

Effects of the Total Quality Management Implication on Patient Satisfaction in the Emergency Department of Military Hospitals

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Background: Emergency services are of great priority in the military health systems and patients satisfaction is among the important determinants of an emergency system efficacy.

Objectives: The objective of this study was to evaluate the effects of Total Quality Management (TQM) implication on patients' satisfaction in the emergency ward.

Patients and Methods: Patients satisfaction was evaluated before and after the TQM-based quality improvement process in the emergency department by using a satisfaction survey questionnaire. Participants in the survey were patients admitted to the emergency ward of Besat Air Force General Military Hospital (Tehran, Iran) between September-December 2009 and April-July 2011. All the possible interventions were implicated after discussions with responsible teams and the managing staff during the 15 months of the satisfaction evaluation interval.

Results: The satisfaction level for physicians, nurses, transporting and service personnel, and imaging staff has increased significantly by 12.7%, 21.8%, 17.0%, and 14.1%, respectively ($P < 0.001$). The overall satisfaction increased from 55.4% to 71.3% after the TQM application ($P < 0.001$).

Conclusions: Considering the substantial impact of the TQM implication on increasing the satisfaction level among our patients regarding the emergency and healthcare services, we suggest that TQM can be a very effective solution in improving the health care service quality and increasing patients' satisfaction in Iranian Military Hospitals, without significant economic strain.

Keywords: Total Quality Management; Delivery of Health Care; Patient Satisfaction; Emergency Service

1. Background

Patient satisfaction is one of the most important determinants of health care systems and hospital services evaluation. Emergency services are of great priority in the military health system. Furthermore, the emergency ward is an important and the first ward that patients enter in the hospital setting. Increasing the health care service qualification of this ward would have a great effect on the attitude of the society towards the hospital organization and its service. From another point of view, the low satisfaction of the patients affects the organization, and also causes low compliance of the patients, which leads to consequences such as the loss resources and downgrading of the public health service efficacy.

In the traditional managing system, the goal of the organization is defined as reaching the dictated expectations of the head of the managing team on interpretation of quality and, merely "doing the task", in the individualized aspect of every member of the organization. In such a system,

gaining more patients' satisfaction might be among the secondary objectives of the health care providing system. The Total Quality Management (TQM) has introduced a new reading of the health care system managing goals. Considering patients as external customers of the hospital servicing system, the quality will be defined based on patients' satisfaction and their needs. The TQM is a system based on customer, focusing on quality, which works through evidence-based facts and teamwork (1-4). In order to reach the most efficient aspects, TQM needs to be conducted and supported by the high ranked managing team of the organization. During the TQM application, defining a specific process and comprehending the different steps and participating teams represent a necessity to increase the quality of the services and efficiency of energy, time, and budget, in a cost-benefit manner. Following analysis of the data gathered from patients, the teams collaborate to correct the faults and defects in order to increase the quality of the

service and meet the final goal of customers' satisfaction. The success of the process can be evaluated by the periodic surveys of customers' satisfaction and their feedbacks.

Despite introduction of the TQM concept into the managerial science in Iran for a long time, our search could not find any study reporting its implication in national health care organizations. Several studies, published in regional journals, had analyzed the satisfaction level of patients and revealed a low level ranging from 41% to 61%.

2. Objectives

The current study was designed to evaluate the effects of TQM application on patients' satisfaction in the emergency ward in a referral military academic hospital in the Iran Capital city, Tehran.

3. Patients and Methods

With the aim of evaluating the effects of TQM principles application, this study targeted on the process of obtaining a radiologic imaging from patients admitted to the Emergency Department of Besat Hospital, Tehran, Iran. The study design was approved by the AJA University of Medical Sciences Ethical Committee and it was supported by the head of the management team of the organization. The staff of the emergency ward, including physicians, nurses, patient transport personnel, and imaging department personnel, were instructed in TQM principles and application steps.

Patients who were admitted to the emergency ward, for whom a radiologic imaging investigation was required, were included in the study. Exclusion criteria were considered in the cases of patients presenting with mental illness, severe multiple trauma or hemodynamically unstable patients, requiring an urgent procedure. Informed consent was obtained from patients and they were assured of the anonymity of the questionnaire, as well as of the absence of any negative impact of their answers on the care they would receive. Given type 1 error = 5% and type 3 error = 20%, the required sample size for the detection of 10% change in the satisfaction level was estimated as being 150 patients,

which was upgraded to 200, for potential attrition. All participants signed the informed consent form.

The satisfaction questionnaire published by the Iranian Ministry of Health was used to obtain the level of satisfaction. The questionnaire evaluated the patients' satisfaction regarding the physicians, nurses, transporting and service personnel, and imaging department staff, separately. The questionnaire was filled by the patients at the time of leaving the emergency ward (discharge, transfer to other hospital wards, or leaving the hospital by self-request).

The first phase of the survey was carried out from September to December, 2009. The collected data was analyzed and the working teams were fed back on the results. The working teams were motivated to discuss on the problems mentioned by the patients, as well as their suggestions and solutions were recorded. The recorded comments of the team members, along with patients' remarks, suggestions and satisfaction level were classified, analyzed and reported to the hospital managing board. Proper actions considering the organization resources, hospital structural capacity, and managing board authority were instructed to the responsible departments, based on the TQM principles. The main adopted changes in the functionality of the department are presented in Table 1. Following complete application of the approved changes, patients' satisfaction was evaluated using the same questionnaire from April to July 2011.

The data were analyzed using the SPSS software, version 16 (SPSS Inc., Chicago, IL, USA). Descriptive analysis and student t test were used for analyzing the data. The results were presented as mean \pm standard deviation. A $P < 0.05$ was considered as a significant result for statistical analysis.

4. Results

A total number of 200 questionnaires was distributed during the first survey, of which 175 (87.5%) were completed and included in the study. The mean age of the participants was 43.3 ± 19.9 years old, ranging from 9 to 98 years old. The complete demographic characteristics of the study groups are illustrated in Table 2. Patients' satisfaction

Table 1. Main Adopted Changes to be Applied to the Study Target Process (Functionality of the Emergency Department)

Periodic service and improving the air conditioning system
Attention to scheduling patients referral to the imaging department, to decrease the waiting time of the patients
Controlling and avoidance of crowding of the patients' accompanying person
Demonstrating the complete flow chart of admission and health care service process on a billboard
Decreasing the delay time between a specialist/subspecialist call and visit
Specification of a partition and experienced personnel to perform triage, based on the scientific guidelines
Consulting with the emergency medicine specialist in the triage to avoid admission of controversial cases
Acquisition of an up-to-date CT scanning device
Arranging periodic educational meetings for physicians regarding the indications of imaging study, to avoid unnecessary imaging requests
Providing the short stools for beds in order to facilitate patients to mount/descend

Trates for physicians, nurses, transporting and service personnel, and imaging teams were $61.4 \pm 19.2\%$, $58.0 \pm 20.7\%$, $58.3 \pm 21.0\%$, and 58.2 ± 18.0 , respectively. In addition, participating patients mentioned their overall satisfaction rate for hospital service as $55.4 \pm 21.4\%$. A total number of 64 problems and suggestions were obtained through the answers of the patients to the open questions placed at the end of the questionnaire. Several examples of more frequently mentioned problems include the long distances to the imaging department and the resultant time spent for transport, keeping patients waiting for imaging as a consequence of miscoordination, inappropriate air conditioning of the departments, and long waiting time to be visited by the specialist.

The results of the patients' satisfaction Table 3, as well as the mentioned problems and suggestions, were fed back to the corresponding teams, as well as to the managing board. After several meetings, several lists of comments, defects, and solutions were obtained from the teams. The most important obstacles mentioned by the teams included: unavailability of the imaging study, particularly ultrasonography during night shifts, insufficient staff in relation to the patients load, old and malfunctioning equipment, such as wheelchairs and beds, long interval between informing the physician and visiting the patient, and dissatisfaction of the staff.

After several meetings, all the data were gathered and 209 comments were obtained. Finally, total number of 273 problems, suggestions, and comments presented by the

participating staff, as well as the patients, were classified, analyzed, and evaluated throughout several meetings of the managing board and study committee. Consequently, 77 items were resolved completely while 16 items were partially resolved. Based on the insufficient resources and physical constraints, 180 changes were not possible at the time of the study and were considered for future planning in the hospital and organization decision making.

In the second survey of the patients' satisfaction, 177 (88.5%) out of 200 questionnaires were valid and included in the study. The demographic characteristics of the second study group are presented in Table 1. The satisfaction level for physicians, nurses, transporting and service personnel, and imaging department were increased by 12.7%, 21.8%, 17.0%, and 14.1%, respectively. The overall satisfaction of the hospital was increased to $71.3 \pm 22.9\%$. All the satisfaction rate increases were statistically significant ($P < 0.001$) Table 2.

Table 2. Demographic Characteristics of the Study Participants^a

Parameter	First Phase of the Survey	Second Phase of the Survey	P Value
Age	43.3 ± 19.9	38.5 ± 20.0	0.037
Gender			0.496
Male	102 (61.4)	109 (65.3)	
Female	64 (38.6)	58 (34.7)	
Marital Status			0.478
Single	51 (32.1)	56 (35.9)	
Married	108 (67.9)	100 (64.1)	

^a Data are presented as No. (%) or mean ± SD.

Table 3. Increase in Satisfaction Level of the Patients for Different Staff Groups^a

Staff Group	First Phase	Second Phase	P Value
Physicians			
Waiting time before first visit	58.7 ± 25.0	75.0 ± 20.9	< 0.001
Physicians conduct	70.2 ± 22.2	80.0 ± 22.1	< 0.001
Responding to the patients questions and needs	63.7 ± 25.2	74.5 ± 25.0	< 0.001
Examination time assigned for patient visit	60.0 ± 26.2	70.7 ± 26.3	< 0.001
Overall satisfaction of physician service	61.4 ± 19.2	74.1 ± 19.8	< 0.001
Nurses			
Timing of the nursing service	58.0 ± 24.2	77.0 ± 23.7	< 0.001
Nursing staff conduct	59.2 ± 25.5	81.5 ± 22.3	< 0.001
Responding to the patients questions and needs	56.7 ± 26.7	78.7 ± 24.1	< 0.001
Overall satisfaction of nursing service	58.0 ± 20.7	79.8 ± 19.6	< 0.001
Transporting and service personnel			
Timing to receive required services	58.0 ± 22.5	74.7 ± 23.2	< 0.001
Service personnel conduct	58.5 ± 23.2	76.0 ± 22.5	< 0.001
Transportation to the imaging department	57.5 ± 25.5	72.7 ± 24.0	< 0.001
Overall satisfaction of service personnel	58.3 ± 21.0	75.3 ± 21.3	< 0.001
Imaging department			
Waiting time to perform the imaging	59.0 ± 26.2	73.5 ± 23.5	< 0.001
Distance and condition of the imaging department	54.5 ± 26.5	68.5 ± 28.1	< 0.001
Coordination in scheduling the imaging	59.7 ± 24.7	73.2 ± 25.9	< 0.001
Imaging staff conduct	61.7 ± 20.7	75.0 ± 23.2	< 0.001
Overall satisfaction of imaging department service	58.2 ± 18.0	72.3 ± 20.4	< 0.001
Overall satisfaction	55.4 ± 21.4	71.3 ± 22.9	< 0.001

^a All satisfaction rates are represented as percent and in the form of mean ± SD

5. Discussion

The aim of the present study was to evaluate the effects of TQM principles implication on patients' satisfaction in the emergency ward of Besat Hospital, as an academic hospital in Tehran, Iran. Besat Hospital is the second largest academic hospital in the capital city and plays a crucial role for emergency care in the eastern part of the city. As a general hospital, Besat hospital has several specialty and subspecialty wards of medical care. The emergency department of the hospital is an academic department which has responsibility for residency training.

As a conceivable fact, the implication of TQM principles in large complex organizations is a more difficult deed and needs more effort and resources compared to smaller ones (5). This can explain the fact that major number of suggested ideas in this study could not be applied despite being valuable. The main obstacle was the requirement of more resources and time, as well as the fact that reforming a series of management aspects of an academic and governmental organization needs a great deal of effort and bureaucratic processes. Meanwhile, given the fact that only 34.0% (N = 93) of the suggestions and objections were completely or partially ameliorated, the improvement in the patients' satisfaction and of the quality of the service was significant.

As our study was one of the first studies in health care management in our country, in which a straight forward strategy based on TQM principles was adopted, the present study can be classified as a beginner analyzer system, according to the Miles and Snow topology classification (6). Meanwhile, according to Berwick, Godfrey, and Roessner, the strategy in our center was project dominant (7). Carman et al. suggested that hospitals known as analyzer or prospector can get more advantage from the TQM application (5). They mentioned that having physicians' cooperation would have a great positive effect on the final results (5). Our study was a beginner analyzer and the hospital physicians cooperated with the study team, although the number of mentioned suggestions from physicians was lower compared to the other participating groups.

As reported by other studies, the empowerment of the organization members and teams to decide about the needed actions concerning their work environment would demonstrate a great effect on patients' satisfaction. Having close contact with the patients and their primary problems and requirements gives the emergency ward staff a clear, precise, and practical view, which can be useful in the process of quality improving (8). Also, we consider the emergency ward as an appropriate and reasonable part for implication of TQM principle in the hospital setting.

The TQM requires different parts of the organization to participate in the quality improvement process, underlining that working in a separate manner would have unfavorable effects on the quality of the services provided by the system. In this regard, the role of the head of man-

agement is to create and maintain the culture of teamwork and cooperation, with the objective of quality improvement. The present study was evaluated as a "great improvement in having a teamwork atmosphere" in our hospital system, which was suggested strongly to other wards of the hospital, as well as health care organizations in the country.

One of the main complaints of the staff, and especially the nursing staff, in the present study was the low satisfaction among the employees themselves, which would be transferred to the patients. Different approaches can be adopted in order to increase the employee satisfaction regarding the organization conditions and resources. Several studies reported an increase in the employees' job satisfaction by empowerment and contribution to decision making (8-10). The main focus of this study was on the patients or external customers' satisfaction. The satisfaction level of the employees or internal customers is one of the must to consider factors for future studies designed on the basis of this study.

The Iranian patients' satisfaction level regarding the health care services could be improved for obtaining the international standards. The implication of TQM principles in the emergency ward resulted in a significant increase in the patients' satisfaction from different staff groups, as well as the overall hospital service. We suggest considering TQM principles as a proper choice for improving quality and patient satisfaction for regional and international health care organizations, in particular in military hospitals.

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Authors' Contributions

All authors have actively contributed in the study design, investigations, analysis and manuscript preparation.

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