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The Effect of Safety Culture Education on Improvement of Managers' Attitudes towards Patients' Safety

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ABSTRACT

Background & Objectives: Medical errors have turned into a major problem in health sector. The goal of this study was to measure attitudes of managers towards patients' safety before and after the Safety Culture educational course in an educational hospital of Tehran.

Methods: This research is of semi-empirical type and some data have been accumulated using retrospective approach in 2011. Safety attitude questionnaire (SAQ) was applied for data collection. Sampling in this study was done using census method and included all managers of the educational hospital.

Results: This study provided strong evidence to some improvement in the managers' positive attitudes to patient safety before and after safety culture education in the dimensions, as follows: teamwork climate (from 76.4% to 97.3%), safety climate (from 60% to 96.4%), job satisfaction (from 69.1% to 99.1%), stress recognition (from 20.9% to 27.3%), management perception (from 44.5% to 88.2%), and work conditions (from 59.1% to 84.5%). Some statistically significant differences were seen in the positive attitudes to safety culture before and after education in all of dimensions.

Conclusion: Education has positive effect on improvement of managers' attitudes towards safety culture. The finding of this study can act as a motivating proof to the health centers to provide safety culture courses in their respective hospitals.

Keywords: Safety culture, education, patient, manager, hospital

Introduction

In recent years the patient's safety and preventing from medical errors has turned into a major problem in health sector and many health services organizations are trying to add up the quality of their services through minimizing the medical errors. According to the reports issued by the UK National Services in 2000, at least 400 patients died during treatment or seriously injured from the accidents and about 10000 patients experience side effect reactions of the drugs (1).

Normally when a fatal accident occurs in health centers, the focus on the patient's safety is limited to inspection by the head nurses or supervisors and formation of the patient's safety committees (2) because finding most of the safety parameters in health sector is impossible or at least difficult, the cause of which can be attributed to the following reasons: Non-prevalence or even too rare nature of such accidents, lack of predefined standards, the supervisor system's reliance on self-reporting, anonymity of the population at risk, unspecified period of risk exposure (3).

In new perspective of safety, the focus of attention has shifted from the individuals to the system and the faults are considered as the results of the system defects (4) and this belief is growing fast that the organization's ability in preventing from the injuries and damages will manifest itself only when the institution could establish safety culture among its staff (5). That is why the organizations influential in the health category including the World Health organization (WHO) (6-7), the National Patient Safety Foundation (8), the JCI and the Institute for Health Care Improvement (9)have put the promotion of safety culture high on their agenda.

The decrease in the damages rate is highly dependent to the organization's top management's commitment than the staff perception. Changing the management's approach declines the rate of injuries among the personnel. Also, creating positive safety culture depends on the factors like "the relationship quality between the managers and the staff", "their consensus on the importance of the safety within all hierarchy levels" and "trusting the personnel regarding the risk assessment" (10).

According the studies undertaken in International Atomic Energy Agency, development of the safety culture would be impossible without the commitment of the top management of the organization; and the importance of such commitment is revealed when the management shows its interest in the issue. Development in safety domain must not be confined to the management and/or the safety experts and it can manifest itself by visible interest of the management in the safety, resulting in the commitment of the personnel to promoting the safety (11). Also the study carried out by Yang et al. showed that the leaders' behavior is influential in the safety culture and safety performance of the health organizations and the safety performance is influenced by the leadership and positive safety culture (1).

Considering the mentioned issues, promoting the managers' attitude of a health services organization toward the safety problem can be greatly effective in the patients' safety (12). Of the efficient methods, the management's "education" can be mentioned. Obviously in such an education, changing the managers' attitude toward the safety category must be targeted. Health education and promotion as an effective approach with especial focus on the prevention concept has long proven its efficiency and has been prevalent as one of the key areas of better controlling the human diseases, pains and sufferings; and this is because the best part of the human sufferings and problems arise from his performance and originates from unhealthy behaviors and evil deeds and lack of attention to and benefiting from the ecological conditions and human relationships. Although changing the prevalent

safety culture in an organization is not possible conveniently and over a short time span, the wrong attitude of the individuals toward the health category can be changed within a much shorter period of time instead (13).

The objective of this study was to investigate the educational hospital's managers' attitude toward patients' safety and the possibility of promoting this attitude through educating them with the safety culture.

Methods

This research is of semi-empirical type and some data have been accumulated using retrospective approach in 2011. For this purpose, first different existing questionnaires about the patient's safety regarding the measurable elements, number of questions, trust and weak and strong points were investigated (14) and the safety attitude questionnaire (SAQ) was selected given its features including (tested in larger sample, detailed report describing instrument, adequate psychometric properties) . As the questionnaire was a Persian translated version of the original copy which was in English, we used the re-translation method to maintain reliability.

For the validity measurement, the questionnaire was sent to a number of experts that resulted in minute changes in a few questions; but the content of the questions was not changed. To measure the external reliability, the questionnaire was completed two times with 10 days interval by 24 randomly selected people from the research society; the results were then were compared as regards to correlation, showing high correlation of 94%. Also to measure the internal reliability of the questionnaire, the Cronbach's alpha coefficient was used which was assessed to be 87%. The internal reliability measurement was performed for each of the dimensions that returned approximately similar results.

Sampling in this study was done using census method. All managers of the educational hospital of Tehran including the chairman, deputies, heads of departments, educational assistants, supervisors, head nurses, as well as the personnel in charge of para-clinical units and administrative staff (110 people) were selected and the questionnaire was completed by all of them. Since this study only deals with general consideration of the management attitude towards the patient's safety from different dimensions (before and after education), no other controls were maintained on other variables.

All of the six areas of investigation used by Sexton et al, (15) including teamwork climate, safety climate, job satisfaction, stress recognition, management perception and working conditions were employed in this questionnaire. Each question was graded based on the Likert's five options scaling form (1=totally agree, 2=agree, 3= indifferent, 4=disagree, 5=totally disagree). The scores of the individuals then were ranked from 0 to 100 and the scores higher than 60% were considered as positive attitude towards the safety culture. These scores are equivalent to the scores 3 and 4 in Likert's scale (the questions' orientation was adjusted for more uniformity before grading).

In order to promote the management's attitude towards the patient's safety, the safety culture education was adopted in 6 dimensions of teamwork climate, safety climate, job satisfaction, stress recognition, the management perception and work conditions. The management's education was performed in the form of focused groups; in other words, those with similar profession were educated together during several sessions.

During the education, at first the inefficiency causes of the safety measures including such causes as disbelieve in profitability of safety measures, lack of familiarity with risk control

methods, lack of strong legislation, lack of sufficient executive support for the rules and regulations, weakness of the supervision systems, shortage of the specialized and skilled personnel, and weakness of the education system were mentioned. Thereafter the statistics of the risk affected personnel and patients in domestic and foreign countries' health services and the resulting financial loss were mentioned; and in the last stage other issues like the present attitude round the globe concerning the human being failures, fallibility of the human in many of the communities and the need for promoting the security culture for security of the work environment were discussed. For this purpose, after defining each of the security culture dimensions, the items to be observed in any of such dimensions were emphasized:

Teamwork climate dimension: the perceived quality of cooperation among the personnel.

Safety climate dimension: the perceived quality of the organizations' strong and active commitment towards the security.

Job satisfaction dimension: is the positive perception of the employees regarding their work experience.

Stress recognition dimension: affirming that how an individual's behavior is affected by the stressors.

Management perception dimension: is the management's performance confirmation by the personnel concerning the security issues.

Work conditions dimension: is the perceived condition or quality of a work environment and its supportive supplies.

Three month after educating the selected people, their attitude was measured once again using "safety attitude measurement questionnaire" and the mean and standard deviation pre and post security culture education was determined. Also McNemar test and t-test were used for comparing the pre and post education positive attitude of the samples toward the patient's security and testing the mean of education influence on different dimensions respectively. The significance level in this research was $p<0.05$. The SPSS 14.0 software was used for statistical analysis.

Results

The research results showed that the highest frequency related to the women's group with 64 people (58.2%0); of the research society, 44 people (40%) aged above 45 and 6 people (3.6%) aged below 30 years old. 92 people (83%) were married, 55 people (50%) were university graduates and 7 people (6.4%) had diploma,71 people (64.5%) worked in clinical units and 15 people (13.6%) served in para-clinical units. The highest frequency regarding background work experience related to the group with 20 years of background experience (36 people: 32.7%). Regarding employment status, most of the samples (86 people: 78.2%) had been officially employed (Table 1).

The positive attitude percentage of the people under study concerning the dimensions "teamwork climate, job satisfaction, security climate, stress recognition, management perception and work conditions" post the education was significantly increased ($P< 0.05$). The mean and SD values of the attitude towards the security pre and post the education showed significant changes in all the dimensions, confirmed by the t-test results. The highest education effect was observed in the management perception with mean 17.25 (Table 2).

Also the results showed that on the whole the management attitude toward the patient's security had grown from 56.4% to 96.4% pre and post education respectively (Table 3).

Discussion

This study was the first assessment of managers' attitude toward the safety undertaken in an educational hospital of Tehran; although numerous studies regarding the effective factors in occurrence of accidents have been carried out before in Iranian hospitals, e.g. the study undertaken on the Imam Reza Hospital personnel in 2008 in which 85% of the respondents mentioned at least one case of contacting with blood during their career, and perceived factors such as fatigue, too high working stress, inaccessibility to safety devices and crowded situation of the department as the most important causes of such damages (16); Or another study undertaken in emergency in 2008 suggested establishing control over the employees' physical, equipments and behavioral axes as the main and most important component of the clients' satisfaction and the best solution for accident prevention (17). But in none of them the individuals' attitude toward the safety after education has been measured.

In this study in which the upper and intermediate managers of the hospital participated, the attitude of the understudy samples toward the safety was assessed in two stages of before and after intervention. The percentage or the mean value of each of the six dimensions of teamwork climate, safety climate, stress recognition, job satisfaction, working conditions and management perception pre and post the intervention shows close and in some cases higher or lower consistency with the results achieved by other researchers (3, 18-20).

The present study showed that intervention (education) similar to the intervention in Donnelly's study can positively affect all the dimensions of safety culture education although the effectiveness increase in the present study was higher in all the respective dimensions compared with the aforementioned study (21).

Also the present study showed that the hospital's managers had the lowest growth rate in stress recognition dimension after the intervention, indicating that the upper and intermediate managers of the organization did not believe in the impact of the existing stressors on the personnel performance. On the other hand, investigating the education effect in this study showed that the management perception dimension had been heavily influenced by the education, indicating that the samples under study were aware of the management's role in the promotion of the safety culture, although they themselves were from the upper and intermediate managers of the organization. This was consistent with the results of the study undertaken by Singer et al, (22) who believed in the influence of the main safety culture determinants such as the management support and communication on other dimensions of the safety culture or the other study that proposed the executive managers in health care sector must spend enough time and resources for the patient's safety (23).

Studies have shown that the upper level management of the organization play an important role in improving the safety culture (24); obviously no measure of promoting the safety culture can be fruitful without the management support so that establishing a strong safety culture is considered as one of the challenging and crucial tasks of the upper managers of the organizations, engaging them in risk taking activities (25). In such conditions the managers may need change management skills to overcome the organizational resistances; although the special mechanisms needed by the upper management of the health services organizations to establish safety culture are not completely known and the managers themselves have only few tools for assessing

their own attempt in achieving the organizational safety goals (26).

Conclusion

Manager's education of health centers has a role of a catalyst to patients' safety. Although safety is a priority for managers of an organization but due to financial pressures may not be reflected in their daily activates. Moreover traditional safety efforts in most of health centers have focused on engineering aspects, changes in the physical structures of health centers and using new equipments; this issue has led to incidents related to staff and patients' safety no to reduce.
Results of this study showed that Education has positive effect on improvement of managers' attitudes towards safety culture and it can act as a motivating proof to the health centers to provide safety culture courses in their respective hospitals.

Conflict of interest: None to declare.

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Table1: Frequency of demographic information of studied sample

Items		Frequency	Percentage
Sex	Male	46	58.2
	Female	64	41.8
Age	< 30	4	3.6
	30 – 34	7	6.4
	35 – 39	24	21.8
	40 - 44	31	28.2
	>45	44	40
Marital status	married	92	16.4
	unmarried	18	83.6
Education	Diploma	7	6.4
	BSc	55	50
	Msc	17	15.5
	PhD	18	16.4
	Post PhD	13	11.8
Service area	Clinical	71	64.5
	Para clinical	15	13.6
	Administrative	24	21.8
Employment status	Official	86	78.2
	Contract	24	21.8
Work Shift	Morning	53	48.2
	Morning and evening	42	36.2
	Evening and night	1	0.9
	Circulation	14	12.7
Experience in the current job	< 5	9	8.2
	5 - 9	8	7.3
	10 – 14	34	30. 9
	15 – 19	23	20.9
	> 20	36	32.7
Experience in the educational hospital	< 5	27	24.5
	5 - 9	13	11.8
	10 – 14	27	24.5
	15 – 19	19	17.3
	> 20	24	21.8

Table 2: Distribution of mean and standard deviation (SD) of managers' attitude before and after training on aspects of patients' safety

Dimension	Before training		After training		Effect of training		Test results		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean
Teamwork climate	67.06	12.08	79.42	8.73	12.36	10.76	12.04	109	0.001
Safety climate	63.08	9.32	76.35	8	13.27	9.1	15.29	109	0.001
Job satisfaction	65.34	12.31	77.23	8.3	11.89	9.71	12.83	109	0.001
Stress recognition	41.15	19.05	50.15	17.05	9	11.04	8.55	109	0.001
Management perception	58.13	14.94	75.38	11.32	17.25	14.63	12.36	109	0.001
Work conditions	62.21	11.06	72.44	16.06	10.23	14.8	7.24	109	0.001
Total	61.72	9.27	74.7	7.36	12.97	8.75	15.54	109	0.001

Table 3: Frequency distribution, status of the managers' attitude before and after training on aspects of patients' safety

Dimensions	Attitude	Attitude(+)	Attitude(-)	Total	McNemar Test
		Frequency (%)	Frequency (%)	Frequency (%)	
Teamwork climate	Attitude(+)	84 (76.4%)	0 (0%)	84 (76.4%)	0.001
	Attitude (-)	23 (20.9%)	3 (2.7%)	26 (23.6%)	
	Total	107 (97.3%)	3 (2.7%)	110 (100%)	
Safety climate	Attitude(+)	66 (60%)	0 (0%)	66 (60%)	0.001
	Attitude (-)	40 (36.4%)	4 (3.6%)	44 (40%)	
	Total	106 (96.4%)	4 (3.6%)	110 (100%)	
Job satisfaction	Attitude(+)	76 (69.1%)	0 (0%)	76 (69.1)	0.001
	Attitude (-)	33 (30%)	1 (0.9%)	34 (30.9)	
	Total	109 (99.%)	1 (0.9%)	110 (100%)	

Stress recognition	Attitude(+)	23 (20.9%)	0 (0%)	23 (20.9%)	0.001
	Attitude (-)	7 (6.4%)	80 (72.7%)	87 (79.1%)	
	Total	30 (27.3%)	80 (72.7%)	110 (100%)	
Management perception	Attitude(+)	49 (44.5%)	0 (0%)	49 (44.5%)	0.001
	Attitude (-)	48 (43.6%)	13 (11.8%)	61 (55.5%)	
	Total	97 (88.2)	13 (11.8%)	110 (100%)	
Work conditions	Attitude(+)	61 (55.5%)	4 (3.6)	65 (59.1%)	0.001
	Attitude (-)	32 (29.1%)	13 (11.8)	45 (40.9%)	
	Total	93 (84.5%)	17 (15.5)	110 (100%)	
Total	Attitude(+)	62 (56.4%)	0 (0%)	62 (56.4%)	0.001
	Attitude (-)	44 (40%)	4 (3.6%)	48 (43.6%)	
	Total	106 (96.4%)	4 (3.6%)	110 (100%)	