in hospitals and supervisors have not developed a culture to decrease such problems regarding errors. In addition, not reporting any errors is involved in the loss of a person's job (44). As the feeling of fear exists in hospitals, staffs will try to hide errors, since they believe that this information will be kept in their personnel profiles (19). It must be mentioned that more reports of errors by health care providers are considered as a positive feature for their safety culture of their unit. Actually, the organization which provides health care services can improve the quality of patient safety care through reporting adverse incidences by its staffs (37). Some studies show that positive safety culture may be associated with increasing of medication errors, this may happen due to a positive safety culture therefore more likely to report incidents of staffs, it seems errors are increased (23).

The results of the present study regarding the score which was allocated to hospital safety by staffs showed that 30% of the people at Khatam ol Anbia, 12.4% at Ali Ibn Abi Taleb and 23.3% at Bu Ali hospital considered patient safety as very good. The studies in this area have different results. While some of them are mentioned at following: in a study by Chandraharan and Arulkumaran, it was shown that 70% of the staffs viewed patient safety in workplace as great or very good (45). However, in a study by Yaghobi Far *et al* (37), this rate was only 31%. This rate was 60%

(45) in hospitals of Saudi Arabia and it was surveyed as acceptable in Mexico (22). In a study by Mahfoozpour *et al*, 68.1% surveyed it as average and 24.4% surveyed it is good (17).

The mean score for the aspect of patient safety culture based on demographic information showed that there was a statistically significant difference between men and women in terms of manager's actions and expectations to promote patient safety, organizational learning, permanent promotion, workgroup in hospital units, non-punishment reaction to errors, and good communication. This finding is in contrast with the findings of Aboul-Fotouh *et al* (26). There was a significant difference between males and females regarding each aspect of patient safety (26). The mean of these scores based on the place of work also showed that there was a statistically significant difference between general and intensive units in terms of management support, non-punishment reaction to error, manager's action and expectations. This finding is in line with the findings of Izadi *et al* (16). In a study by Agharahimi *et al* (28), there was a significant relationship between the staffs' workplace and management support of patient safety and the general perception to patient safety. Considering the correlation between the scores of patient safety culture with age and employment history variables, the analysis showed that there was a statistically significant correlation between employment history with workgroup in hospital units, reaction aspect and communications related to error. This finding is in line with the findings of Izadi *et al* (16). We also found that staff with 1-5 years of work experience gave fewer scores to work group. This can be owing to workgroup reinforcement. Conversely, staff with more work experience allocated higher scores to communication. This can be related to being more present at work as well as being more familiar with the nature of organizational communication (16). There was a significant relationship between the aspects of organizational learning and reaction; and communication related to errors with employment experience. This finding is in line with the findings of Mahfoozpour *et al* (17). In their study, work experience was statistically significant based on its score for patient safety culture. In a study by Jafarjalal *et al* (3), there was a significant relationship between nurses' work experience and their safe performance to patients. Actually nurses with more work experience enjoyed more from the opportunities to learn from errors and risks. In a study by Moghery (46), it was shown that working in a certain unit, job, work hours, and professional work experience led to a significant difference in patient safety. In addition, the findings of the present study are in contrast to the findings of Agharahimi *et al* (28). In their study, no significant relationship was observed between employment history and one of the aspects of patient safety culture. The results based on marriage status showed that there was a statistical significant relationship between bachelor and married people regarding the aspect of general perception to patient safety. In a study by Mahfoozpour *et al* (17), it was shown that there was a significant

relationship between marriage status and provider's attitude towards the performance procedure ($P \leq 0.05$). In the present study, no significant relationship was observed between age and performance of nurses' variables.

Conclusion

Patient safety is one of the most important objectives which can promote the quality of nursing care. Besides, patient safety culture is regarded as an important strategy and a necessary requirement to meet various shortages associated to patient safety field.

Overall, it seems that our hospitals are placed in a satisfactory level regarding safety culture and atmosphere. Issues such as reaction to occurred errors and mistakes, issues which occur while transferring, transactions and shift changes in hospitals, our cooperation and coordination between different units of hospitals, and lack of an error reporting system or an inefficient system are among the weak points related to the above-mentioned hospitals in terms of patient safety. Hospitals can improve their patient safety by emphasizing on the strong points of their patient safety culture and improving their weaknesses. Strengthens of safety culture show staffs and managers of units are capable to promote patient safety, however reforming of some procedures and policies in the hospital are necessary. So developing a comprehensive plan for patient safety including measurable objectives, training opportunity for staffs, and having an error reporting system is a necessity. Therefore, moving from a criticizing culture to a safe culture needs a change which itself requires comprehensive training of all staffs regarding safety issues in order to prevent patients' injuries. To achieve this goal, staff must gain access to resources and available infrastructures to perform effectively and efficiently in their workplace. Hence, the fear of blaming to errors must be omitted and an open atmosphere full of communications and permanent learning must be replaced. Based on investigations, some actions can be implemented to improve patient safety in hospitals of Iran. These actions include: 1) improving employees' motivation 2) emphasizing on the system and preventing individualism at workplace, 3) having long and short term plans to improve patient safety in educational hospitals, 4) decreasing individual blaming and employing sufficient personnel, 5) enhancing the training system by implementing patient safety courses which emphasize on skills, data collecting, etc. 6) establishing a committee for patient safety in hospitals and 7) directing the management support towards the needs and declaring that patient safety is a collective responsibility of all people involved and it should be considered as a strategic plan in hospitals to make it executable in the form of very important operations.

Acknowledgments

The authors would like to express their thanks to the managers, officials, and nurses who participated in this study. This research was based on an approved research plan by the Information and Technology deputy of Zahedan Uni-

versity of Medical Sciences.

Ethical issues

This research was approved by the ethical committee of Zahedan university of medical sciences.

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