



Assessment of patient safety culture in viewpoints of Kashan hospitals nurses 2016

Mohammad Reza Sharif¹, Monika Motaghi^{2*} and Alireza Farrokhian¹

¹Infectious Diseases Research Center, Kashan University of Medical Sciences, Kashan, Iran

²Clinical Research Center, Shahid Beheshti Hospital, Kashan University of Medical Sciences,
Kashan, Iran

*Corresponding Email: Monika3005@yahoo.co.uk

ABSTRACT

Patient safety, i.e. prevention of any hurt to the patient, is one of the main factors of health care quality. Improving patient safety culture through the implementation of systems and processes necessary to work can play an important role in preventing errors and improving the quality. For this purpose, the status of patient safety culture in Kashan hospitals was examined. This cross-sectional study was performed in five hospitals of Kashan University of Medical Sciences and one Social Security Hospital, by a 42-item standard patient safety questionnaire with a random sampling of 200 nurses available in 2016. Mean age, experience, experience in the last unit of work, experience in nursing profession, work hours per week were obtained 34.28 ± 6.89 , 7.72 ± 5.1 , 5.87 ± 4.2 , 10.42 ± 7.93 years and 62.8 ± 26.8 hours, respectively. Average of safety culture and its dimensions including teamwork within the units, in line with expectations and the head of patient safety, patient safety management support, organizational learning and continuous improvement, the general perception of patient safety, communication and feedback about errors were obtained 2.88 ± 0.56 , 3.04 ± 0.69 , 2.87 ± 0.79 , 3.08 ± 0.88 , 2.96 ± 0.54 , 2.87 ± 0.98 , 2.81 ± 0.59 , 2.52 ± 0.98 , 2.91 ± 0.43 , 3.14 ± 1.04 , 2.99 ± 0.54 , respectively. According to the obtained results, the status of safety culture in hospitals was deemed unfavorable and seemed to need development by training and proper guidelines in order to establish a culture of patient safety and prevention of hurt to patients in order to assure their safety at the hospitals.

Keywords: Patient safety, Patient safety culture, Hospital

INTRODUCTION

Before the hospitals can plan performing their affairs, their level of safety and security should be assessed and improved [1]. Patient safety is one of the qualitative key factors of care and no issue like harming and hurting a patient can disaccord with the foundations of healthcare system. However, treatment and healthcare preliminaries are not always out of risks and medical errors or accidents which threaten the patient safety may take place [4-2].

Healthcare quality is composed of a number of key elements from which safety is one important factor [5]. Patient safety means prevention of occurring dangerous risky events which may hurt patients once providing healthcare services to them [6]. These accidents may include medical errors (a mistake in a drug dose), surgical operations (performing the operation in an improper organ, using a wrong technique and post-surgery complications), wrong diagnosis (delay in diagnosis, lack of diagnosis, wrong diagnosis), hospital infections, patient fall down from beds, bedsores, wrong treatment and etc. [7].

Unforeseen events and medical errors are of the challenges which involved healthcare system in all countries for which they try to minimize the hurts and complications incurred by the patients. One fifth of individuals in a community are exposed to medical and health care errors and risks, consequently there may millions of people who have died or suffered from these treatment hurts [8]. Experts of hospitals and healthcare centers of the United States say that 98000 mortalities occur because of medical errors each year [9]. Studies show that safety problems of the patients stem from lack and inefficiency of proper work systems and procedures within the hospital units, not from

human errors [10-11]. It is believed that safety problems are rooted in unintentional wrongs and breaching of the safety rules [12]. On the other hand, medical error level is highly considered around the world and has been one of the main causes of mortality [13].

Today, in most countries evaluation of organizational culture is a priority [14-15] for their managers. Culture is defined as the beliefs and values of a group of people which appears in their behaviors [16]. Organizational culture is concerned as a key determinant factor for the patient safety [15-17]. In fact, patient safety culture shows the priority level assigned to the patients in viewpoint of healthcare center staff in their organizations [18]. Factors relevant to the patient safety culture are strongly associated with medical errors, hurts caused by nursing care, hospital infections, patient satisfaction, patient awareness of nursing staff responsibility and accountability and also nurses' job satisfaction [19]. Different elements affect medical errors including human (knowledge and performance), technical factors, equipment, environment of health care service provision, patients, organizational factors (procedures and regulations) in addition to the inconsistency of the available healthcare teams, however, most world associations such as WHO believe that medical errors and patient safety threatening factors most occur because of defective healthcare systems (not only for the human mistakes) [2, 20-22]. Studies show that 3-17 % of patients hospitalized in healthcare centers suffer from a hurt or complication resulted from an unintentional medical error from which 30-70 % seems to be preventable by implementation or development of the current guidelines [23]. Similar data from Canada and Great Britain also confirm a high frequency of these errors [24, 25].

In Iran, patients' complains of safety status have increased during the past few years. Medical errors leading to death [3], bedsore prevalence, hospital infections and downfall from beds [26-29] have been common complains of the patients. In response to the increasing frequency of medical errors and following that, the public attentions and pressure toward this problem, Ministry of Health introduced the program of "Superintendence of Clinical Services" in December 2009 as a preference of the Ministry to improve healthcare services including patient safety improvement [30]. Referring to all the points asserted above, in relation to the vital role of patient safety, patient safety culture has been considered and evaluated in hospitals of Kashan Medical University Science in the present study.

MATERIALS AND METHODS

The study data were gathered from nursing staff of five training healthcare hospitals of Kashan Medical Science University (Shahid Beheshti, Matini, Naghavi, Seyedoshohada, Kargarnejad) and one S.S.O hospital (Shahid Rajayi), entirely included 200 nurses, through a descriptive analytical cross sectional study in 2016. Data were collected by random sampling from available and proportional to the staff number. In this study, standard tools and questionnaires were used designating and editing each year by Quality and Healthcare Research Agency of America in 2004, for patient safety [31], which have been applied for examination of the hospital staff opinions on patient safety culture in different regions of the world. The tool is a stable and valid tool designated by different literatures, recognition tests and factor analysis in order to evaluate the patient safety culture in hospitals which verified and validated by Tehran Medical Science University through Confirmative Factor Analysis (CFA) [32]. Smith et.al has confirmed in his study that the test measures patient safety culture in addition to the staff attitudes [33].

The questionnaire contained 42 items which measured 12 different factors relevant to patient safety including contents such as general knowledge of the staff on patient safety, wrong reports and impunitive responses to the mistakes, their superiors and directors acts on improvement of safety in different hospital wards, knowledge of quality improvement in the organization, team work status within the workplace and within the hospital, convenient interpersonal communications within the wards and the hospital, their feedback and interactions against the mistakes, proportionality between nurses number and their work load, the way of patients transfer from one ward to the other. The questionnaire also included two other items, one relating to what score the respondents give the patients safety and another about how many cases of error or mistake occurred during the previous 12 months and at last career information such as work experience, work experience at that ward, work hours per week, specialized work experience, job and type of the job contact with the patients, gender, age, and conditions of the staff employment.

In order to obtain the respondents views, a Likert scale was used for the items (1= very low or strongly disagree, 2= low or disagree, 3=middle or no idea, 4= high or agree, 5= very high or strongly agree). In order to calculate percent of the responses, strongly disagree and disagree were to be "negative" and agree and strongly agree were concerned as "positive" responses. The questionnaire items were categorized according to the questionnaire designed by Quality and Healthcare Research Agency of America such that a number of items formed one factor of the 12 – factor patient safety culture [33]. Each dimension value was calculated and extracted by collecting the respondents scores for each item and dividing it by the number of the items for each dimension (table.1). Value of each

dimension was then compared to that of the Benchmark published annually by Quality and Healthcare Research Agency of America and those units which gained "strong" in terms of the patient safety or needed improvement were identified. In deductive data Multi Regression Analysis Model, which will be discussed forth word, was used for obtaining total score of patient safety culture in order to determine share and significance of the 12 factors.

Table.1 Number of items included in patient safety culture questionnaire separated by safety factors

| Patients safety culture factors | Number of items |
|--|-----------------|
| Team work within the hospital units | 4 |
| Expectations and reactions of the ward superior about patient safety | 4 |
| Support of administrative unit from patient safety | 3 |
| Organizational training, continuous improvement | 3 |
| General knowledge of patient safety | 4 |
| responses and feedback against errors | 3 |
| Communication convenience | 3 |
| Reporting event frequency | 3 |
| Our team work between the units | 4 |
| Job problems relating to the staff | 4 |
| Modifications and revolutions at the hospitals | 4 |
| Unpunitive response against errors | 3 |
| Total items | 42 |

RESULTS

As nurses play a vital role in patient safety culture, the study participants were selected from the nurses. Demographic information of the participants is provided in table.2.

Table.2- demographic information of the study participants

| variable | | frequency |
|-------------------------------------|---------------------------|-----------|
| age | <25 | 10 (5%) |
| | 26-35 | 110(55%) |
| | >35 | 80(40%) |
| | <25 | 10(5%) |
| gender | Male | 22(11%) |
| | female | 178(89%) |
| Hospital ward | internal | 22(11%) |
| | surgery | 28(14%) |
| | Obstetrics and Gynecology | 7(3.5%) |
| | Pediatric and infants | 31(15.5%) |
| | emergency | 40(20%) |
| | I.C.U | 29(14.5%) |
| | midwifery | 16(8%) |
| | Nursing station | 25(12.5%) |
| | Others | 2(1%) |
| Work experience at the hospital | <6 years | 91(45.5%) |
| | 6-15 years | 88(44%) |
| | 16-25 years | 19(9.5%) |
| | >25 years | 2(1%) |
| Work experience at the current unit | <5years | 124(62%) |
| | 5-15 years | 67(33.5%) |
| | >15 years | 9(4.5%) |
| Specialized experience | <5 years | 61(30.5%) |
| | 6-10 years | 54(27%) |
| | 11- 15 years | 33(16.5%) |
| | >16 years | 51(25.5%) |
| Work hours per week | < 45 hrs. | 69(34.5%) |
| | 45-55 hrs. | 35(17.5%) |
| | 56-65 hrs. | 20(10%) |
| | 66-75 hrs. | 15(7.5%) |
| | >75 hrs. | 61(30.5%) |
| Type of recruitment | Permanent | 60(30%) |
| | Temporary | 52(26%) |
| | Contractual | 68(34%) |
| | Education | 20(10%) |

The average work experience of the participants was 5.1 ±7.72 years at the hospitals from which the maximum and minimum experiences were 27 and 1 year, respectively. In average, the participants had been working at their last job for 4.2± 5.87 years from which the maximum and minimum were 20 and 1 year, respectively. Average work

hour per week was obtained 26.2±62.8 hours from which max and min hours were 179 and 12, respectively. The participants had been working as nurse, for 7.93±10.42 years in average, from which max and min experience years were 8 and 1, respectively.

Average age of the participants was obtained 34.28± 6.89. Approximately, one third of the participants, according to table.3, have expressed their stress of their errors or mistakes to be recorded in their personnel resume files. More than one third of the participants thought their mistakes have been used against them. More than half have reported that alternative (temporary) workforce had been working overtime in the wards. Most of the participants believed that hurting or threatening events for the patients were reported before any accident happened.

Table.3- Responses to some items (questions) of the questionnaire

| Some items of the questionnaire | Positive response (%) | Mean | SD |
|---|-----------------------|------|-------|
| There are sufficient personnel to do the tasks in this unit | 68 | 2.26 | 1.06 |
| We do any task actively in this unit to improve safety | 30 | 3.21 | 1.016 |
| We use alternative personnel more than usual in our unit | 54 | 2.56 | 1 |
| Staff think that their errors will be applied against them | 32.5 | 2.9 | 1.04 |
| It is completely by accident that there happens no serious error here | 42 | 3.21 | 1.04 |
| In critical conditions, we do a high workload with a high speed | 28 | 3.57 | 3.02 |
| Staff are stressed about their errors recording in their personnel information file | 29 | 2.8 | 1.05 |
| There are problems about patient safety in our unit | 34 | 2.89 | 2.89 |
| Our systems and methods work well on prevention of errors | 36 | 2.91 | 1.08 |
| How probable is to report the error which was corrected before hurting the patient? | 51.5 | 2.56 | 0.97 |
| Hospital administration has provided a proper work atmosphere to improve patient safety | 48 | 2.67 | 1.09 |
| The hospital different wards are not in a good coordination together | 45 | 3.02 | 1.04 |
| Hospital administration acts show that patient safety is in a high priority | 37 | 2.94 | 1.06 |

The mean scores of different factors of the patient safety culture are provided in table.4. Data indicate that job problems of the staff and frequency of the events reporting obtained the highest and lowest scores of the patient safety culture with mean values 3.14 and 2.52, respectively. Total average of the patient safety culture at the studied hospitals obtained 2.88± 0.56.

Table.4. Mean scores and percentage of positive responses separated by different factors of patient safety culture

| Patient safety culture factors | Mean score | SD | Positive response (%) |
|---|------------|------|-----------------------|
| Team works inside the units | 3.04 | 0.78 | 41.5 |
| Expectations and acts of the unit head for patient safety | 3.03 | 0.69 | 56.5 |
| Administrative support of patient safety | 2.87 | 0.79 | 43 |
| Organizational training, continuous improvement | 3.08 | 0.88 | 35.5 |
| General knowledge of patient safety | 2.96 | 0.54 | 35 |
| Communications and feedbacks against errors | 2.87 | 0.98 | 47.5 |
| Communication convenience | 2.81 | 0.59 | 65.5 |
| Event reporting frequency | 2.52 | 0.98 | 64 |
| Our team work between units | 2.91 | 0.43 | 60.5 |
| Job problems of the staff | 3.14 | 1.04 | 32.5 |
| Variations and revolutions at the hospitals | 3.08 | 0.38 | 52 |
| Unpunitive response against errors | 2.99 | 0.54 | 64 |
| Patient safety culture | 2.88 | 0.56 | 49.79 |

As it can be observed from table.5 bellow, 13 percent of the participants believed that they had reported no event during the last 12 months in their workplace and 26.5 percent also confirmed that they had reported one or two events during the previous 12 months. All the participants had responded the item that the reporting system was well working at the hospitals.

Table.5. Number and percentage of the events and accidents reported during the previous 12 months

| variable | frequency | percentage |
|----------------------------|-----------|------------|
| No event has been reported | 26 | 13% |
| 1 – 2 events | 53 | 26.5% |
| 3-5 events | 62 | 31% |
| 6-10 events | 23 | 11.5% |
| 11-20 events | 25 | 5.12% |
| 21 and more events | 11 | 5.5% |
| Total | 200 | 100% |

Forward Regression Model was used to determine share and importance of the factors in total score of the patient safety culture. Results showed that five important factors of patient safety culture gained 88 percent of the total

patient safety culture score which are “administrative support, communications and feedbacks about the mistakes, team work between the units, and communications and work relations convenience among the staff, respectively. Data are shown in table.6. Other factors of the patients safety culture compose about 12 percent of the variations relating to the total patient safety culture including: organizational training and continuous improvement, expectations and initiations of the director or the supervisors for safety, team work at the units, general knowledge of safety, frequency of reporting the events and accidents and revolution at the hospitals.

Table.6. Forward Regression Model

| Fields (patient safety culture factors) | index | SD | Statistical Significance |
|---|--------------|-----------|---------------------------------|
| Constant index | 32.09 | 1.81 | <0/001 |
| Administrative support of patient safety | 1.88 | 0.114 | <0/001 |
| Communications and feedbacks against errors | 1.74 | 0.197 | <0/001 |
| Team work between the units | 1.36 | 0.098 | <0/001 |
| Communicative ways availability | 1.71 | 0.109 | <0/001 |
| Job problems of the staff | 1.23 | 0.131 | <0/001 |

DISCUSSION AND CONCLUSION

The start point to establish a safety culture in a healthcare center is to evaluate the present culture using an appropriate suitable tool [5]. The present study was conducted using the questionnaire of patient safety culture which was one of the best tools in this area [35-36]. Results revealed that above 75% of the hospitals staff had a work experience lower than 11 years at their present position and of the rest 25%, only 14.5% had been working over 11 years in their latest post at the related unit. This could be a sign of high amount of staff displacement among the hospital wards and this can affect the patient safety culture of the staff because of lower knowledge and acquaintance about the new affairs. In a similar study, about 19% of the staff had been working for more than 11 years at their latest posts [35].

Similar studies also conducted in hospitals of Iran [35-37], Saudi Arabia [38], Lebanon [39], Turkey [40] and Belgium [41] to review the status of patient safety culture, however, most participants included nurses which was in accordance with the present study. Around 83% of the studies show that nurses work over 40 hr. per week which is 13% higher than that of the similar studies at Tehran [35] and Belgium [41]. It seems that work hours in these studied hospitals have been over the ideal standard time according to the standard work hour of nurses which is 36 hours per week. The reason may be rooted in deficiency of healthcare personnel, especially nurses at the hospitals. The obtained results also showed that 58.3%, 37.7% and 5% of the participants in this study had a work experience in their present posts below 10, 10-20 and over 20 years, respectively.

A study conducted in Tehran (70%) and Saudi Arabia (56%) also revealed that most staff had below than 10 year work experience [35, 38]. 13%, 38.5% and 48.5% of the studied population reported the patient safety culture as weak, middle and strong, respectively, while in a study conducted in Tehran, the U.S and Turkey, it was reported well by 82%, 74% and 42%, respectively [35, 40]. The results showed that the studied hospitals ranked middle with score 2.88 among those of other countries. Job problems of the staff and frequency of the events reporting are of the least and highest important factors of the patient safety culture with average scores of 3.14 and 2.52, respectively which are different with those obtained in Tehran as team work at the wards of the hospitals and unpunitive response to the errors gained highest and lowest scores among patient safety culture factors [35] and this was stemmed from cultural differences between the geographical regions.

The study results are not in accordance with those of the similar study in which 82 % of participants marked reporting errors factor lower than the average, as at the present study 23.5% of the participants assigned lower than average score to error reporting item which might show the increased knowledge among the staff in this area.

In the study accomplished by Edmonson, lack of reporting errors was claimed to be rooted in weak or prejudice culture [42]. Thereby, the status of reporting errors has been reported desirable in the studied hospitals which show a proper training to the personnel and understanding of the fact that errors are an opportunity for learning [13]. Medical Association of America mentions the issue as: “Although all the events are caused by human error, the mistakes are usually stemmed from deficiencies of work, systems and processes and leads the individuals to the errors” [13].

Results show that although the administrative system has prioritized safety as their first preference, a high percentage of the nurses (40.5%) confessed that the management has paid more attentions to the errors just once a dreadful event happens which is not in accordance with those obtained from other studies. Most attempts to improve safety has been along with a reaction nature and it’s been always tried to detect the mistakes and remove them,

although these attempts play an important role in safety improvement of the hospitals [37,47]. The present study results were in accordance with those obtained from the similar ones in terms of role of the hospital administration system in activation and improvement of patient safety culture [37, 44].

Patient safety culture can improve first by evaluation and modifications of the available culture level at the hospitals to recognize the weak and strength points of the culture and then by designating interventions like establishment of an error establishment system, variation of the present punishment culture, using sufficient personnel, and reduction of work load and hour [45]. The important point about distribution of patient information is that the patient safety or medical error information are deemed as confidential and cannot be used in legal authorities, for instance for the confidentiality cautions and necessity to report the medical or hospital events, some rules have been approved in the U.S in which using the patient safety information is forbidden for the purposes except than for legal agencies and authorities [46]. As patients report those errors which can recognize them and do not diagnose problems such as hospital infections after their release [47], it seems necessary for the policy makers to establish and introduce proper strategies and train the target group the required information and guidelines.

Advances in patient safety culture at the hospitals need a number of alterations such that the prevalent culture of blaming the individuals against their errors should be disappeared. Blaming personnel will lead to remove the incentives to report errors and will deviate us from attention to weak points of the systems and our work procedures. [17]. If no error is reported, the value of information of the errors will be neglected, therefore the capability of the organization to analyze them will be restricted and this will lead to disability to prevent errors. One of the problems with which developing countries are faced for their education systems, is separating different disciplines of science [48]. In this respect, establishing a culture to inform different classes of the community against the patients, their rights, physical, mental and social safety regardless of expedited legislations seems to be insufficient and incomplete. On the other hand, more attentions to the safety guidelines in all units of the hospital in order to preserve and improve the safety of patients, staff and attendants to the hospitals and more protection of possessions, is an unavoidable and important issue because of the number of the personnel and availability of advanced facilities and versatility of processes at present, attention to the safety and the related regulations seems urgent. In this respect, the following suggestions are provided:

To employ managers well acquainted with academic management, preparation of required guidelines for safety rules respect of physical and utilities structure of healthcare centers, active use of medical engineers, more involvement of environment health issue, specifying instructions and rules and paving way of required conditions and facilities to preserve and protect the staff health and safety and concerning public cautions in hospital cares, consideration of legal system and legislations to a correct, fair and exact discipline establishment directing the patients` communications with other citizens in order to reduce deficiencies of medical organization in patients treatment section, patient drug safety supply, avoiding discrimination in respecting patients rights, to protect patient private limits, coordination of educational and legislative systems with medical findings, detection of interests and questions of each patient individually regarding their personal characters, attitudes, culture and mental status.

REFERENCES

- [1] Ansari H. Hospital management and planning rowles, Tehran, Samat publication, 2002; pp 428-429.
- [2] Wachter RM. Understanding Patient Safety. 1st ed. New York: Mc Graw Hill; 2008.
- [3] Moghaddasi H, Sheikhtaheri A, Hashemi N. Reducing medication errors: Roles of computerized physician order entry system. J Health Admin 2007; 10(27): 57-67 (Persian).
- [4] Marin HF. Improving patient safety with technology. Int J Med Inform 2004; 73(7-8): 543-546.
- [5] Smites M, Dingelhoff I, Wagner C, Vanderwal G, Groenewegen P. The psychometric properties of the 'Hospital survey on Patient safety culture in Dutch hospitals. BMC Health Services Research, 2008; 8(230): 1-9.
- [6] Alahmadi H A. Assessment of patient safety culture in Saudi Arabian hospitals. Quality Safety Health Care, 2010; 19: 1-5.
- [7] Abdi Zh, Maleki M, Khosravi A. Staff perception about patient safety culture in selected hospitals of Tehran University of Medical Sciences. Payesh Quarterly, 2012; 10(4): 411-419.
- [8] Bodur S, Filiz E. Validity and reliability of Turkish version of "Hospital Survey on Patient Safety Culture" and perception of patient safety in public hospitals in Turkey. BMC Health Services Research, 2010; 10:28.
- [9] Solberg L I, Ache S E, Averback B M, Hayek A m, Schmitt M S, Lindquist T C , et al. Can patient safety be measured by surveys of patient experiences? The Joint Commission Journal on Quality and Patient Safety, 2008; 34(5): 266-274.
- [10] Barry E, Murcko AC, Brubaker CE. The six sigma book of healthcare. Chicago (IL): Health Administration Press; 2002.
- [11] Chassin MR, Becher BC. The wrong patient. Ann Intern Med 2002; 136: 826-33.

- [12] Gershon RR, Karkarshian CD, Grosch JW, Murphy LR, Escamilla-Cejudo A, Flanagan PA et al. Hospital safety climate and its relationship with safety work practices and work place exposure incidents. *Am J Infect Control* 2000; 28:211.
- [13] Kohn LT, Corrigan JM, Donaldson MS: *To err is human: Building a safer health system*. Institute of Medicine Washington, DC: National Academy Press 2000.
- [14] Kohn LT, Corrigan JM, Donaldson MS, Editors. *To err is human: building a safer health system*. Washington (DC): National Academy Press; 2000.
- [15] Sochalski J. Quality of care, nurse staffing, and patient outcomes. *Policy Polit Nurs Pract* 2001;2: 9-18.
- [16] Feng X, Bobay K, Weiss M. Patient safety culture in nursing: a dimensional concept analysis. *Journal of Advanced Nursing* 2008; 3: 310-19.
- [17] Shortell SM, O'Brian JL, Carman JM, Foster RW, Hughes EF, Boerstler H, et al. Assessing the impact of continuous quality improvement/total quality management: concept. *Health Serv Res* 1995; 30:377-402.
- [18] Milligan JF. Establishing a culture for patient safety-the role of education. *Nurse Education Today* 2007; 2: 95-102
- [19] Hoffman D, Marks B. An investigation of the relationship between safety climate and medication errors as well as other nurse and patient outcomes. *Pers Psychol* 2006; 4:847-69.
- [20] Vozikis A. Information management of medical errors in Greece: The MERIS proposal. *Inter J Inform Manag* 2009; 29(1): 15-26.
- [21] Herzer KR, Mark LJ, Michelson JD, Saletnik LA, Lundquist CA. Designing and implementing a comprehensive quality and patient safety management model: a paradigm for perioperative improvement. *J Patient Saf* 2008; 4(2): 84-92.
- [22] Aspden P, Corrigan JM, Wolcott J, Erickson ShM, editor. *Patient Safety: Achieving a New Standard for Care*. Washington, DC: Institute of Medicine, 2004.
- [23] Akbari Sari A, Doshmangir L.. An overview of methods for identifying and measuring adverse events in health care and their strengths and weaknesses. *Journal of Iranian Scientific Hospital Association*, 2009 , 32 .51-56
- [24] Moghri J. *Valida□on of Hospital Survey of Pa□ent Safety Culture (HSOPSC) and assessment patient safety culture from physicians, nurses and radiology and laboratory staff view [M.S thesis]*. Tehran: Tehran University of Medical Sciences; 2009.
- [25] National Patient Safety Agency. *Seven steps to pa□ent safety the full reference guide*.2004, Available from: URL: www.npsa.nhs.uk/sevensteps/
- [26] Ghotbi F, Raghbmotlagh M, Valaie N. Nosocomial sepsis in NICU department in Taleghani hospital, 2001-2002. *Journal of the Faculty of Medicine (Shaheed Beheshti University of Medical Sciences)* 2005; 29: 313-18 [Persian]
- [27] Reihani H, Haghiri A. Determination of bed sore risk factors in craniospinal trauma patients in intensive care units. *Arak Medical University Journal* 2007; 10: 39-45 [Persian]
- [28] Magharei M, Zarif Sanayei N. Identifying the Pressure sore incidence and risk factors in patients admitted in medical, surgical and orthopedic wards of hospitals affiliated to Shiraz University of medical sciences. *Iranian Journal of Nursing* 2003; 9: 1-7 [Persian]
- [29] Safavi Byat Z, Zorriastein F. Determining risk factors associated with falling among elderly at residential care facilities in Tehran. *The Journal of Qazvin University of Medical Sciences* 2008; 11: 66- 70 [Persian]
- [30] Legal Office of Iranian Ministry of Health. *Clinical Governance*. 2009. Available at: URL:http://lawoffice.mohme.gov.ir/laws/dedicated_law/print_laws_all.jsp?id=1&id2=1384. Accessed Oct 2010 (Persian).
- [31] Juni P, Witschi A, Bloch R, Egger M The hazards of scoring the quality of clinical trials for metaanalysis. *JAMA* .1999;282:1054-60.
- [32] Mogarri J. *Accredit and evaluating patient safety culture in personnel of academic hospitals in Tehran University of Medical Sciences in 2009 [dissertation]*. Tehran: Tehran University of Medical Sciences; 2009.
- [33] Smits M, Wagner C, Spreeuwenberg P, Wal G van der, Groenewegan PP. Measuring patient safety culture: an assessment of the clustering of responses at unit level and hospital level. *Qual Saf Health Care* 2009;18:292-6.
- [34] Zohar D, Livne Y, Tenne-Gazit O, Admi H, Donchin Y. Healthcare climate: a framework for measuring and improving patient safety. *Crit Care Med* 2007;35:1312-17.
- [35] Ebadi F, Rezapoor A, Tanoomand A, Bayat R, Arabloo J, Rezapoor Z. Study of patients'safety culture in Selected Training hospitals affiliated whith Tehran university of medical sciences. *Journal of Hospital Tehran University Of Medical Sciences*, 2012; 14(3).
- [36] Movahed E, Arab M, Akbari A, Hosseini M. Inpatient Perceptions of Participating in cure decision making and safety among public hospitals of Tehran medical sciences university. *Journal of Hospital Tehran University Of Medical Sciences*, 2012; 14(3).
- [37] Baghaei R , Nourani D , Khalkhali HR , Pirnejad H . Evaluating patient safety culture in personnel of academic hospital in urmia university of medical sciences in 2011. *The Journal of Urmia Nursing and Midwifery Faculty*, Vol 10(2), May-June, 2012

-
- [38] Alahmadi H A. Assessment of patient safety culture in Saudi Arabian hospitals .Qual Saf Health Care, 2010; 19:1-5
- [39] El-Jardali F, Jaafar M, Dimassi H. The current state of patient safety culture in Lebanese hospitals: a study at baseline. International Journal for Quality in Health Care, 2010; pp. 1–10.
- [40] Bodur S, Filiz E. Validity and reliability of Turkish version of “Hospital Survey on Patient Safety Culture” and perception of patient safety in public hospitals in Turkey. BMC Health Services Research, 2010; 10:28.
- [41] Hellings J, Schrooten W, Klazinga N, Vleugels A. Challenging patient safety culture: survey results. International Journal of Health Care Quality Assurance 2007; 20: 620-632.
- [42] Edmondson AC. Learning from mistakes is easier said than done: group and organizational influences on the detection and correction of human error. J Appl Behav Sci 1996;32:5-28.
- [43] Sorra JS, Nieva VF. Hospital survey on patient safety culture. Rockville, MD: Agency for Healthcare Research and Quality; 2004.
- [44] Piotrowski MM, Hinshaw DB. The safety checklist program: creating a culture of safety in intensive care units. Jt Comm J Qual Improv 2002;28:306-
- [45] Moghri J, Ghanbarnezhad A, Moghri M, Rahimi Forooshani A, Akbari Sari A, Arab M. Validation of Farsi version of hospital survey on patient Safety culture questionnaire, using confirmatory factor analysis method. Journal of Hospital Tehran University Of Medical Sciences, 14(2); 2012.
- [46] The Missouri Center for Patient Safety: Patient Safety Organization. The patient safety and quality improvement act of 2005. 2009. Available at: URL: <http://www.mocps.org>. Accessed August 30 2010.
- [47] Ravaghi H, Barati Marnani A, Hoseini AF, Takhiri A. The Relationship between Health Care Providers' Perceptions of Patient Safety Culture and Patients' Perceptions of Medical Errors in Teaching Hospitals in Tehran: 2011; Journal of health management, 15(48); 2013.
- [48] Yavari F. patient safety and system of human rights. Journal of human rights, 5(18); 2011.