Original Research Article

Hospital Patient Safety Culture in Developing Countries: A Comparative Study in Ilam City, Iran

Abstract

Aims: In this study, patient safety culture was assessed in four educational hospitals in Ilam city, Iran.

Study Design and Setting: A cross-sectional study was carried out in four educational hospitals (Imam Khomeini, Mustafa Khomeini, Taleghani and Kowsar hospitals) in Ilam city (Iran).

Study Duration: The study was conducted over 2014.

Methods: The data collection was conducted via the Iranian version of Hospital Survey on Patient Safety Culture (HSOPSC) questionnaire. The questionnaire contains 42 items that evaluates 12 dimensions of patient safety culture.

Results: The results showed that 47 % of the participants had 1- 5 years of work experience and 71.1 % of them worked more than 40 hours per week in hospital. The mean positive answers score of the safety culture in this study was obtained 40 % that was much lower than the benchmark (64 %). The highest and lowest percentages of the positive answer were attributed to teamwork within units (70 %) and non-punitive response to error (11 %), respectively.

Conclusion: In order to increase the patient safety culture in the hospitals, the number of professional staff should be increased and a practical plan about the patient safety culture should be provided. Moreover, the hospitals management should support the staff to report errors without fear of the punishment.

Keywords: Hospital, Patient Safety Culture, Developing Countries.

1 Introduction

The safety culture conception was introduced because of human error in the Chernobyl accident of Ukraine in 1986 [1]. After that, the safety culture has been considered in many organizations. One of the most important issues facing the healthcare centers is care quality or patient safety [2]. Various studies have reported that patient safety conditions particularly in developing countries are unacceptable and they have emphasized on the different procedures to improve it [3]. Many studies have also shown that the safety problems are products of inefficiencies and poor communication within specific units [4]. Gershon et al. (2000) suggested that safety problems are caused by errors and violation of safety principles [5]. Therefore, the medical errors have been identified as one of the five major factors of mortality in the world [6]. Nowadays, about 2.9% to 16.6% of patients in hospital are influenced by harmful incidents including nosocomial infections, medical errors and patient falls

[7]. World Health Organization (WHO) has estimated that, every year, tens millions of patients are victims of injuries and deaths resulted from unsafely medical activities and cares in the world [6]. In the United States, medical errors led to 44,000 to 98,000 preventable deaths in hospitals in 2008 [8]. In England, unwanted events occurred for 10 % of hospital admissions and 16.6% of admissions caused the undesirable events in Australia in 2011 [9]. Injuries and deaths resulted from medical errors have led to the significant costs to patients, healthcare systems as well as the society. It has been estimated that the cost of preventable medical errors in the United State is 17 to $ 29 million per year [10]. WHO, with emphasis on the importance of patient safety in healthcare units, established "international cooperation on patient safety" in 2004 [11]. As noted by the motto, WHO aimed to coordinate the international efforts associated with patient safety to provide the safer cares to the patients [11]. Patient safety culture is one of the aspects of patient safety which has been widely considered for improving safety in hospitals [6]. Various studies have shown that patient safety culture plays a substantial role in establishing programs of patient safety within the associated organizations [12]. Institute of Medicine (IOM) expresses that the establishment of patient safety culture plans for staff in healthcare settings is necessary to prevent the inadvertent and intentional errors, which may lead to damage to patients [13]. The scientists believe that hospitals should improve healthcare quality and patient safety culture among their staff [12]. Assessment of patient safety culture provides valuable information about various aspects of the safety culture to healthcare departments [14]. Iran, with the population of 75 million in 2014, is one of the developing countries located in the Middle East. During this study, patient safety culture in Ilam city hospitals, as a city in western Iran, was investigated and the data was compared with other studies, especially in developed countries.

2 Materials and methods

2.1 Study place

This study was carried out in four educational hospitals (Imam Khomeini, Mustafa Khomeini, Taleghani and Kowsar hospitals) in Ilam city in 2014. These hospitals with a total capacity of 250 beds have 23 wards including six internal medicine wards, five intensive care wards, three surgical wards, three emergency departments, two pediatrics wards, two neurology wards and two psychiatry units. Total numbers of all employees working in all these hospitals including physicians, nurses, midwives and paramedics (radiology and laboratory staff) were 365 persons. A total of 104 persons in different wards of the hospitals including physicians, nurses, midwives and paramedics (radiology and laboratory staff) were selected and participated in this study through available (convenience)

sampling, depending on the unit size. Table 1 shows the job characteristics of the participants in the studied hospitals.

2.2 Data collection and analysis

In this study, data collection was conducted via the Hospital Survey on Patient Safety Culture (HSOPSC) questionnaire which offered by AHRQ (Agency for Healthcare Research and Quality) in 2004 [15, 16]. This tool has been frequently used for assessment of employees' views about patient safety culture within various studies [14, 17-20]. The questionnaire has been appropriately localized to the culture of Iran with confirmatory factor analysis (CFA) method [16]. The questionnaire contains 42 items that evaluates 12 dimensions of patient safety culture [14, 21]. In this questionnaire, 5-point Likert scale ranging from strongly agree (5) to strongly disagree (1) or usually to never was applied for obtaining the respondents' opinions. The answers of strongly agree, agree, often agree and always were considered as positive answers to positive questions. The answers of strongly disagree, disagree, rarely and never were also regarded as positive answers to negative questions. After calculation of the positive answers for each item, the mean value was applied for the corresponding dimension. If the positive answers score for each item are greater than 75 %, that item can be regarded as patient safety strength [13]. Those dimensions with the positive answers grade lower than 50 % should be considered as dimensions in need of improvement. Data analysis was performed by SPSS-16 (ANOVA and qualitative tests) and p-value less than 0.05 was considered as significance level.

Table 1. Job characteristics and workplace wards of the participants.

Characteristic	N	%
Job		
Nurse	55	52.9
Physician	27	26.0
Lab staff	11	10.6
Radiology staff	7	6.7
Other	4	3.8
Ward		
Internal	11	10.6
Surgery	22	21.2
Women	4	3.8
Pediatric	3	2.9
Nervous	7	6.7
ICU	16	15.4
Emergency	23	22.1
Lab	10	9.6
Radiology	8	7.7

3 Results

The maximum and minimum numbers of the participants (Table 1) in this study were in emergency departments (22.1 %) and in women wards (3.8 %), respectively. As seen from Table 1, 52.9 % and 26.0 % of the participants were nurses and physicians, respectively. Table 2 shows that 47 % of the respondents had 1-5 years of work experience and 71.1 % of the individuals worked more than 40 hours per week in hospital. More than 94% of the individuals also expressed that they come into contact with patients. Table 3 shows that 71.2 % of individuals reported no events in their hospitals during the past 12 months.

Table 2. Work experience and work hours (per week) of the participants.

Characteristic	N	%
Work experience (year)		
Less than 1	9	8.7
1-5	49	47.1
6-10	22	21.2
11-15	6	5.8
16-20	8	7.7
21 or more	10	9.6
Work per week (hr)		
Less than 20	3	2.9
20-39	27	26.0
40-59	47	45.2
60-79	17	16.3
80-99	6	5.8
100 or more	4	3.8

Table 3. Number of events and patient safety grade expressed by the participants.

Characteristic	N	%
Number of events (per year)		
None	74	71.2
1-2	19	18.3
3-5	6	5.8
6-10	3	2.9
11-20	2	1.9
Patient safety grade		
Excellent	2	1.9
Very good	25	24.0
Good	49	47.1
Undesirable	16	15.4
Weak	12	11.5

On other hand, as presented in Table 3, most respondents (73 %) described that the patient safety grade in their hospitals was in good to excellent level. During the present study, the percentage of positive answers scores for twelve dimensions of patient safety culture was compared to benchmark (Table 4). As seen, the percentage of the positive answers scores in the present study was obtained 11-70 %. The highest percentages of the positive answers were attributed to teamwork within units (70 %) and then organizational learning-continuous improvement (56 %). The lowest percentages of the positive answers were also associated to staff (19 %) and non-punitive response to error (11 %). As shown (Table 4). the mean of positive answers score achieved in this study (40 %) was also much lower than of the benchmark (64 %). Table 5 represents the strongest and weakest items related to patient safety culture dimensions. As can be seen, the third item (In this department, people treat each other with respect) of the first dimension (teamwork within departments) had the maximum positive response (81 %). The first and third items of the last dimension (non-punitive response to error) also had the minimum positive response (10 %). Table 6 shows that there was a significant relationship between work experience and total score of patient safety culture (p=0.003). As shown (Table 6), the highest score of patient safety culture was devoted to the employees with less than one year work experience.

Table 4. Positive answer scores of safety culture dimensions in the studied hospitals and Benchmark study [22].

Dimension	Number of questions	This study (%)	Benchmark * (%)
Teamwork within units	4	70	81
Supervisor/manager expectations & actions promoting patient safety	4	40	76
Organizational learning – continuous improvement	3	56	73
Hospital management support for patient safety	3	44	72
Feedback and communication about error	3	43	67
Overall perception of patient safety	4	30	66
Frequency of events reported	3	39	66
Communication openness	3	37	62
Teamwork across hospital departments	4	44	61
Staff	4	19	55
Hospital handoffs & transitions	4	49	47
Non-punitive response to error	3	11	44
Mean	-	40	64

* Benchmark indicates the mean of the patient safety culture score in the USA hospitals that is annually conducted by AHRQ. Therefore, the data obtained in 2014 was used as benchmark in our study.

Table 5. Highest and lowest scores of patient safety culture based on the separate questions.

Dimension	Questionnaire Items	% of positive response	
		This study	Benchmark
Teamwork within departments	1- People support one another in this department.	74	86
	2- When a lot of work needs to be done quickly, we work together as a team to get the work done.	76	86
	3- In this department, people treat each other with respect.	81	80
	4- When one area in this department gets really busy, others help out.	51	71
Organizational learning – continuous improvement	1- We are actively doing things to improve patient safety.	78	84
	2- Mistakes have led to positive changes here.	31	64
	3- After we make changes to improve patient safety, we evaluate their effectiveness.	60	71
Staff	1- We have enough staff to handle the workload.	24	54
	2- Staff in this department work longer hours than is best for patient care. (R)	12	52
	3- We use more agency/temporary staff than is best for patient care. (R)	25	66
	4- We work in "crisis mode," trying to do too much, too quickly. (R)	13	50
Non- punitive response to error	1- Staff feels like their mistakes are held against them. (R)	10	50
	2- When an event is reported, it feels like the person is being written up, not the problem. (R)	14	48
	3- Staff worry that mistakes they make are kept in their personnel file. (R)	10	35

(R): indicated on the negative aspect of the item.

Table 6. The statistical analysis between total score of patient safety culture with work experience.

Grade	Work experience of the participants (year)	Mean	Std. Deviation	F	p
Total score of patient safety culture	Less than 1	153.11	20.41	0.003	3.95
	1-5	131.02	14.50		
	6-10	138.00	14.59		
	11-15	129.33	8.71		
	16-20	139.50	17.03		
	21 or more	138.60	12.07		

4 Discussion

The assessment of patient safety culture causes that the organizations realize their weaknesses and strengths of their safety conditions. Moreover, the organizations can compare their safety culture scores with other organizations [17]. During this study, HSOPSC tool was used to assess the patient

safety culture in Ilam city hospitals. As seen from the results, 71.1 % of the individuals worked more than 40 hours per week. Hellinges et al. study (2007) in Belgium hospitals showed that only 29 % of the employees worked more than 40 hours a week [23]. It seems that the number of working hours of the employees in our study was more than ideal level. This may be resulted from the lack of the professional workforces especially nurses in our study. The employees' burnout and exhaustion in this study, due to the lack of the workforces, can reduce concentration of the individuals and subsequently it can threat the patient safety [24]. The results showed that 9 % of the participants had less than one-year of work experience, which only 2 % of them (of 9 %) worked at their professional career. This may be due to the lack of workforces in some professions. The findings (Table 3) also indicated that 71.2 % of the participants had no reported errors during one past year. El-jardali et al. (2010) and Bodure and Filiz (2010) reported that about 60 % and 84 % of the participants had no reported errors during previous year, respectively [6, 17]. This value (no event reported by participants over the past one year) in USA hospitals was found to be 56 % [18]. One of the most important reasons of the lower reported errors by the individuals in various studies can be because of the fear of the consequences of reporting errors [25]. The culture of error statement by the individuals without the fear of blaming, shame and criticism should be developed [26]. The results (Table 3) also showed that only 25 % of the participants described the safety degree in their hospitals as very good to excellent, while this value in El-jardali et al. (2010, 2014) and Ballangrud et al. (2012) studies was about 70 %, over 70 % and 75 %, respectively [17, 27, 28]. Hospital management has a substantial role in improving patient safety culture via employees as a key factor in promoting safety [29]. The lower value of the safety degree in our study can be originated from the weakness of the hospitals management. As seen from Table 4, the mean of positive answers score about patient safety culture was 40 %. This value in an Iranian study conducted by Moussavi et al. (2013) in Tehran hospitals was 35 % [24]. The mean value of positive answers scores of patient safety culture in various studies from other countries such as U.S hospitals in the united states, Agnew et al. (2013) in Scotland, Ballangrud et al. (2012) in Norway, Wang et al (2014) in China and Chen & Lee (2010) in Taiwan was 64, 50, 55, 57, and 64 %, respectively [13, 14, 22, 28, 30]. The results of 12 dimensions of patient safety culture (Table 4), such as other studies, showed that the highest score of positive answer (70 %) was attributed to the first dimension, team working within units [17, 18, 22, 24, 28, 30]. Table 5 shows that 81 % of the employees in different units treated each other respectfully and 76 % of the individuals worked together as a team in dealing with over load working. On the other hand, the lowest score of positive

answer (11 %) was assigned to non-punitive response to error (Table 4). Moussavi et al. (2013) and Sorra et al. (2014) also indicated that the weakest dimension of positive answer was allocated to non-punitive response to error as 12 % and 47 %, respectively [22, 24]. About 90 % of the staff (Table not shown) thought that their mistakes are held against them and they were concerned about registering the mistakes in their personnel files by the department management. The reason of this fact may be resulted from lack of confidence towards the management system, presence of punitive regulations and also the absence of supportive behaviors from hospital authorities for dealing with employees' mistakes. The lowest percent of positive answer (Table 4) after non-punitive response to error was assigned to staff-related issues dimension (19 %). This result has been also reported by various studies [13, 14, 18, 19, 24]. About 76 % of the employees believed that there were not enough workforces to serve the patients. The findings related to employees working hours (Table 2) also confirmed this fact. Sanders and Cook (2009) illustrated that major disasters occurred in hospitals with inadequate staff because the staff had to do overwork in the organizations [31]. The overworked staff may also suffer from stress and insomnia which can lead to effective errors in their performance [32]. As listed in Table 4, the scores of patient safety culture for all the dimensions except for hospital handoff & transitions in the present study were less than Benchmark. This may be due to the cultural differences and also due to the lack of the staff interest to express the negative opinions about their work place.

5 Conclusions

The present study showed that the Ilam city hospitals had unacceptable conditions in terms of patient safety culture. The presence of punitive culture in workplace, lack of professional workforce, longer working hours and lack of patient safety programs were the main factors of unsuitable safety conditions in the studied hospitals. The hospitals, in this study, require to practical and educational programs concerned to patient safety culture in both the staff and management levels. In addition, the hospitals management can improve the patient safety culture through the staff training, providing the professional workforce and identifying and modifying the risks. Moreover, the hospitals management should support and encourage all the staff to report the errors without fear of the punishment.

References

1. Teemu R, Rollenhagen C. Does the concept of safety culture help or hinder systems thinking in safety? Accid Anal Prev. 2014: 68: 5-15.

2. Smits M, Christiaans-Dingelhoff I, Wagner C, van der Wal G, Groenewegen PP. The psychometric properties of the Hospital Survey on Patient Safety Culture in Dutch hospitals. BMC Health Serv Res. 2008;8(1):230.

3. Cooper D. Safety culture: A model for understanding and qualifying a difficult concept. Prof Saf. 2002;47(6):30-6.

4. Barry R, Murcko AC, Brubuker CF. The Six Sigma Book for Healthcare: Improving Outcomes by Reducing Errors. J Health Care Qual. 2003;25(2):52.

5. Gershon RRM, Karkashian CD, Grosch JW, Murphy LR, Escamilla-Cejudo A, Flanagan PA, et al. Hospital safety climate and its relationship with safe work practices and workplace exposure incidents. Am J Infect Control. 2000;28(3):211-21.

6. 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 Serv Res. 2010;10(28):1-9.

7. Ausserhofer D, Schubert M, Desmedt M, Blegen, MA, De Geest S, Schwendimann R. The association of patient safety climate and nurse-related organizational factors with selected patient outcomes: a cross-sectional survey. Int J Nurs Stud. 2013:50(2):240-252.

8. Leong P, Afrow J, Weber HP, Howell H. Attitudes toward patient safety standards in US dental schools: a pilot study. J Dent Educ. 2008;72(4):431-7.

9. Gonzalez-Formoso C, Martin-Miguel MV, Fernandez-Dominguez MJ, Rial A, Lago-Deibe FI, Ramil-Hermida L, et al. Adverse events analysis as an educational tool to improve patient safety culture in primary care: A randomized trial. BMC Fam Pract. 2011;12(1):50.

10. Zwart DLM, Langelaan M, van de Vooren RC, Kuyvenhoven MM, Kalkman CJ, Verheij TJM, et al. Patient safety culture measurement in general practice. Clinimetric properties of SCOPE. BMC Fam Pract. 2011;12(1):117.

11. World Health Organization. Summary of the evidence on patient safety: implications for research. 2008.

12. Pumar-Mendez MaJ, Attree M, Wakefield A. Methodological aspects in the assessment of safety culture in the hospital setting: A review of the literature. Nurse Educ Today. 2014;34(2):162-70.

13. Wang X, Liu K, You L-m, Xiang J-g, Hu H-g, Zhang LF, et al. The relationship between patient safety culture and adverse events: A questionnaire survey. Int J Nurs Stud. 2014;51(8):1114-22.

14. Chen IC, Li H-H. Measuring patient safety culture in Taiwan using the Hospital Survey on Patient Safety Culture (HSOPSC). BMC Health Serv Res. 2010;10(1):152.

15. Sorra J, Nieva VF. Hospital survey on patient safety culture. AHRQ.2004.

16. 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. Hosp J. 2012;11(2):19-29.

17. El-Jardali F, Jaafar M, Dimassi H, Jamal D, Hamdan R. The current state of patient safety culture in Lebanese hospitals: a study at baseline. Int J Qual Health Care. 2010;22(5):386-95.

18. Bagnasco A, Tibaldi L, Chirone P, Chiaranda C, Panzone MS, Tangolo D, et al. Patient safety culture: an Italian experience. J Clin Nurs. 2011;20(7-8):1188-95.

19. Nieva VF, Sorra J. Safety culture assessment: a tool for improving patient safety in healthcare organizations. Qual Saf Health Care. 2003;12(suppl 2):17-23.

20. Sorra J, Famolaro T, Dyer N, Khanna K, Nelson D. Hospital survey on patient safety culture: 2011 user comparative database report. AHRQ. 2011.

21. Alahmadi HA. Assessment of patient safety culture in Saudi Arabian hospitals. Qual Saf Health Care. 2010;19(5):1-5.

22. Sorra J, Famolaro T, Yount ND, et al. Hospital Survey on Patient Safety Culture 2014 User Comparative Database Report. (Prepared by Westat, Rockville, MD, under Contract No. HHSA 290201300003C). Rockville, MD: AHRQ. 2014. AHRQ Publication No. 14-0019-EF.

23. Hellings J, Schrooten W, Klazinga N, Vleugels A. Challenging patient safety culture: survey results. Int J Health Care Qual Assur. 2007;20(7):620-32.

24. Moussavi F, Moghri J, Gholizadeh Y, Karami A, Najjari S, Mehmandust R, et al. Assessment of patient safety culture among personnel in the hospitals associated with Islamic Azad University in Tehran in 2013. Electronic Physician. 2013;5:664-71.

25. 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. 2004;40(1):66-90.

26. French J. Medical errors and patient safety in health care. Can J Med Radiat Technol. 2007;37(4):9-13.

27. El-Jardali F, Sheikh F, Garcia, N. A, Jamal D, Abdo, A. Patient safety culture in a large teaching hospital in Riyadh: baseline assessment, comparative analysis and opportunities for improvement. BMC Health Serv Res. 2014:14(1):122.

28. Ballangrud R, Hedelin B, Hall-Lord ML. Nurses perceptions of patient safety climate in intensive care units: a cross-sectional study. Intensive Crit Care Nurs. 2012;28(6):344-54.

29. Piotrowski MM, Hinshaw DB. The safety checklist program: creating a culture of safety in intensive care units. Jt Comm J Qual Saf. 2002;28(6):306-15.

30. Agnew C, Flin R, Mearns K. Patient safety climate and worker safety behaviours in acute hospitals in Scotland. J. Saf. Res. 2013;45(4):95-101.

31. Sandars J, Cook G. ABC of patient safety. John Wiley & Sons; 2009.

32. Baldwin JRDC, Daugherty SR, Tsai R, Scotti Jr MJ. A national survey of residents self-reported work hours: thinking beyond specialty. Acad Med. 2003;78(11):1154-63.