

Evaluation the Effect of Establishing Patient Safety Friendly Hospital Initiative on Improving Patient Safety Culture in Nurses Views in Shahid Sadooghi University Hospitals: A Before and after Study

¹A. Homauni, ²R. Askari, ²M. Shafiei, ³H. Gharaei, ⁴H. Fallah zadeh and ⁵M. Chalak

¹Master of Healthcare Management, Shahid Sadoughi University of Medical Science, Yazd, Iran

²Candidate in Healthcare Management, Department of Health Management and Economics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran

³Hamedan University of Medical Science, Health Center of Hamedan, Hamedan, Iran

⁴Department of Statistics, Shahid Sadoughi of Medical Science, Yazd, Iran

⁵Tehran University, Management Faculty, Tehran, Iran

Abstract: Introduction: Improving the safety culture in health care centers has implemented as Key strategy to improve patient safety in health care. Safety culture assessment has been recommended as a strategy for patient safety. In this regard, hospitals that has implemented patient safety friendly hospital initiative (PSHFI) are as an umbrella that underlying all aspects of patient safety. This study aimed to evaluation the effect of establishing patient safety friendly hospital initiative on improving patient safety culture in a before-after study. Methods: This is a quasi experimental-interventional, descriptive and correlation study that has implemented in Sadooghi and Rahnamoon hospitals in Yazd city in 20113. Prior to implementation patient safety friendly hospital initiative in mentioned hospitals, Patient safety culture has been studied in a separate study. Thus, in the way of examining the patient safety culture after implementing patient safety friendly hospital initiative and comparing its aspects with safety culture aspects in previous study, the rate of improvement in different aspects of safety culture in effect of implementing this design has obtained. Findings: Average score of safety culture in Sadooghi and Rahnamoon hospitals has improved in order from 40.19 and 41.40 to 54.77 and 51.85. Strongest area of safety culture in Sadooghi hospital in after study was teamwork within hospital units area with the score of 77.9 and the weakest area of this hospital was the area of reply to issues related to employee with a score of 36.77. On the other hand, the strongest area in Rahnamoon hospital was organizational learning-continuous improvement area with a score of 78.83 and the weakest area was the frequency of incidents and accidents reporting of with a score of 25.9. Conclusion: Implementation of patient safety friendly initiative has significant impact on improving patient safety culture in both hospitals. Although these two hospitals have achieved 100% of the required standard and considered among between level 1 friendly patient safety hospitals, but safety culture has improved from poor status to moderate during two past years

Key words: Patient safety • Patient safety culture • Patient safety friendly hospitals

INTRODUCTION

Medical errors are the major challenges of the health systems all around the world which threaten all th countries [1]. Despite the best efforts of the medical staff, there is always a possibility of error to occur [2].

Evidence suggests that in developing countries, one in ten patients who receive medical care, one person is seriously harmed. On the other hand, because there are no accurate statistics on the countries, this number is likely higher than these are [3]. Adverse events and medical errors are among the challenges facing health systems

Corresponding Author: Roohollah Askari, Candidate in Healthcare Management, Department of Health Management and Economics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran.

worldwide so they attempt to minimize medical errors and increase patient safety. As defined by JCAHO, medical errors in an unintentional action that takes place because of negligence or an act which does not lead to desired result in medicine [4]. Culture is a measure of human development [5]. Safety culture, a subset of organizational culture, is defined in healthcare as the integration of safety thinking and practices into clinical activities [6]. One of the factors that play an effective role in improving patient safety in healthcare centers, is the existence of patient safety culture in these centers [7]. Patient safety is one of the main concerns overwhelm healthcare administrators [8].

Featuring the existence of patient safety culture, no hiding errors and accidents and detection them, employee training in the field of patient safety, use of data reporting system to improve processes, reduction individual blaming, teamwork, transparent communication between departments for benefit of patients and organizational leadership's attention to patient safety, can be mentioned [9]. Improvement safety culture is conducted in health care centers as a key strategy to improve patient safety in health care provision and assessment of safety culture has been recommended as a strategy for patient safety [10]. Accordingly, hospitals that have implemented patient safety friendly hospital initiative (PSFHI) remain as an umbrella which covering all aspects of patient safety. Those hospitals are called patient safety friendly hospital which their leadership focuses on activities of its employees in issues related to patient safety and preventing medical errors. In patient safety friendly hospitals efforts are on ensuring patient safety in every way. Several countries of the Eastern Mediterranean area are running this program in their own country [11]. Patient safety friendly hospital initiative, a WHO project, which aims to help health care institutions to initiate a comprehensive patient safety program in the countries.

Patient safety friendly initiative standards have been established on five main groups, which are divided into 24 subgroups. Five groups that encompass the standards are: governance and leadership, participation and interaction with patients and the community, safe and evidence-based clinical services, secure environment and continuing education.

The 5 main groups contain 24 subgroups. A set of mandatory standards (a total of 20 standards), major standards (A total of 90 standard) and advanced

standards (A total of 30 standard), are located in this 5 groups.

Mandatory standards, the standards for recognition hospitals as a patient safety friendly hospital, are essential to have achieved 100%. Basic standards include minimum standards which hospitals must comply to provide patients safety. Although determining the level of patient safety friendly hospital depends on the percentage of basic standards which are achieved, but achieving 100% of basic standards of patient safety as a patient safety friendly hospital Level 1, is not necessary.

Advanced standards, are requirements which hospital depending on its capacity and resources must proceed to achieve them in order to enhancing safety services [12].

In Iran, patient safety friendly hospital initiative (PSFHI) was carried in collaboration with the World Health Organization as a pilot at 10 hospitals in 2011 and at 100 hospitals in 2012 [13].

It should be mentioned that patient safety friendly initiative such as an umbrella covers all aspects of patient safety. This project was quite relevant to standards of patient safety culture and it could be said that one of the objectives of this program is to improve patient safety culture among staff of clinical centers. Also with the questions that was asked of the authorities of Sadooghi and Rahnemoun hospitals, both hospitals have achieved almost 100% required standards of program. Therefore, these two hospitals can be introduced as patient safety friendly hospitals. This study aimed to assess patient safety culture and compare its various aspects with the study which was carried before this program.

MATERIALS AND METHODS

This is a quasi experimental-interventional, descriptive and correlation study that has implemented in 2013. The study population consisted of all nurses of Sadooghi and Rahnemoun hospitals. Before the implementation of patient safety friendly hospital initiative, patient safety culture has been examined in a separate study [14]. In this study, sampling was stratified random in which a total of 117 nurses (72 in Sadooghi and 45 in Rahnemoun) were selected. In Chalak thesis that has conducted in educational hospitals of Yazd city in 2012, she has examined the patient's safety culture. The results of this study are available separately for each hospital.

In Iran, patient safety friendly hospital initiative (PSFHI) was carried in collaboration with the World Health Organization as a pilot at 10 hospitals in 2011 and at 100 hospitals in 2012. In the city of Yazd, two hospitals Sadooghi and Rahnemoon get started the project since mid 2012. Due to the availability of questionnaire of previous study and according to demographic data of respondents in that study, we attempted those people who had completed the questionnaire in the previous study attend in current study. Given that, it was not possible to access all those in the previous study, in some cases, according to demographic data matching was done. Considering that the previous results were available, the results of current study were compared with results of previous study. To collect the required data, standard questionnaire "Hospital Survey on Patient Safety" known as HSOPSC is used. This questionnaire was designed by Agency for Healthcare Research and Quality (AHRQ) in 2004 and by now has been used frequently to assess hospital staff opinions about patient safety culture around the world [15]. HSOPSC is a reliable and valid instrument that is designed by using different contexts, cognitive testing and analysis to assess the culture of patient safety in hospitals. Moghri validated this questionnaire in his thesis entitled "Validation of patient safety culture questionnaire and assess the status of patient safety culture in perspective of medical and diagnostic staff in Tehran hospitals in 1388" [16]. The questionnaires measuring staff knowledge about patient safety culture that includes 12 aspects of patient safety culture and each dimension has 3 to 4 questions. The questionnaire assesses different aspects of patient safety culture in a five-item Likert scale, from strongly disagree to strongly agree. The questionnaire was scored according to scoring instruction. Agree and strongly agree options have been classified in positive range, no comment in neutral range and disagree and strongly disagree in negative range. A number of questions have been developed in a way in which scoring system is reversed, it means disagree and strongly disagree options have classified in positive responses range and agree and strongly agree options have classified in negative responses range. Percentage of positive responses to each area reflects the rating of that area, so positive responses under 50% is poor, 50% to 75% is average and higher than 75% is considered strong. In order to analyze data, at first by SPSS the data of each questionnaire of before study is placed beside the data of matched questionnaire in after study and Positive responses (agree and strongly agree which have positive meaning and strongly disagree and disagree which have negative

meaning) Rating 4, no idea rating 3 and negative responses (disagree and disagree which have positive meaning and agree and strongly agree which have negative meaning) rating 1. Paired t test has been used to means comparison and compute the standard deviation of each area in before and after study and also Paired t test has been used to calculate the Pvalue.

Finding: As earlier mentioned, the purpose of this article is to assess the patient safety culture after conducting patient safety friendly hospital initiative and comparing it various aspects with the study before implementation of this project in Sadooghi and Rahnemoon hospitals. The number of questionnaires distributed to different department of each hospital in before and after study was equal: Sadooghi 45 and Rahnemoon 72.

This table shows the patient safety culture of Sadooghi hospital has been in poor status before implementation of patient safety friendly hospital initiative with 40.19 points. But after the project while the hospital has achieved 100% standards required by program, patient safety culture improved to 54.77 points and is in average condition in the field of patient safety culture. As well as this table shows the patient safety culture of Rahnemoon has been in poor status before implementation of patient safety friendly hospital initiative with 41.40 points but after the project while the hospital has achieved 100% standards required by the plan, patient safety culture improved to 51.85 points and is in average condition in the field of patient safety culture.

In the case of frequency of incidents reported to the relevant authority, in Sadooghi hospital during past 12 months from 72 questionnaires distributed in prior study, 73.6% of the subjects did not provide any report to relevant authority, 16.7% of subjects 1 or 2 and 8.3% of subjects have provided 3 to 5 report to relevant authority. In after study 52.77% did not provide any report to the relevant authority, 38.8% of subjects reported 1 to 2, 2.77% 3 to 5 report and 5.55% provide more than six reports to the relevant authority that indicates the number of reports has increased.

Also in Rahnemoon hospital from 45 questionnaires distributed in before study 64.4% of the subjects did not provide any report to relevant authority, 20% of subjects 1 or 2, 6.7% of subjects have provided 3 to 5 report and 4.4% provide more than six reports to relevant authority. In after study 24.4% did not provide any report to the relevant authority, 62.2% of subjects reported 1 to 2, 6.7% 3 to 5 report and 6.7% provide more than six reports that indicates the number of reports has increased.

Table 1: the frequency of the studied subjects in defferent departments

Department	Sadooghi hospital		Rahneemoon hospital	
	before	after	before	after
domestic	11	11	9	9
surgical department	10	10	13	13
maternity department	5	5	5	5
Pediatrics department	10	10	-	-
Neurology	3	3	4	4
ICU	10	10	8	8
Emergency	5	5	3	3
other departments (Orthopedy, Laboratory, Radiology and....)	18	18	3	3
total	72	72	45	45

Table 2: total score of safety culture in each hospital

area	Sadooghi hospital		Rahneemoon hospital	
	before	after	before	After
frequency of incidents and accidents reporting	32.87	44.6	31.1	25.9
overall perception of safety	49.65	60.3	50	55.53
manager/supervisor expectations and actions to improve safety	44.07	54.77	36.67	53.32
organizational learning - continuous improvement	64.37	76.46	56.3	74.83
teamwork within hospital units	46.17	77.9	65.02	71.12
free communication path and honesty in communication	37.5	48.5	37.03	48.76
communication and provide feedback regarding the error	33.36	44.6	32.6	37.76
non-punitive response when error event	15.26	47.03	19.26	31.13
reply to issues related to employee	16.65	36.77	30	45.55
hospital management support for patient safety	50.43	57.83	44.4	66.66
teamwork between hospital units	40.62	52.22	41.12	62.22
incidents occurred during the shift change and moving patient	51.42	56.25	53.35	49.45
Total mean	40.19	54.77	41.4	51.85

Table 3: The results of t-test in each areas of patient safety culture in sadooghi hospital

Area	Sadooghi hospital				Pvalue
	mean		standard deviation		
	before	after	Before	after	
frequency of incidents and accidents reporting	8.23	9.16	2.71	2.43	61/0
overall perception of safety	11.26	12.23	2.88	3	98/0
manager/supervisor expectations and actions to improve safety	10.48	11.95	3.28	3.47	May-00
organizational learning - continuous improvement	10.11	10.44	1.8	1.93	66/0
teamwork within hospital units	12.92	13.98	3.13	2.29	Feb-00
free communication path and honesty in communication	7.97	8.77	1.73	2.32	13/0
communication and provide feedback regarding the error	8.45	8.98	2.01	2.28	36/0
non-punitive response when error event	4.97	7.82	1.96	2.93	71/0
reply to issues related to employee	6.52	9.26	2.32	3.94	97/0
Hospital management support for patient safety	8.36	9.14	2.92	3.21	88/0
teamwork between hospital units	10.55	11.44	3.23	3.7	Sep-00
incidents occurred during the shift change and moving patient	11.11	11.92	3.8	3.31	Jun-00

Table 4: The results of t-test in each areas of patient safety culture in Rahmehoon hospital

area	Rahmehoon hospital				Mean
	mean		mean		
	before	before	Before	before	
frequency of incidents and accidents reporting	7.27	8.95	2.86	1.91	94/0
overall perception of safety	11.77	11.8	2.33	2.63	51/0
manager/supervisor expectations and actions to improve safety	9.73	11.91	3.29	2.99	32/0
organizational learning - continuous improvement	9.04	10.44	2.23	2.08	14/0
teamwork within hospital units	12.46	13.28	2.98	3.26	43/0
free communication path and honesty in communication	8.35	10.33	2.49	2.49	99/0
communication and provide feedback regarding the error	8.51	10.11	2.61	1.92	28/0
non-punitive response when error event	5.86	6.68	2.76	3.46	31/0
reply to issues related to employee	8.44	10.4	2.41	3.75	Apr-00
Hospital management support for patient safety	8.08	9.68	2.66	2.11	43/0
teamwork between hospital units	10.77	13.15	3.07	2.43	17/0
incidents occurred during the shift change and moving patient	11.52	11	3.15	4.22	Aug-00

DISCUSSION

The present study was designed to assess the effect of patient safety friendly hospital initiative on patient safety culture in Sadooghi and Rahmehoon hospitals. It should be noted that the overall condition of the patient safety culture in this hospital and in before study with a score of 40.19% was in poor condition. In the study that was conducted after implementation of patient safety friendly hospital initiative the areas of frequency of incidents and accidents reporting, free communication path and honesty in communication and provide feedback regarding the error, non-punitive response when error event and reply to issues related to employee with a score of less than 50% were among the poor areas. The two areas of organizational learning - continuous improvement and teamwork within hospital units are among the strongest areas of safety culture in this hospital. Overall status of safety culture of this hospital in after study with a score of 54.77 is in average condition that is consistent with the results of the study of Ebadi Azar titled "study the culture of patient safety in selected educational health centers of Tehran University of Medical Sciences" that estimated average score of safety culture at these centers to amount to 62 [17]. The strongest area of safety culture in this hospital is teamwork within hospital units with a score of 77.9. As well as, in the study that conducted by Ebadi Azar and *et al.*, the strongest area of safety culture was teamwork within hospital units with the score of 67 [17]. Also in a study done in U.S.A strongest area was teamwork within hospital units with 80% of total score [18]. In studies conducted in Turkey [19], Belgium [20], the Netherlands [21] and Lebanon [22] obtained similar results. The weakest area of safety culture in this hospital was

reply to issues related to employee with a score of 36.77. In Ebadi Azar study the non-punitive response when error event area was the weakest area with the score of 51. In the study of U.S.A the weakest area was non-punitive response to error and transfer and exchange of information areas, together with the points of 44%. As well as in the study of Saudi Arabia two areas non-punitive response to error (22%) and reply to issues related to employee (27%) was weakest area [23]. Also in Taiwan study the reply to issues related to employee (39%) obtains the lowest score that is similar to the results of Sadooghi hospital in current study [24]. In Turkish study the frequency of incidents and accidents reporting obtains the lowest point.

In Rahmehoon hospital in before study the areas of overall perception of safety, organizational learning-continuous improvement, teamwork within hospital units and incidents occurred during the shift change and moving patients have been between average areas and other area were in poor condition. Overall status of safety culture with a score of 41.40 was in poor condition. In after study the areas of frequency of incidents and accidents reporting, free communication path and honesty in communication, communication and provide feedback regarding the error, non-punitive response when error event, reply to issues related to employee and incidents occurred during the shift change and moving patients was among weak areas of safety culture. As well as the areas of overall perception of safety, manager/supervisor expectations and actions to improve safety, organizational learning-continuous improvement, teamwork within hospital units, hospital management support for patient safety and teamwork between hospital units have been among average areas. Overall status of safety culture of this hospital in after study with a score of 51.85 is in

average condition that is consistent with the results of the study of Ebadi Azar that conducted selected educational in health centers of Tehran University of Medical Sciences that estimated average score of safety culture at these centers with the score of 62(20). The strongest area of safety culture in this hospital is organizational learning - continuous improvement with a score of 74.83. In the study that conducted by Ebadi Azar and *et al.*, the strongest area of safety culture was teamwork within hospital units with the score of 67(20). The weakest area of safety culture in this hospital was reply to issues related to employee with a score of 25.9. In Ebadi Azar study the non-punitive response when error event area was the weakest area with the score of 51 that is inconsistent with the results of the study in Rahneemoon hospital. In the study of U.S.A the weakest area was non-punitive response to error and transfer and exchange of information areas, together with the points of 44%(21). As well as in the study of Saudi Arabia two areas non-punitive response to error (22%) and issues related to employee (27%) was weakest area(26). Also in Taiwan study the issues related to employee (39%) obtains the lowest score that the results of these studies are inconsistent with the results of Rahneemoon hospital in our study (27).

CONCLUSION

The results of this study showed a significant impact on improving patient safety culture due to implementation of patient safety friendly hospital initiative in studied hospitals. Although these two hospitals have achieved the 100% standards required and considered as level 1 patient safety friendly hospital, but within two years safety culture condition has improved from poor to moderate. Therefore, it is anticipated that implementation of required and advanced standards of this program and promote these two hospitals to higher levels, the situation of patient safety culture becomes even better.

The Most important limitations of this study was collecting the questionnaires of before study, finding studied subjects of before study and also matching the demographic characteristics of respondents.

This study is the result of a thesis titled "Evaluation the effect of establishing patient safety friendly hospital initiative on improving patient safety culture" by Abbas Homayuni the student of master of healthcare management.

Finally, we find it necessary to thank for cooperation of nurses and management of this two hospitals.

REFERENCES

1. Hatam, N., V. Keshtkar, F. Forouzan and B. Peivand, 2012. Patient safety culture status in teaching hospitals: A case of shiraz university of medical sciences. Middle east journal of scientific research, 12(7): 970-975.
2. Vafae-najar, A., A. Pourtaleb, H. Ebrahimipour, M. Meraji, F. Erfanian-yazdi, E. Houshmand, K. Khodaparast and R. Dehnavieh, 2013. Study of patient,s scomplaints reported over 36 months at a large public educational specialized center of obstetrics and gynecology. Middle east journal of scientific research, 16(1): 23-29.
3. 10 facts on patient safety. [Cited 2008 Nov 20]. Available from: www.who.int/features/factfiles/patient_safety/en/index.html.
4. Banja, J., 2005. Medical error 101: A primer case manager, 16: 57- 9.
5. Arshabekovna Beysenbavea, A., A. Isaevna Bulshekbayeva and S.H. Adilkairovna Ubniyazova, 2013. Educational and Ideological Culture of a teacher in forming tolerance. Middle east journal of scientific research, 14(7): 920-924.
6. Bahrami, M.A., R. Montazeralfaraj, M. Chalak, A. Dehghani tafti, G.H. Ahmadi tehrani and S. Entezarian Ardakani, 2013. Patient safety culture challenges: survey result of Iranian educational hospitals. Middle east journal of scientific research, 14(5): 641-649.
7. Anderson, J.D., 2006. Creating a culture of safety: leadership, teams and tools. Nurse leader journal, 5: 38- 41.
8. Hanan A. Ezzat alkorashy, 2013. Facators shaping patient safety management in the middle east hospitals from nursing perspective: A focus Group study. Middle east journal of scientific research, 15(10): 1375-1384.
9. Schutz, L.A., A.M. Counte and S. Meurer, 2007. Development of a patient safety culture measurement tool for ambulatory health care setting: analysis of content validity. Health care management science, 2: 139-49.
10. Allen, S., M. Chiarella and C. Homer, 2010. Lessons learned from measuring safety culture: An Australian case study. Midwifery, 26: 497-503.
11. Abdullatif, A., 2007. the patient safety friendly hospitals initiative: an entry point to building a safer health system in the eastern mediteranean region. IHF reference book.

12. Emami razavi, H. and H. ravaghi, 2012. patient safety friendly hospitals: Tehran, mehr ravash.
13. Barret, K. and W. Joel., 2006. Assessing patient patient safety culture: A Review and synthesis of the measurement tools. *Journal of patient safety*, 3(2): 105-115.
14. Chalack, M., 2010. A survey of patient safety culture in nurses views in yazd educational hospitals, health care management undergraduate thesis, health faculty, yazd university of medical science.
15. The Psychometric Properties of the Farsi Version of "Hospital Survey on Patient Safety Culture" In Iran's Hospitals.
16. Moghri, J., M. Arab and R. Goudarzi, 2012. The Psychometric Properties of the Farsi Version of "Hospital Survey on Patient Safety Culture In Iran's Hospitals: Iranian Journal of Public Health, 41(4): 80 PMID 23113168 PMCID PMC3481614.
17. Ebadi fardazar, F., A. Rezapour, A. Tanoomand khooshmehr, R. Bayat, J. Arabloo and Z. Rezapour, 2013. Study of patient safety culture in medical- educational centers of Tehran university of medical science hospital journal, pp: 65-66.
18. Singer, S., D. Gaba, J. Geppert, A. Sinaiko, S. Howard and K. Park, 2003. The culture of safety: Results of an organization-wide survey in 15 California hospitals. *Quality and safety in health care*, 12: 112.
19. Bodur, S. and E. Filiz, 2010. 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*, 10: 28.
20. Hellings, J., W. Schrooten, N. Klazinga and A. Vleugels, 2007. Challenging patient safety culture: survey results. *International journal of health care quality Assurance*, 20: 620-632.
21. Smits, M., I. Christianns-Dingelhoff, C. Wagner, G. van der Wal and W.P. Groenewegen, 2008. The psychometric properties of the 'Hospital Survey on Patient Safety Culture' in Dutch hospitals. *BMC Health Serv Res.*, 8: 230.
22. El-Jardali, F., M. Jaafar and H. Dimassi, 2010. The current state of patient safety culture in Lebanese hospitals: a study at baseline. *International Journal for Quality in Health Care*, pp: 1-10.
23. Alahmadi, H.A., 2010. Assessment of patient safety culture in Saudi Arabian hospitals. *QualSaf Health Care*, 19: 1-5.
24. Chen, I.C. and H. Li, 2010. Measuring patient safety culture in Taiwan using the Hospital Survey on Patient Safety Culture (HSOPSC). *BMC Health Services Research*, 10: 152.