# Investigating the Performance of Baharloo Hospital during 2004 to 2014 (Case Study)

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## Abstract

**Context:** Today health care organizations are complex organizations that need strong support of management in the field of evaluating performance.

**Objectives:** The purpose of this study was to investigate ten years performance of Baharloo education Center. Methodology: This research is a case study that has been conducted in two quantitative and qualitative stages. In the first stage, the trend of changes in performance indicators was identified. In the second phase, the root causes of change and success, the challenges were examined over a 10-year period.

**Results:** In this study, hospital indicators were categorized into three groups: input, process, and output (outcomes), and studied.

**Conclusions:** Organizations should do some sort of rotation from traditional systems to new management systems. Performance management is a continuous performance improvement process that helps organizations find ways to better support their organizational and staffing roles. Key words: Performance, Baharloo Education Center, hospital indicators.

**Keywords:** Baharloo Hospital; Health Care Systems; Ministry of Health

## Introduction

Effective evaluation of system is inevitable due to dramatic changes in management knowledge. So that the lack of evaluation of various aspects of the organization, including the evaluation of the use of resources, personnel, goals and strategies is considered as one of the symptoms and the diseases of organization [1]. In developed countries, the hospitals have allocated about 40 percent and in developing countries, about 80 percent of costs in health sectors to themselves. Therefore, how to evaluate and implementation of the results could be of particular importance. The lack of evaluation not only leads to increased healthcare costs, but neglecting to provide primary health care, community seriously endangers public health. However, providing it in addition to ensuring security and health care will be followed by taking full advantage of health care institutions with reasonable cost [2]. In all countries, regardless of their size or wealth, people's health and ways of providing health care is considered as an important issue, and providers of health services are struggling to provide their services according to available resources and at the highest level of quality. In the past, the performance of health care organizations were

assessed through therapeutic parameters, and the quality of services was guaranteed only by the technical knowledge of medical staff, but today health care organizations are complex organizations that need strong support of management in the field of evaluating performance [3].

Today, as a result of developments in the field of management and supervision, the interest of researchers and management experts has drawn to identify the characteristics of successful organizations. The interest and desire has increased because of developments and changes in the corporate environment as well as the rise and fall of a large number of leading companies and organizations during the past seals. Using titles such as successful, lasting, idealistic, perfect, transcendental to those organizations has become widespread among experts and managers [4]. Apart from title used, a common feature among organizations that despite the competitive and economic conditions operate successfully is that these organizations in terms of the level of performance have been higher than others, and hence, they are called organizations with superior performance. These organizations benefit from a set of features, have lasted a long time and have had profound impact on the business world and have discredited many common myths in literature and the theory of organization and management [5]. Hospitals as complex organizations, an important part of health systems and health care complex or as the most important pillar and offer, depending on its size as the first or second referral level health care facilities operate or future reference. They also offer many care, including critical illness and severe injuries. Hospitals are centers for transfer of knowledge and skills, and have formed an important source of information and power, and usually consume a large part of the national health resources, and the health care systems have focused on these centers. According to the World Health Organization Report, hospitals in third world countries have allocated about half the national spending in the health sector to themselves. The share of hospitals about government current expenditure on health is between 50 and 80 percent because they are the largest and most costly performing unit of health systems and use much of capital, human and financial resources. Briefly, efficiency is defined as maximizing the use of resources to generate the efficiency. To determine the effectiveness or ineffectiveness, every business should use the appropriate index or indices as a basis for comparison. Hospital efficiency in the utilization of the resources can be measured by specific indicators, and by analyzing it, and planning to improve efficiency indicators, it can be expected that efficiency in the system to be improved. Measuring the quality of health services, is a difficult task because the outcome or result of the service is certainly not clear, and is not measurable at the set time. So often in order to compare and evaluate health units, the quantitative indices used. The World Health Organization Regional Office for Europe, in an article presented a plan to develop and promote a comprehensive and flexible tool for evaluating hospital performance, which will help to improve the quality of services. Six aspects were considered in this study, the production efficiency indicators, such as average length of stay and medication inventories, and the day of surgery was considered as one of the most important dimensions of hospital performance assessment. Studies show that there are different indicators to measure efficiency in hospitals, which the most useful of them are: bed occupancy rate, Bed turnover interval and the mean duration of hospitalization [6]. Paying attention to these points, and the necessity of learning the lessons learned from experiences in the field of knowledge management indicate importance of benefiting from the experiences of centers with excellence performance in various fields of service delivery [7]. Accordingly, the analysis of the reasons for the growth and development of Baharloo hospital which has been made based on key indicators of hospitals performance and control measures including the assessment of the hospital status in the establishment of standards of patient safety, clinical governance standards, national accreditation standards during 2004 to 2014, is known as one of the successful hospitals at the level of Tehran University of Medical Sciences, and can be provided as valuable resources for decision-makers of the health system structure.

## Methods

This study is based on case studies which based on objective is considered as Applied Studies and was conducted quantitative in two stages of quantitative and qualitative. Population was clinical and non-clinical performance documentations of the Baharloo hospital.

All documentations, and clinical and nonclinical records, electronic and non-electronic records, including in compliance with the criteria including recognition, accuracy related to the period of study, which are related to center location or headquarters of Tehran University of Medical Sciences, entered the study. Research Environment was Baharloo hospital in Tehran University of Medical Sciences headquarters.

The tool used in this study is data extraction form. This form includes 15 standard indicators with priority in Hospital, in three groups of input; output and process among indicators with definitions and standard calculation method which are displayed based on the guidelines issued by the Ministry of Health are in the seasonal form of production, and in a process of 10 year-old. The data was collected through the form mentioned, which includes all 15 indicators considered. This form has been completed using the information, documents in Statistics Unit at the Baharloo hospital. After data collection, data was entered into SPSS

software version 18. Using descriptive statistics (mean, variance, standard deviation, etc.) the data was described and the time series process of indices was investigated.

## Results

The results are presented in form of three Tables of input, process and output Indicators.

| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Hospital infection rate** | 1.1575 | 1.5575 | 1.5075 | 1.5775 | 1.7075 | 1.8375 | 2.0075 | 2.1575 | 2.4075 | 2.425 | 3.025 |
| **The ratio of successful resuscitation to total resuscitation done** | 48.07 | 49.1625 | 47.2775 | 51.065 | 44.8425 | 47.4275 | 45.2025 | 45.4275 | 47.3025 | 46.5675 | 47.6175 |
| **Hospitalized patients' satisfaction** | 80 | 81.25 | 83.5 | 84 | 83.5 | 85.5 | 86 | 86.75 | 90 | 90 | 92 |
| **The average rate of Patients referred to the emergency room** | 25 217 | 34 220 | 42 775 | 51 282 | 57 048 | 54 652 | 66 415 | 51 402 | 63 939 | 72 246 | 101 649 |
| **The average rate of Patients referred to the hospital clinical units** | 25 217 | 34 220 | 42 775 | 51 282 | 57 048 | 54 652 | 66 415 | 51 402 | 63 939 | 72 246 | 101 649 |
| **The average rate of Patients referred to the clinics** | 53 100 | 66 753 | 84,958 | 99 347 | 102 026 | 114 766 | 103 679 | 113 929 | 135 072 | 145 568 | 162 873 |
| **Bed occupancy rate** | 67.75 | 72.5 | 79.25 | 81 | 80.75 | 81.25 | 81.75 | 81.5 | 84.25 | 83.5 | 86.75 |
| **The mean hospitalization time in the hospital** | 5.1875 | 4.9975 | 4.825 | 4.6175 | 4.6675 | 4.54 | 4.3775 | 4.2575 | 4.025 | 3.815 | 3.555 |
| **Bed turnover interval** | 1.39 | 1.38 | 1.1475 | 0.9475 | 0.9275 | 0.86 | 0.85 | 0.625 | 0.77 | 0.7825 | 0.71 |
| **Bed occupancy rate** | 67.75 | 72.5 | 79.25 | 81 | 80.75 | 81.25 | 81.75 | 81.5 | 84.25 | 83.5 | 86.75 |
| **The mean hospitalization time in the hospital** | 5.1875 | 4.9975 | 4.825 | 4.6175 | 4.6675 | 4.54 | 4.3775 | 4.2575 | 4.025 | 3.815 | 3.555 |
| **Bed turnover interval** | 1.39 | 1.38 | 1.1475 | 0.9475 | 0.9275 | 0.86 | 0.85 | 0.625 | 0.77 | 0.7825 | 0.71 |
| **Bed occupancy rate** | 67.75 | 72.5 | 79.25 | 81 | 80.75 | 81.25 | 81.75 | 81.5 | 84.25 | 83.5 | 86.75 |

**Table 1:** The 10-year changes trend of output parameters at the Baharloo Hospital.

**Analysis**

As can be seen, all indicators trend is upward and has been in line with improving, and this growth is considered statistically significant for the indices of bed occupancy rate, the mean hospitalization time in the hospital, the average rate of patients referred to the para clinic, and the average rate of patients referred to the hospital.

| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| The average number of bed | 118 | 132 | 151 | 164.5 | 200.75 | 207 | 198.75 | 215 | 216 | 220 | 224.5 |
| The ratio of the number of Specialists and sub-specialists to hospital bed | 0.14 | 0.14 | 0.16 | 0.16 | 0.18 | 0.21 | 0.2 | 0.25 | 0.29 | 0.38 | 0.435 |

**Table 2:** A 10-year trend of input parameters of the Baharloo Hospital.

As can be seen, upward trend of the above mentioned indices is evident; this increasing trend is considered statistically significant about the indicator of the ratio of the number of Specialists and sub-specialists to hospital bed.

| | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|
| Average waiting time to receive the first nursing service | 3.91 | 3.965 | 3.9525 | 3.545 |
| Average waiting time for receiving the first medical service | 3.915 | 3.81 | 3.6 | 3.2525 |

**Table 3:** 10-year trend of process parameters of the Baharloo Hospital.

Given that the data required for the production of the above indicators of 2011 were available, 4-year trend of the above indicators has had a positive trend, but from the perspective of the statistical analysis, the difference was not significant between the studied years.

## Discussion

Hospital indicators show the hospitals' performance at different areas. So full attention to these markers is essential. In our country, some hospital indicators don't have satisfactory situation, and in many cases are far from standards [8]. In the field of input parameters, due to direct contact with these indicators, it can be expected that the growth or decrease of these parameters be done along with each other. In recent years, due to serious shortcomings in the area of hospital beds, and discrepancies with international standards, development of hospital beds and consequently increase in the number of nurses needed medical, has drawn the attention of the various governments [9], and in this regard, Tehran University of Medical Sciences, with two policies of creating new sections and development and modernization of existing sections has made efforts to have a good contribution for improving the indicators mentioned, which based on under this policy, Baharloo Hospital due to the special geographical position, and located in one of the most densely populated areas of the metropolis of Tehran, has been one of the target centers of the project, and perhaps the growth of above indicators can be attributed to this general policy. In relation with process parameters, given the nature of these indicators, which are produced at the first exposure level, and in the emergency department of a hospital, it can be expected that this index indicates the status of emergency room in the centers directly. Emergency department is considered as the heart of health systems, and improving and organizing emergency department, is considered as working priority of the Ministry of Health [10]. One of the main points of interest in the above mentioned indicators is close relationship of the index with input factors, including the ratio of number of doctors and nurses to hospital beds, but the main reason for the improvement of the above parameters can be followed on the paying serious attention to the issue of hospital emergency departments organization by health system of the country, following the project, paying special attention to the presence of specialists in emergency department and triage and ranking emergency services with a special interest has been the center of attention [11]. In similar studies done, the tangible role of triage and ranking patients on arrival has been considered as one of the factors affecting the determination of status of the patients quickly and increasing emergency patients' satisfaction [12].

Given that, organizations have results-oriented approach traditionally, and achieving the goals in an efficient and effective manner is considered as an integral part of the dimensions of organization, indicators used to measure the output of any system has always drawn special attention [13]. Overview of essential hospital indicators advised by the Ministry of Health and Medical Education also shows that more than 80 percent above indices are among the indicators of output. Based on the nature of the above mentioned indicators, and structural relationships among indicators of occupancy rate, Average length of stay in hospital, bed

turnover interval, it can be expected that, coefficient of the above mentioned indicators is aligned and fitted, which study of above indicators leads to the same result. Studies conducted by Rabie, et al., Entitled "Performance indicators of education hospitals in Ahvaz are also in line with the results of this study [14]. Nosocomial infections index has also experienced statistically significant negative trend during this period that it can reflect the center's efforts towards the establishment of the monitoring system and control of nosocomial infections in the form of the establishment of patient safety standards, national accreditation and clinical sovereignty.

## Conclusions and Recommendations

Overall, the process of key indices above, during the study period of 10 years in the center indicates dynamic status of the center which is in progress, the pace of this growth has been higher in recent years, one of the most common causes of these conditions, in addition to the internal potential of the center, and the role of the sovereignty of this hospital, could be a new approach in the establishment of national and international standards, including national and safety accreditation of the patient, which the strengthening of these standards in the form of a comprehensive evaluation systems, in addition to providing a single criterion for external assessing can be used for internal assessments and identifying strengths and weaknesses.

## Acknowledgments

Design and implementation of study has been conducted in support of International Campus of Iran University of Medical Sciences.

## Declaration of Conflicting Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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