Patient Safety in Tehran University of Medical Sciences' General Hospitals, Iran

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Abstract

Background: It is important to focus on creating opportunities for patients' participation at all levels of health systems in order to promote their ability to improve patient safety and quality of services. The general aim of this study was to determine patient safety level in Tehran University of Medical Sciences' (TUMS) general hospitals, Tehran, Iran from patients' perspective and to determine the contributory factors on their perspective.

Methods: This was a cross-sectional study. In the spring 2011, the list of clinical departments of the six general hospitals affiliated to TUMS was obtained through the Website of TUMS. By using stratified random sampling, the sample size was calculated 300 patients. Data were collected by using a structured questionnaire and its validity and reliability were acceptable. Descriptive statistics, linear regression and logistic regression were used for analyzing the data.

Results: Totally, 60% of patients were female. Patient safety was evaluated high by 60% of respondents. The unmarried or educated or employed individuals tend to score lower than others.

Conclusion: TUMS's general hospitals are enough safe from patients' perspective, patient safety should be improved. In clinical governance, contributing patients' perspective to the improvement of patient safety reforms is critical in generating new models of good practice.

Keywords: Patient, Safety, Hospital, Iran

Introduction

The delivery of health care is an art rather than as a science. Medical centers abound with basic and clinical researchers; few centers have experts in the science of health care delivery and health services researchers. Patients experience preventable harm from medical errors, mistakes and teamwork failures (1).

Patient safety stems from health care processes. It is prevention and amelioration of adverse outcomes or injuries (2). It is a guiding factor in daily care and a central issue in healthcare (3, 4). Patient safety is a key area in health care strategic planning (5). Employing skilled clinicians result in good care and safety. It is a subject on its own. For example, in Iran, it is not taught to medical personnel, traditionally (6).

Patient safety is the most importance issue in health care in all countries. However, preventable adverse events are common in developed and developing countries (7). There has been a growing awareness of the measures and cost of incidence in two decades ago (8). Therefore, it is

essential to identify adverse events producing conditions (9). For example, childbirth's mortality and morbidity highlight the importance of learning from events (10).

It is necessary to revisit patient safety, changes, remained challenges, emerging new problems, and effect of health care in the quality and safety of healthcare (11). Events reduce by focusing on reduction in adverse (12).

Patients carry their own perspective. They have cognitive characteristics affecting willingness to participate in patient safety programs. Patients' perspective is patients' beliefs and attitudes in the field of preventing and controlling errors and the risk of error occurring (13). A patient engaging with safety is the most benefit of strengthening a relationship with physicians and nurses (14). Therefore, patients' perspective shouldn't be undermined. Patients' misperceptions result in emerging obstacles in the environment that patients themselves have to manage (13). Healthcare organizations must involve patients in procuring safety strategies and programs. Therefore, it is necessary to learn from patients' perspective (15).

The patients' negative perspective into hospital's patient safety may reversely conduce to incongruity in referrals and follow-up, petitions and allegations concerning jeopardizing patient's life. There are many individual, environmental and organizational factors for not accurately evaluating healthcare, quality and patient safety level in hospitals (16). Acording to the findings of Australian Patient Safety Report (2001), Public Hospitals Survey in Kerman, Iran (2006), Educational Hospital Survey in Izmir, Turkey (2006), Patient Safety Survey in Urmia, Iran (2010), Urmia Patient Safety Survey (2012), Patient Safety Survey in Isfahan, Iran (2012) and Iranian Patient Safety Survey (2012), the premier factors are as follows: age, gender, marital status, education, insurance coverage, employment status, period of referring to physician and the date of latest hospitalization (17). Even so, patients' perspective have excluded in the construction of clinical governance and health-care reforms. It requires decreasing the imbalance of information and power between patients and healthcare professionals. Addressing

this problem is seen as long overdue (3). Patients must involve in coordinating the health care system (15). Therefore, it is necessary to notify, realize, modify or remove the cause and effect of the negative perspective (18). The general aims of this study were:

-   To determine patient safety level in Tehran University of Medical Sciences' general hospitals from patients' perspective
-   To determine the contributory factors on patients' perspective.

Materials and Methods

This study had a cross-sectional design carried out in a period of six-month – from May 2011 to November 2011. The study populations were inpatients in the clinical wards that had the experience of hospitalizing. The required sample size was obtained in two steps. **First Step:** The sample size was calculated by using the following formula:

$$n = \frac{Z_{1-\alpha/2}^2 \times p \times (1-p)}{d^2}$$

On the ground that no researches have been done so far, the favorable perception of involvement in treatment decisions and patient safety was considered 50% ($P=0.5$).

The sample size for each treatment decision and perceptions of safety were calculated 180 in the first step considering to the confident interval 95% ($\alpha=0.05$) and maximum deviation 7.5% ($d=0.075$).

Second Step: According to Clark's study (2001), the minimum r that influenced various factors was 0.6 (19). Therefore, the desirable sample size was calculated 300.

In the spring of 2011, the list of six general hospitals affiliated to Tehran University of Medical Sciences (TUMS)' clinical wards were prepared. The numbers of clinical wards in each hospital were 120 as follows:

-   **Imam Hospital:** 39 wards (ICU &CCU: 13, Surgery, transplant, obstetrics and gynecology: 13, Internal medicine, infec-

tious diseases, ear, nose and throat, general: 13)

- **Baharlou Hospital:** 16 wards (ICU &CCU: 5, Surgery, transplant, obstetrics and gynecology: 5, Internal medicine, infectious diseases, ear, nose and throat, general: 6)
- **Shariati Hospital:** 37 wards (ICU &CCU: 12, Surgery, transplant, obstetrics and gynecology: 12, Internal medicine, infectious diseases, ear, nose and throat, general: 13)
- **Ziaian Hospital:** 13 wards (ICU &CCU: 4, Surgery, transplant, obstetrics and gynecology: 4, Internal medicine, infectious diseases, ear, nose and throat, general: 5)
- **Amiralam Hospital:** 7 wards (ICU &CCU: 1, Surgery, transplant, obstetrics and gynecology: 1, Internal medicine, infectious diseases, ear, nose and throat, general: 5)
- **Sina Hospital:** 8 wards (ICU &CCU: 3, Surgery, transplant, obstetrics and gynecology: 3, Internal medicine, infectious diseases, ear, nose and throat, general: 2).

Eventually, the stratified random sampling method was used. The 120 wards were divided into three groups as:

- **Group 1:** Intensive care unit (ICU and CCU) (38 wards);
- **Group 2:** Surgery, transplant, obstetrics and gynecology (38 wards);
- **Group 3:** Internal medicine, infectious diseases, ear, nose and throat, general (44 wards).

300 samples were proportionally divided between 3 groups. The numbers of samples in each group were as:

- **Group 1:** 95
- **Group 2:** 95
- **Group 3:** 110

20 samples were collected from each group. Therefore, the sample size in each group was divided into 20. The numbers of wards in each group were:

- **Group 1:** 5 wards
- **Group 2:** 5 wards
- **Group 3:** 6 wards.

Finally, the sample was selected as follows:

- **Group 1:** Imam CCU, Baharlou CCU, Shariati CCU, General Imam ICU, Ziaian CCU and Post CCU.
- **Group 2:** Imam Surgery, Amiralam Surgery, Sina General Surgery, Shariati General Surgery, Ziaian Surgery.
- **Group 3:** Imam Internal, Amiralam Internal, Baharlou Internal, Shariati Internal Pulmonary, Shariati Internal, Ziaian Internal.

The original questionnaire

Library and internet research was conducted in order to develop the patient safety questionnaire. The questionnaire was developed by Clark in 2001 (17) to assess patients' opinions about patient safety issues, medical error, and event reporting. It includes 37 items in 4 sections as follows: demographic characteristics (eight questions), general information regarding the doctors and hospitals (six questions), participation in treatment decisions (12 questions) and patient safety (11 questions). The five-level Likert scale was employed for the responses as follows: strongly disagree (1 score), disagree (2 score), neither (3 score), agree (4 score) and strongly agree (5 score).

The range of scoring to participation in treatment decisions was 12-60. Therefore, the participation's level was evaluated as follows:

- **12-36 score:** Low
- **36-60 score:** High.

The range of scoring to patient safety was 11-55. Therefore, the patient safety's level was as follows:

- **11-26 score:** Low
- **26-41 score:** Intermediate
- **41-55 score:** High.

Preparing Farsi version of the questionnaire

The questionnaire was translated into Farsi. Then, both the translated questionnaire and the original one were handed to some experts in order to revise it. After that, the comprehensibility of the survey was tested on 20 patients from the study population who had not been included in our sample. The reliability coefficient of the questionnaire was calculated 0.78. According to patients' perspective, we prepared the final version of the Farsi questionnaire after altering some questions and eliminating irrelevant questions.

Statistical Analysis

The data was analyzed by SPSS and STATA software. Statistical methods included descriptive statistics, linear regression and multivariate logistic regression.

Results

Participants' demographic characteristics were as follows: 60% were female, and the rests (40%) were male. 20%, 23% and 20% were 24-18, 44-35 and 55 years-old people, respectively. The ethnicity of 32%, 24.3% and 21% was Azeri, Kurd and Fars, sequentially. 47% and 31.7% were married and single. The rest (21.3%) were divorced or widowed. 26%, 19.7% and 20.3% were BSc, MSc and PhD, respectively. Health insurance, social security insurance and other insurances' coverage were 37%, 23% and 25.7%, sequentially. 22.7%, 16.3%, and 16.3% were students, housewives and employees, respectively. Income status of 42% was evaluated high.

Patient safety was evaluated high, intermediate and low by 60%, 14% and 26% of patients, respectively. Patient safety variables included: demographic variables (including age, gender, education, ethnicity, marital status, insurance type, employment status and income statues), period of referring to family physician or general practitioner, the date of latest medical consultation, the number of hospitalizations in the past year, the date of latest hospitalization, hospital's type, exposure to adverse events and patient participation in treatment decisions. Tables 1 and 2 show the results of linear regression and multivariate logistic regression, respectively.

Table 1: The results of the linear regression analyses of patient safety-related factors

Variable		Patient Safety Score					Total		Test	P-Value
		Low		Intermediate		High				
		N	%	N	%	n	%	N	%		
Age	≤45 years old	126	42	42	14	18	6	186	62	Spearman	<0.1
	45 years old<	20	6.7	1	0.3	60	20	114	38		
Gender	Male	77	25.7	41	13.7	1	0.3	119	39.67	Kruskal-Wallis	<0.1
	Female	1	0.3	1	0.3	179	59.7	181	60.33		
Ethnicity	Fars	7	2.3	4	1.3	25	8.3	36	12	Kruskal-Wallis	<0.1
	Azeri	33	11	20	6.7	43	14.3	96	32		
	Kurd	21	7	8	2.7	44	14.7	73	24.33		
	Lor	14	4.7	5	1.7	44	14.7	63	21		
	Etc	3	1	5	1.7	24	8	32	10.67		

Table 1: Cond…

Marital status	Single	15	5	24	8	63	21	102	34	Kruskal-Wallis	<0.1
	Married	60	20	16	5.3	115	38.3	191	63.67		
	Etc	3	1	2	0.7	2	0.7	7	2.33		
Education	Diploma or less	60	20	41	13.7	1	0.3	102	34	Spearman	<0.1
	Higher than diploma	3	1	1	0.3	179	59.7	198	66		
Insurance coverage	Yes	68	22.7	37	12.3	148	49.3	253	84.33	Kruskal-Wallis	<0.1
	No	6	2	5	1.7	32	10.7	47	15.67		
Employment status	Employed	48	16	12	4	164	54.7	224	74.67	Kruskal-Wallis	<0.1
	Unemployed	30	10	30	10	16	5.3	76	25.33		
Period of referring to family physician or general practitioner	≤1 year	77	25.7	41	13.7	1	0.3	119	39.67	Kruskal-Wallis	<0.1
	1 year <	1	0.3	1	0.3	179	59.7	181	60.33		
The date of latest medical consultation	≤1 year ago	58	19.3	34	11.3	128	42.7	220	73.33	Kruskal-Wallis	0.1<
	1 year ago<	76	25.3	32	10.3	31	10.3	80	26.67		
The number of hospitalizations in the past year	1	23	7.7	14	4.7	64	21.3	101	33.67	Kruskal-Wallis	0.1<
	1<	55	18.3	28	9.3	116	38.7	199	66.33		
The date of latest hospitalization	≤1 year ago	77	25.7	41	13.7	174	58	292	97.33	Kruskal-Wallis	<0.1
	1 year ago<	1	0.3	1	0.3	6	2	8	2.67		
Hospital's type	Public	50	16.7	27	12.3	131	43.7	208	69.33	Kruskal-Wallis	0.1<
	Private	28	9.3	5	1.7	49	16.3	92	30.67		
The date of latest exposure to adverse events	≤1 year ago	77	25.7	38	12.7	178	59.3	293	97.67	Kruskal-Wallis	<0.1
	1 year ago<	1	0.3	4	1.3	2	0.7	7	2.33		
Patient participation in treatment decision	High	39	13	1	0.3	179	59.7	219	73	Spearman	<0.1
	Low	39	13	41	13.7	1	0.3	81	27		

According to the table 1, patients' socio-demographic, medical and hospitalized variables affecting on the hospital's patient safety score were as follows: age, gender, ethnicity, marital status, education, insurance coverage, employment status, period of referring to family physician, or general practitioner, the date of latest hospitalization, the date of latest exposure to adverse events, participation in treatment decisions (P<0.1).

For adjusting possible problematical factors and achieving independent factors, affecting variables imported in the final multivariate logistic regression model by a stepwise method. The results are summarized in table 2. The most important variables affecting on the hospital's patient safety score were as follows: education, employment status and marital status. Education, employment status and marital status decreased odds ratio of dedicating high score to hospital's patient safety, 0.014, 0.32 and 0.19 times, respectively. It was meaning that the unmarried or educated or employed individuals tended to score patient safety lower than others.

Table 2: The results of the multivariate logistic regression analyses of patient safety-related factors

Variable	Sub-Group	OR (SE)	Confidence Interval 95% OR	*P*-Value
Education	Diploma or less	1	0.007-0.031	<0.0001
	Higher than diploma	0.014 (0.005)		
Employment status	Unemployed	1	0.160-0.620	0.001
	Employed	0.32 (0.11)		
Marital status	Married	1	0.098-0.381	<0.0001
	Single and etc	0.19 (0.067)		

Discussion

According to the findings, patient safety was evaluated high by the most of patients (60%) hospitalized in TUMS's general hospitals. Considering to their perspective, much attention has been paid to patient safety in health care, the registration and the examination of safety incidents, particularly in hospitals. It is in concordance with Sheikh Beiklou's survey in Urmia's public and private hospitals. According to the findings, patient safety was ranked high (56%) from the patients' perspective (17). There is a little data on patient safety in healthcare settings (20). Poor attention to patient safety results in errors, low quality of care, and increases the length of stay (5).There are a number of risk areas in which errors and risks are more likely to occur. Therefore, patients' perspective provides a rich source of data in looking at how patient's power impacts upon safety in organizational contexts (3).

Education, employment status and marital status are the premier factors affecting on evaluating patient safety in hospitals. It is in concordance with Florin's survey in 2006. According to the findings, the disparate perspective was pertinent to age, marital and social status including example education, employment (21).

Patient's perspective is associated with higher education. It is consistent with the findings of other surveys: Clark in Australia's private and general hospitals (19), Larsson et al. (22), in Kerman's public hospitals, Iran (23), in Izmir's educational hospitals, Turkey (24), and Schwappach and et al. (14). Nowadays, the consumers are more conscious in healthcare market. Because educated people have more risk-assessment ability. It could be due to the positive effect of training and educating. They rapidly conceive whether providers perform their duties, the services are concordant, effective and patient-centered, there is "do it right" culture in healthcare organization or not.

The employed individuals give the lower score to patient safety. They have more patient safety knowledge. It is consistent with the findings of other reviews: Oskouiee and Zare in Tabriz's educational hospitals, Iran (17), Leventhal (25), Ozdemir et al. in Izmir's educational hospitals,

Turkey (24), and Ghaffari and Rakhshande in Iran (16). Furthermore, married people give more score to hospital's patient safety. It is consistent with the findings of other reports: Clark in Australia's general and private hospitals (19) and Ozdemir and et al in Izmir's educational hospitals, Turkey (24). According to the findings of "patient safety survey in Urmia' hospitals", Mousavi et al. emphasized that patients' perspective is the most important criterion for appraising patient safety in hospitals. It is pertinent to some of patients' characteristics such as marital status (26). It is because of communicating with others, increasing awareness and understanding issues such as safety. The employed or married patients inquire into disease, medical process and healthcare organizations from communicating or consulting with their colleagues, friends and family members. Indeed, they carefully trace care process and request the highly safe care.

Patients' perspective is the most important catalyst to the emergence of a safety movement in healthcare over the last decade (3). Patients are in the proper position to identify the harm producing conditions. They invite providers to loyalty and realism. Understanding the patients' perspective is a pivotal way of generating knowledge about the processes involved in harm. It leads to generating a broader framework for addressing patient safety. It mustn't ignore in the adoption of a 'no-blame culture' in patient safety. Considering patients' feedback assures improvement in quality and safety in healthcare systems.

Conclusion

However, TUMS's general hospitals are enough safe from patients' perspective, patient safety should be improved. The contributory factors, such as education, employment and marital status, were conclusive to claim that these factors were predicting patients' perspective in safety matters. In clinical governance, contributing patients' perspective to the improvement of patient safety reforms is critical in generating new models of good practice. Health Care organizations can go beyond mainstream frameworks for quality and patient safety improvement by create higher value for patients' perspective.

Limitation of the study

This study has two research methods also have limitations: the lack of cooperation of some hospitals to do research and patients' unwillingness to fill the questionnaire.

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.

Acknowledgments

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