

## Assessment of Patient Safety for Quality Improvement Based on Joint Commission International Accreditation Standards in Farabi Eye Hospital of Tehran University of Medical Sciences

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### ABSTRACT

**Introduction:** Quality improvement and patient safety are the most important aspects of health care delivery systems. Improving quality and safety in health care organizations is assured through accreditation.

To evaluate patient safety in Farabi Eye Hospital by Joint Commission International (JCI) accreditation standards for quality improvement.

**Materials and Methods:** This descriptive-analytical study was carried out in 2014. The data collection instrument was the translated version of JCI checklist, the validity of which was confirmed by a panel of Iranian experts. The data were obtained through interviews with all heads of departments (n=80) and observation of documentation in each department by appraisers in Farabi Hospital. To analyze the data, Spearman's rank correlation coefficient and Mann-Whitney U tests were run using SPSS Version 16.

**Results:** The highest rate of compliance with JCI standards was 91.1%, pertaining to infection control and adopting an approach to reduce contamination. The lowest rate was associated with management monitoring of patients' demographic information. In general, Farabi Eye Hospital observed the standards to a high level.

**Conclusion:** Our findings exhibited that Farabi Eye Hospital is relatively efficient as to patient safety as a quality improvement factor. However, there were some shortcomings regarding some standards, which indicate deficient compliance with the JCI standards in this hospital. Absence of comprehensive training programs and defective policies and documentation are the key factors for patient safety quality improvement.

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### Introduction

In the health care service delivery systems throughout the world, hospitals have an exclusive role (1), and individuals require their services in all stages of life. Accordingly, disregarding quality of health care

system can cause irreversible damages and losses to humans (2). Implementation of high-quality care and services leads to patient satisfaction, and the specialized effectiveness of service providers. Service

quality is a necessary factor for the development, success, and survival of hospitals (3, 4), and patient safety is considered as a key component for promoting the quality of health care system and prevention and attenuation of unexpected events and injuries (5).

Currently, patient safety has become a matter of international concern, affecting patients in both developed and developing countries. Former studies demonstrated that approximately 10% of hospitalized patients are hurt to varying degrees due to medical errors (6).

However, it is estimated that up to 75% of these errors can be prevented. Although, patients have the right to receive health care in accordance with the best standards, it is estimated that 5-10% of health care-related costs arise from unsafe clinical services, which result in the injury and suffering of patients (7).

The importance of patient safety as one of the components of health care quality improvement has led to prioritizing accurate and conspicuous assessment of the performance of health care organizations to determine the efficiency of these services (8).

Standardization, accreditation, and assessment of health care organizations are inevitable to improve quality (9, 10). On the other hand, surge of external quality assessments has affected health care delivery system during the last two decades throughout the world. Governments, service consumers, professional medical associations, managers of insurance companies, and other beneficiaries attempt to enhance the quality of health service delivery through accreditation of activities (11-13).

Among the present assessment models such as International Standardization Organization (ISO), Six Sigma, Balanced Score Card, Malcolm Baldrich, Clinical Governance, Total Quality Management (TQM), and Organizational Excellence, Joint Commission International (JCI) accreditation model is addressed in this study. Accreditation is a process in which a group or organization grants reputation, recognition, and officialism to a hospital through external assessment of compliance with certain standards (11-13).

Accreditation standards focus on constant quality improvement, patient-centered care, patient safety promotion, and assurance of safe environment (14, 15).

Accreditation is an independent voluntary program, which was founded in the year 1917 in the United States by the Joint Commission Accreditation on Health Care Organizations (JCAHO) to assess hospitals, and in general, to grant accreditation to health care organizations.

International branch of JCAHO named JCI accreditation was founded in 1998 to fulfill the needs of accreditation at an international level by developing a set of accreditation standards (16, 17). JCI accreditation standards can be applied in all health care organizations, according to the report by World Health Organization (WHO) (18).

The study conducted in 2000 by Donahue and Van showed that JCI accreditation is a conspicuous accreditation program, which provides the opportunity for quality management (16).

The study conducted by Jardali in 2008 showed that during and after the process of accreditation, nurses understood the importance of quality improvement in health care delivery (19).

In a study entitled as "the degree of preparedness of teaching hospitals of Iran University of Medical Sciences in achieving Joint Commission International (JCI) Accreditation", the mean score of hospital preparedness was 57% as to patient and family rights standards, and the mean of preparedness based on organization-oriented standards was 71%. It seems that the studied hospitals were relatively prepared for the attainment of Joint Commission International accreditation (20).

The study conducted by Khodayari in 2010 revealed that hospitals affiliated to Iran University of Medical Sciences had a relatively good status in terms of Joint Commission standards, which reflects the relative preparedness of the hospitals to attract medical tourists. Nevertheless, with regard to the standards related to family and patient rights, patient safety, and patient training, it was concluded that improvement was required (21).

According to available studies, JCI has accredited more than 150 medical centers around the globe and is continuing monitoring, supervising, and approving processes of these organizations (22).

Studies also suggest that JCAHO and JCI standards provide a certain framework and a systematic approach for efficient performance of the health care organizations, which can be the primary model for assessing these organizations (16, 23).

Based on the aforementioned information and with respect to the importance of patient safety as a key component of health care quality improvement, this study aimed to evaluate compliance with patient safety standards according to JCI standards in Farabi Eye Hospital to improve service quality.

## Materials and Methods

This cross-sectional, descriptive-analytical study was carried out in Farabi Eye Hospital in 2014. In this study, medical departments of the hospital (i.e., reception, emergency, intensive care unit, cardiac catheterization or angiography, radiology, optometry, stem cell provision center, clinical laboratory, and outpatient) and non-medical departments (i.e., maintenance and installation, store, occupational health, nutrition and dietitian, laundry, computer center, central sterilization, medical records, patient safety, excellence office, public relations, social working, supply, library, audio-visual center, the secretariat of seminars, and medical engineering) were assessed.

The data collection instrument was the checklist of JCI accreditation, which includes 11 standards and

some sub-standards. These standards are divided into patient-oriented and management-oriented sections. Patient-oriented standards comprise of appropriate

patient identification, improvement of effective communication, promotion of drug safety (cautious administration of drugs), ensuring appropriate location of surgery, proper surgical procedures, and proper patient surgery, diminishing the risk of contamination and hospital-acquired infections, lowering the risk of patient injuries sustained from fall, use of clinical guidelines, application of patient safety procedures, and adopting indices for measuring patient safety.

In addition, management-oriented standards include participating in patient safety program, designing managerial processes, monitoring management including risk management, utilization management, patient and staff satisfaction and expectations, financial management, and patients' demographic details.

To validate the JCI checklist, two experts in the field of English language translation translated the English version of checklist into Persian, and a third English language expert back translated it into English and confirmed the concordance of the English and Persian checklists with each other.

Afterwards, 10 experts in the field of hospital accreditation from Ministry of Health and Tehran University of Medical Sciences approved the checklist. Content Validity Index (CVI) of the checklist was calculated to be 0.85.

Data collection was performed by the appraisers and experts in the field of service safety for quality improvement at the hospital through interviews with all heads of departments (n=80) and observation of the existing documentations and records by the appraisers.

Therefore, no sampling was conducted in this study.

Compliance with each standard was determined using three-point scale of complied, partly complied, and not complied.

To analyze the data, Spearman's rank correlation coefficient and Mann-Whitney tests were run using SPSS Version 16. P-value less than 0.05 was considered statistically significant.

## Results

The results of this study on compliance with patient safety standards for quality improvement in Farabi Eye Hospital based on JCI accreditation standards checklist are presented in tables 1 and 2.

According to Table 1, the highest rate of compliance with JCI accreditation standards among patient-oriented standards was related to adopting an approach for reducing risks of contamination and hospital-acquired infections, and the lowest compliance was pertinent to clinical monitoring of use of anesthetics and tranquilizers, as well as the use of blood transfusion.

**Table1: The extent of compliance with patient-oriented Joint Commission International standards**

Patient-oriented standards	Complied	Partly complied	Not complied	Total
Implementing an approach for increasing accuracy in identifying patients	86.7	11.1	2.2	100
Implementing an effective approach for promoting communication	84.5	13.3	2.2	100
Implementing an approach for enhancing patient safety in cautionary drugs	80	15.6	4.4	100
Adopting an approach for ensuring appropriate location and procedure of surgery	77.8	13.3	8.9	100
Adopting an approach for reducing the risks of contamination and infection	91.1	8.9	0	100
Implementing an approach for lowering the risk of patient injuries sustained because of fall	80	17.8	2.2	100
Patient assessment	15.6	73.3	11.1	100
Laboratory services	15.6	60	24.4	100
Radiology services	13.3	57.8	28.9	100
Surgeries	24.4	44.4	31.2	100
Antibiotics administration	11.1	71.1	17.8	100
Medical errors	13.0	46.7	40.3	100
Anesthesia and use of tranquilizers	8.9	77.8	13.3	100
Use of blood transfusion	18.9	53.1	28.0	100
Evaluation of medical records	22.0	60	18.0	100
Infection management	27.8	57.8	14.4	100
Clinical trials	11.1	60.1	28.8	100
Preparing drugs and medical equipment	10	61.2	28.8	100

According to Table 2, which is related to compliance with management-oriented standards, the highest degree of compliance was associated with managers' cooperation with quality improvement and patient safety program, and the lowest level of compliance was pertinent to clinical monitoring of demographic details of patients and use of an internal process to validate data.

**Table2: The extent of compliance with management-oriented Joint Commission International standards**

Management-oriented standards	Complied	Partly complied	Not complied	Total
Managers' cooperation with planning patient safety for quality improvement program	43.8	52.5	3.7	100
Managers' cooperation with patient safety program for quality improvement	63.8	36.2	0	100
Prioritizing patient safety processes by managers	18.8	58.7	22.5	100
Required technology to improve patient safety for quality improvement	50	50	0	100
Transfer of patient safety information to staff	46.3	46.2	7.5	100
Training staff to contribute to patient safety program	30	67.5	2.5	100
Designing new patient safety processes	10	65	25	100
Using treatment guidelines for clinical care	15.6	72.3	11.1	100
Determining indices	12.5	67.5	20	100
Reporting legal activities	11.2	77.5	11.3	100
Risk management	12.5	58.8	28.7	100
Utilization management	26.3	58.7	15	100
Patient satisfaction and expectations	18.8	71.3	9.9	100
Staff satisfaction and expectations	12.5	70	17.5	100
Patient's demographic details	12.5	18.7	68.8	100
Financial management	18.8	50	31.2	100
Prevention of dangerous events	9.7	71.5	18.8	100
Data collection and analysis	5.3	71.4	23.3	100
The appropriateness of the number of analysis	8.8	51.2	40	100
Analysis of internal and external comparisons	18.8	58.8	22.4	100
Use of an internal process to validate data	8.7	30	61.3	100
Managers' approval of credible data	6.2	30	63.8	100
Use of a specific process for management of fatal accidents and events	24.9	63.8	11.3	100
Analysis of data indicating undesirable processes	13.7	70	16.3	100
Use of processes to identify probable accidents and events	18.7	53.8	27.5	100
The pursuit of quality improvement and safety	15	76.3	8.7	100
Prioritizing areas of safety activities	21.2	67.5	11.3	100
Implementation of continuous risk management programs	14.9	63.8	21.3	100

According to Table 3, two components of quality improvement and patient safety, that is, leadership and planning and designing clinical and managerial processes in the medical and non-medical departments, respectively, were significantly different. In other words, the level of compliance with leadership and planning programs in the medical departments was significantly higher than non-medical departments ( $P=0.015$ ). Moreover, as to designing medical and managerial processes, clinical departments had better performance in comparison with non-medical departments. It was observed that although only 15.5% of components of designing medical and managerial processes in the clinical departments were not complied with, this ratio increased to 42.9% in the non-medical departments, and this difference was statistically significant ( $P=0.07$ ).

**Table3: Comparison of compliance with quality improvement and patient safety components between the hospital's medical and non-medical departments**

Variable	Rating	Medical departments	Non-medical departments	Test statistics	Significance level
Leadership and planning programs	Not complied	--	--	2.429	0.015
	Relatively complied	68.9	91.4		
	Complied	31.1	8.6		
	Total	100	100		
Designing clinical and managerial processes	Not complied	15.5	42.9	2.675	0.007
	Relatively complied	77.8	54.3		
	Complied	6.7	2.9		
	Total	100	100		
Data collection for quality measurement	Not complied	11.1	11.4	0.856	0.392
	Relatively complied	77.8	85.7		
	Complied	11.1	2.9		
	Total	100	100		
Measurement data analysis and confirmation	Not complied	28.9	31.4	0.727	0.467
	Relatively complied	60	65.7		
	Complied	11.1	2.9		
	Total	100	100		
Improvement of achievement and maintenance	Not complied	6.7	5.7	0.188	0.851
	Relatively complied	80	80		
	Complied	13.3	14.3		
	Total	100	100		

## Discussion

JCI accreditation can provide quality and patient safety improvement that ultimately increases service providers' satisfaction. This model was considered as both a national and international model as to promoting safety, and shows commitment, responsiveness, and reliability of an organization to quality. This program ultimately leads to organizational improvement, which in turn, promotes a society's public health as one of the main objectives of the health care systems (17,18).

According to our results, two quality improvement and patient safety components, that is, leadership and planning and designing medical and managerial processes were different in medical and non-medical departments. In other words, the level of compliance with leadership and planning programs in the medical departments was higher than the non-medical ones. The reason for this significant difference can be attributed to a number of issues, which are as follows.

Considering that more attention is focused on patient safety and quality improvement in medical departments, and medical staff were more familiar with these issues due to having communication with patients, they are more familiar with the concept of leadership and planning in the field of quality improvement and patient safety. Respondents in medical departments were trained to cooperate with quality improvement and patient safety program, and the information regarding the process of quality improvement and patient safety was transferred desirably to medical staff. Indeed, medical staff were more familiar with priorities of patient safety processes.

Furthermore, non-medical staff did not have adequate information as to the technology that managers and heads of hospitals provide for quality improvement and patient safety program. Therefore, concerning leadership and planning, the performance of medical departments was better than non-medical ones.

Designing clinical and managerial processes was complied with more satisfactorily in medical departments in comparison to the non-medical ones.

Furthermore, 15.5% of the medical staff held that designing clinical and managerial processes in medical departments was not complied with, while this ratio increased to about 50% in non-medical departments.

The reason for this discrepancy can be attributed to the low awareness of non-medical staff about patient safety processes in accordance with the principles of quality improvement as well as lack of information regarding clinical guidelines. In general, familiarity with knowledge, training, and transfer of information as to quality improvement program and patient safety are more important in medical departments, compared to non-medical ones; thus, staff of these departments require more information and awareness regarding patient safety and quality improvement.

The current outcomes revealed that in the medical departments, more attention is paid to patient-oriented

standards rather than management-oriented ones, and therefore, they have more compliance. It seems that medical staff focus more attention to medical activities that directly affect patient safety.

According to the mentioned results, it was observed that Farabi Eye Hospital had a relatively desirable level of compliance with data collection standards for evaluation of quality, particularly in managerial monitoring component, which can be due to low awareness of the respondents as to data collection and medical and non-medical monitoring, which should be performed at due times in hospitals.

In addition, the rate of compliance with adopting processes to identify and manage fatal accidents and events in hospital was 25%, which signifies relative compliance. The study by Toorani showed that Hasheminezhad Hospital had the highest rate of preparedness (72%) for obtaining JCI accreditation among the studied hospitals in Tehran, Iran (24). The study by Carbonu in Qatar entitled as "Promoting a Holistic Multidisciplinary Team Approach to Patient Assessment and Reassessment: Challenges and Outcomes", performed for quality and safety improvement, revealed that holding training courses for staff on the assessment of expert team as to patient care leads to improvement and promotion of quality and safety improvement standards (25).

Regarding infection control and reducing the risks of contamination, which are highly important, Farabi Eye Hospital was at an optimum level. In fact, it was at the highest level of compliance in this regard (91.1%). This could be due to enforcing policies in any department, high awareness of the staff to this issue, and implementation of an effective hygiene program in this hospital. Although, the study carried out by Ghadamgahi showed that most nurses did not have adequate knowledge regarding hospital infection control (26). A study by Sekimoto entitled as "Impact of hospital accreditation on infection control programs in teaching hospitals in Japan" indicated that hospital accreditation has significant influence on adopting policies for infection control (27).

Among the patient-oriented standards, the standards of appropriate identification of patient, ensuring the appropriate location of surgery, proper surgical procedures, hand cleansing and washing, and falling from bed were well-applied in Farabi Eye Hospital, because the nurses' awareness regarding this index was high. In a study performed by Abdi, these standards were not well-addressed and were implemented at a medium level. According to these studies, managers' attention to patient safety and adopting appropriate policies lead to strict implementation of these standards. The level of patient safety culture in all its aspects were reported to be low and moderate (28).

Regarding drug safety standards, Farabi Eye Hospital had a favorable (80%) condition. Alijanzadeh noted

that in the majority of hospitals, there was no counseling between the physician and pharmacy manager to prevent drug interactions (29). The results of the present study confirmed the results of former ones in this regard to a large extent. Although gaining a desired level of compliance with JCI standards is of great importance for Farabi Eye Hospital, it does not represent an excellent ranking, and requires further efforts in this area. In a study by Ahmadi., entitled as "comparative study of hospital accreditation standards of ministry of Health in Iran with Joint Commission International standards in 2006", hospitals could not meet half of Joint Commission International standards, although the quantity of hospital standards indices prepared by Iranian Ministry of Health was more than Joint Commission International standards (30).

In other words, necessary measures should be taken to align the level of national standards with international ones, so that each of the hospital departments can address all standards.

Appropriate compliance with JCI standards leads to improvement of patient care and satisfaction and can be effective in staff's professional performance, management empowerment, enhancement of the quality of patient care, reduction in expenses and costs, and improvement of hospital's efficiency (23, 30).

Ameriyon also considered appropriate professional standards as an effective factor in promotion of service quality and patient satisfaction (31).

Based on the findings of the current study, although the studied hospital was found to be at a favorable level in terms of compliance with JCI accreditation standards, it should be expanded to an excellent level as it is a specialized hospital, and it would not be possible without emphasizing on reinforcement of the strengths and modification of shortcomings. To improve performance, relevant policies should be determined and relevant programs should be implemented, so that the hospital can provide the best possible services.

Subsequently, further attention to patient standards in processes, outcomes, and organizational structure reengineering should be paid for establishment of standardization in this hospital.

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On the other hand, high-reliability standards with emphasis on ongoing quality improvement of patient-oriented practice, promotion of patient and staff safety for explaining the quality of health care can be an appropriate substitute for previous standards to implement fundamental changes in the field of business and health care activities.

The limited number of similar studies at national and international levels, prolonged assessment, and insufficient cooperation of a number of heads of departments are among substantial limitations of this study. In addition, to the author's best knowledge, this study is the first attempt to evaluate a specialized teaching hospital affiliated to Tehran University of Medical Sciences, Tehran, Iran. The results of this study can be applied for implementation of a new theory of accreditation entitled high reliability of organizations.

## Conclusion

Regarding the significance of patient safety, it is recommended to pay equal attention to both medical and non-medical departments of Farabi Eye Hospital.

In addition, patient safety training, encouragement, assessment, and monitoring of hospitals for controlling different departments, cross-sectional study of patient and staff satisfaction, preparation of the required policies for patient safety, and constant monitoring of hospital performance, data collection for quality assessment, adequate medical and non-medical monitoring, active participation and cooperation of leaders and managers of Farabi Eye Hospital and authorities of Tehran University of Medical Sciences in planning and leadership of patient safety are recommended.

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