



Patient Safety Culture Based on Medical Staff Attitudes in Khorasan Razavi Hospitals, Northeastern Iran

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Abstract

Background: Since establishing a safety culture in an organization is considered as the first step in patient safety improvement, there is always a need for updated field evaluation to better plan future decisions.

Methods: We performed a cross-sectional, analytic-descriptive study in 25 hospitals related to Mashhad University of Medical Sciences (MUMS) during a 3-month period from April to June 2012. A questionnaire, designed by previous patient safety culture studies with confirmed validity and reliability, was used and distributed among a sample of 922 staff, chosen randomly from the mentioned hospitals. Data were analyzed by SPSS software version 16.

Results: “Organizational learning - continuous improvement” and “teamwork within unit” had the highest percentage of positive results as $79.85 \pm 12.03\%$ and $71.92 \pm 17.08\%$, respectively; whereas “non-punitive response” to errors (21.57 ± 6.42) and “staffing” (26.36 ± 16.84) came out as the least important factors. There were no meaningful statistical relation between general features of the understudy hospitals including the number of beds, educational level or proficiency status with the general safety culture score.

Conclusion: Most of the safety culture aspects were reported as low to moderate in terms of importance. If something needs to be modified interventionally in this respect, “the approach to confront errors” would be a wise choice. This could be achieved by establishing an atmosphere of open communication and continuous learning through elimination of the fear for reporting errors and installing a more acceptable approach in hospitals.

Keywords: Safety culture, Adverse events, Patient safety, Hospital

Introduction

Patient safety is one of the key elements in healthcare systems, which has turned into an important priority for most of such organizations all around the world through the recent decades (1-4). Patient safety means preventing unwanted events or accidents that might happen during the time period of providing healthcare services for patients (5). These mostly preventable events - happening repeatedly – put a considerable financial burden on healthcare units, needless to mention

the drawbacks of each death they bring (6-8). The American Institute of Medicine (IOM) report “to err is human” made healthcare and therapeutic service providing organizations improve patient safety (9) and in order to do so, the British National Patient Safety Agency introduced “safety culture establishment” as the first step in its 7-step model (10). Being a subdivision of the general culture of an organization, safety culture arises from attitudes, viewpoints, value perceptions and be-

behavioral patterns of people within work units which determine the style and the proficiency of health care management and organizational safety (11, 12). It was firstly announced in the Chernobyl disaster report in 1986 (13) and many high risk industries such as aviation or nuclear corporations started investigations on the definition and evaluation of safety culture as a pathway to decrease the risk of unwanted events and accidents (14). Healthcare is considered to be a high risk industry based on the morbidity and mortality it is involved in; therefore healthcare providing organizations should establish a safety culture among their staff in consistent with the efforts they make to improve patient safety (15, 16). Indeed communications based on a bilateral trust, common perceptions of safety importance and faith in the efficiency of preventive methods are counted as the major characteristics for safety culture beholder organizations (17, 18).

In order to change a safety culture within an organization, it should first be understood properly and this could not be achieved unless an appropriate safety culture evaluation is performed which helps the organization to better perceive its strength or weakness points. Besides, it makes an ideal opportunity for hospitals to detect their different aspects and it would be a reliable scale for comparisons with other hospitals or performing research studies. Care providing units will also be able to explore their deficiencies in patient safety related duties (19). Although patient safety has attracted more attention in risk management methods after clinical dominance in Iran, very few studies have been performed to investigate safety culture as the first step in patient safety improvement; therefore we went through this research to estimate the relation between patient safety culture based on three characteristics of the under-study hospitals (number of beds, education condition, and proficiency status) from Mashhad University of Medical Sciences related hospitals staff's standpoint; and by this we tried to picture a vivid image of the patient safety culture condition in 2012 and to illuminate a route for improving patient safety by knowing our strength and weakness points.

Methods

Study setting

In this cross-sectional analytic-descriptive study, 25 hospitals (all governmental hospitals in Khorasan Razavi Province; 13 hospitals located in Mashhad and 12 in other major cities) affiliated to Mashhad University of Medical Sciences were investigated (the most important medical sciences center in the northeast of Iran). Eleven teaching hospitals versus 14 non-teaching ones; 18 were specialized hospitals while 8 were general hospitals. Number of beds ranged from 23 to 918.

Data collection

In total, 1200 questionnaires were distributed as randomized stratified among clinical staff in 25 under-study hospitals (the sample number of every working group was calculated by the proportion of staff which were spread in various working groups in each hospital). Hospital managers distributed questionnaires among staff in different working shifts. Due to close cooperation of the hospitals' managers and their enthusiasm towards the safety culture evaluation, 922 questionnaires were returned which showed a response rate of 76%.

Measurement

There were various means to evaluate patient safety culture in both quality and quantity features (20). Among the quantitative means HSOPSC (Hospital Survey On Patient Safety Culture), designed by the American Research And Healthcare Quality Agency in 2004, has an appropriate validity and reliability rate (1,5,7,19,21-24). Translated into several languages it has been used in many countries – including Iran - to investigate patient safety culture; so the questionnaire was used once again to collect data (25). The questionnaire consisted of 42 questions that evaluated staff perception of 12 different patient safety dimensions. These dimensions included: 1. overall perception of patient safety, 2. supervisor/ manager expectations and actions promoting safety, 3. teamwork within units, 4. organizational learning – continuous improvement, 5. Non-punitive response to errors, 6. staffing, 7. management support for patient safety, 8. teamwork across units, 9. handoffs and transitions, 10.

Communication openness, 11. Feedback and communication about errors, 12. Frequency of events reported. Each dimension consisted of 3 to 4 questions that in items 1 to 9 a 5-point frequency scale of Likert was used from “completely agree” to “completely disagree” and for items 10, 11 and 12 it was changed into a 5-point frequency scale from “always” to “never”. “Number of reported accidents having occurred in the last 12 months” and “patient safety status evaluation within work units” were 2 single questions added to those 12 mentioned dimensions.

Analysis of data

By means of “Average positive responses” the data were analyzed through a certain procedure; positive response percentages for each question were calculated individually, then by dividing the summation of positive responses to the number of questions asked in each dimension the “average positive response” was achieved. For those questions asking participants grade of agreement on a certain issue, “totally agree” and “agree” responses were chosen for literally positive meaning questions and “totally disagree” and “disagree” for negative ones which were summed up by their percentages. In questions which scale of frequency differed; “always” and “mostly” were considered as responses for literally positive meaning questions while “never” and

“rarely” were used for negative phrases and were summed by their percentages and the general score of patient safety culture resulted through calculating the mean of average positive responses of patient safety culture 12 dimensions. Those 2 single questions were also used as average positive response for analysis; “perfect” and “very good” were regarded as a positive response for patient safety score while for number of reported events by staff this positive response was considered as the percentage of staff who reported at least one event during the last 12 months. T test and Pearson correlation were used as statistical tests to investigate the relation between hospital characteristics and patient safety culture.

Results

The number and percentage of personnel who responded to the questionnaires were as follows: Nurses (677; 77%), physicians (87; 10%), laboratory staff (51; 5.9%), radiology staff (30; 3.5%), midwives (29; 2.9%), and operation room staff (3; 0.3%) general managers without any specialty in therapeutic procedures (2; 0.2%). Male participants consisted 30.8% of the cases whereas females accounted for 69.2%. Other characteristics are included in Table 1.

Table 1: Characteristics of study samples

Characteristics		Frequency	Relative Frequency
Age group(year)	20-20	219	29.4
	30-39	338	45.3
	40-49	165	22.1
	50≤	24	3.2
Hospital experience (year)	1≥	8	5.9
	1-5	272	33.4
	6-10	202	24.8
	11-15	139	17.1
	16-20	100	12.3
	21-30	54	6.6
Working hours per week	20≥	20	2.8
	21-30	74	10.4
	40-59	415	58.2
	60-79	127	17.8
	80≤	77	10.8
Relation with patients	Direct	781	95.2
	indirect	39	4.8

33.6% of participants reported the patient safety score of their ward with “perfect” and “very good” whereas 16% evaluated it as weak and unacceptable. According to Table 2, 53.8% had no report of any events during the last 12 months whereas 46.2% reported at least one single event during the same time period. The average positive response for frequency of reported events was 42.85%, although for the other 11 dimensions it varied from 21.57% to 79.85%.

Generally, most dimensions were mildly low or moderate in terms of the average positive response but 3 of them stranded out with higher percentages. Acknowledging the hospitals strength in the patient safety culture subject, organizational learning continuous improvement (79.85%), team-

work within each unit (71.92%), supervisor/manager expectations and acting towards promoting safety (69.53%) were those 3 dimensions with the respectively highest percentages. The least average scores belonged to non-punitive response to errors (21.57%) and staffing (26.35%) which was considered to be the hospitals weakness points alongside with the frequency of events reported (42.85%) and communication openness (45.46%), Table 3.

As it is shown in table 4, no significant relation between safety culture scores and teaching and the specialty status of hospitals was present. Also there was no relation between bed size and safety culture scores.

Table 2: Last 12 months reported events

Frequency of error reported	0	1-2	3-5	6-10	11-20	21≤
Relative frequency of error reported	53.8	31.9	8.9	3.2	1.3	0.9

Table 3: Descriptive of patient safety culture dimensions

Dimensions	Mean of Positive responses percentage	Standard deviation of Positive responses percentage
Overall perception of safety	56.56	21.19
Supervisors and managers expectations about patient safety	69.53	11.13
Organizational learning _ continuous improvement	79.85	12.03
Team work within units	71.92	17.08
Non-punitive response to errors	21.57	6.42
Personnel work	26.36	16.84
Hospital management support to patient safety	55.27	13.46
Teamwork across hospital units	55.09	12.64
Hospital handoff and transition	51.55	13.88
Communications opening	45.46	21.45
Feedback and communication about errors	51.31	9.44
Frequency of events reported	42.85	10.94

Discussion

In our study more than half of the personnel (53%) had not reported any medical error in the last 12 months prior to study. Alahmadi in Saudi Arabia declared that 43% of the staff members

had not reported any medical errors in the same time duration (5). Similarly, Bodur study in Turkey showed that 84% of the studied personnel had not made any report of a medical error in the last 12 months (7). It is obvious that promotion in the medical error reporting system would be a posi-

tive point in further improving health systems (26) and health care organizations could improve the quality of their services by the use of these reports (27, 28). Therefore the American health association recommends using such reports as a learning opportunity and suggests turning the idea of person based errors to system based errors which would change the culture of reporting (15). Around 34% of our study participants evaluated the quality of patient safety as high level in Mashhad University of Medical Sciences which is still lower than the reports from other countries (5,7,19). Iran is located in the Eastern Mediterranean part of WHO zonal deviation. In Table 5 the results of comparing the safety culture between our country and 2 others has been shown. In most dimensions safety culture scores were higher in Saudi Arabia and Lebanon. In our study organized learning, team work and continuation of im-

provement outreached other dimensions, similar to the two studies conducted by Alahmadi and Aljeradi (5, 19). According to the questionnaire guide, the domains which the mean percentage of their positive answers were at least 70% will be considered as Strengths part of safety culture, the ones between 50 -70% will be considered neuter and the domains less than 50% will be considered the weakness points of safety culture (5).

Table 4: Relation between safety culture scores and hospital status

Hospital status	Count	Safety Culture score	P value
Teaching	11	37.61	0.06
Non-teaching	14	49.53	
Specialized	8	41.95	0.62
Non- specialized	17	45.39	

Table 5: Comparing safety culture of Iran with Saudi Arabia and Lebanon

Dimensions	Iran	Saudi Arabia	Lebanon
Overall perception of safety	56.56	59	72
Supervisors and managers expectations about patient safety	69.53	70	66
Organizational learning _ continuous improvement	79.85	87	78
Team work within units	71.92	84	82
Non-punitive response to errors	21.57	22	24
Personnel work	26.36	27	36
Hospital management support to patient safety	55.27	74	78
Teamwork across hospital units	55.09	50	56
Hospital handoff and transition	51.55	61	49
Communications opening	45.46	60	57
Feedback and communication about errors	51.31	77	68
Frequency of events reported	42.85	63	68

Overall consideration revealed that in this survey, the dimensions of Organizational learning _ continuous improvement and team work within units were improved and similar to the results in Saudi Arabia and Lebanon. The dimensions of Overall perception of safety, Supervisors and managers expectations about patient safety, Feedback and communication about errors, Hospital handoff and transition, Hospital management support to

patient safety were neuter or relatively improved and the rest of dimensions (Personnel work, Non-punitive response to errors, Communications opening, Frequency of events reported) were weak. Teamwork across hospital units and Hospital handoff and transition were neutered similar to Saudi Arabia and Lebanon studies. Non-punitive response to errors and Personnel work were weak such as the two studies mentioned before. Hospi-

tal management support for patient safety, Feedback and communication about errors were two fields in which our outcome was neuter but Saudi Arabia and Lebanon surveys showed improved results. Quality of health care might be in parts related to the quality of the personnel's` life (29). Roger's study showed that nurses' overtime working (more than 12 hours per day or 40 hours per week) had led to an increase in the number of medical errors (30). Nurses who have more free time are more aware about their patients' condition and could better prevent such errors (31).

Although in our study there was no significant relation between safety culture and the hospital status (private, public, teaching...), the agency for research and quality of health care in USA has claimed that smaller and non-educational hospitals have a better safety culture (21). This might be due to cultural differences present.

Regarding the results of our study, it is obvious that planning about patient safety improvement is essential and modifying the medical error reporting process would be very helpful. Spadework should be done to improve the work conditions such as increasing the number of personnel and decreasing the work time. On the other hand, root cause analysis should be considered in studying errors instead of blaming an individual; this could most probably result in reduced feasibility of recurrence in the same situation.

Conclusion

Patient safety is one of the important concepts of health care so in the recent years various programs have been performed to promote patient safety and prevent medical errors; one of them is the establishment of safety culture in hospitals. In this paper we evaluated safety culture from the view point of personnel with three different characteristic criteria of hospitals (number of beds, educational and specialty statuses). The results of this study showed that vision of safety culture is at the moderate and low level in many aspects whereas some parts of this culture like team work and supervision have a good performance. Therefore, the hospital policies should be designed toward

achieving greater improvement in patient safety by determining and overcoming the existing pitfalls.

Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

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