

# The Association Between Management of the Board of Trustees and Its Effectiveness at Hospitals in Tabriz; 2011 to 2013

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**Background:** Reforming the structure and improving care and service system, particularly at hospitals, are the main priorities of the health system. The board of trustees of the hospitals is the main proposed strategy in this field. Hospitals with board of trustees were created with the aim of improving accountability to the community and guaranteeing efficient management and attracting public support in running the hospital.

**Objectives:** The aim of this study was to investigate the association between hospital effectiveness and the board of trustee's management method.

**Materials and Methods:** This cross-sectional study was conducted in Tabriz City, Iran, during the years 2011 to 2013. To assess the effectiveness of board of trustees' management, two hospitals in Tabriz City were compared. Hospitals selected through purposive typical case sampling method. Two hospitals had equal structure, same doctors, and both were gynecology hospitals of Tabriz City, but one of them was a gynecology hospital managed by the board of trustees and the other was managed by the chairman. The information about the five variables of hospital effectiveness was collected during the years 2011 to 2013 using standard lists and questionnaires, which were available in the hospitals; these variables included quality management, safety, medical equipment management, and patients and staff satisfaction. Then, each variable was weighted through the technique of hierarchical analysis and finally they were analyzed using SPSS 17 and Expert Choice II.

**Results:** Among the five variables related to the effectiveness, safety showed to have the highest weight and medical equipment management had the lowest weight. According to the statistical analyses, the score of the effectiveness of the hospital with the board of trustees was 33.08 (on the scale of 0-100) and the score of the hospital with the chairperson was 29.52. No significant association was found between the effectiveness of hospital and the board of trustees management ( $P = 0.81$ ).

**Conclusions:** Because there was no significant difference in the effectiveness between hospitals with and without board of trustees, decision-makers must monitor how the commands are carried out to make board of trustees for hospitals and make sure its success in achieving its objectives.

**Keywords:** Trustees; Hospitals; Hospital Effectiveness

## 1. Background

Management method is one of the domains in an organization that has changed a lot nowadays (1). Hospitals with board of trustees began to form with the purpose of accountability to the community, and seek to ensure that the hospitals are doing their job well and receive adequate support from the community. However, trustees should guarantee that the boards of trustees of hospitals do their responsibilities towards the society and the government. The board of trustees can help with the promotion of the hospital performance through cooperating in establishing hospital policies (2).

In the past, the board of trustees' responsibility or duty was limited to providing required resources necessary

for the performance of the hospital, but over time, the board legally has taken the responsibility of resource management and service quality. Nowadays, hospitals take the responsibility of making domestic or internal administrative and strategic decisions (1). Making correct relationships and proper communication with society and active participation in domestic decision-making and external issues and policies, and reforming and monitoring hospital performance clarify the importance of a qualified, competent, eligible board of trustees (1, 3). In fact, the ultimate responsibility of giving and providing services and the hospital performance are mainly and primarily the responsibility of high-ranking members

of the organization including the board of trustees and board of directors (3).

Given the importance of improving and promoting the healthcare system, the role of hospitals with board of trustees in improving the level of management and providing services and improving the effectiveness of the hospital has recently attracted special attention. Although many studies have been performed on the association between management with the board of trustees and performance indicators (4), strategic thinking (3), and financial issues, no study has been yet done on the association between management with the board of trustees and the effectiveness of the hospital.

In the present study, the association between board of trustee's management and hospital effectiveness were investigated comprehensively and in a documented way for the first time. Studies have shown that changing governmental hospitals to self-oriented or autonomous units improves management and allocation of public resources and increases the level of accountability of hospitals to people (5). This goal will be achieved through reducing direct governmental control and monitoring and devolving daily decision makings from the government to hospital chairmen (6).

Despite recent trends towards board of trustees' management, there are still doubts about its positive effects on hospital effectiveness. All around the world assessing hospital effectiveness has become a crucial issue and is considered as one of the main concerns of world health organization. Many countries have commenced programs and projects of assessing hospital effectiveness by considering issues such as personnel reinforcement in quality management programs (7), improving accountability of hospital board of trustees to people who receive services, and raising public awareness and community education (8).

Hospital effectiveness is defined based on achieving specific managerial and clinical goals. The main objective of health, medical, and treatment care is better health; hence, the specific goals should be defined in relation to the set of past or former activities of the hospital including diagnostic treatment services and care, research, training and education. Nowadays, hospitals are expected to take components such as community care and public health as well as social and staff activities into consideration (9). Thus, information about hospital performance, health professionals, and healthcare organizations has become the main axes of the effectiveness of providing healthcare (10). Improving or promoting the performance of healthcare and treatment organizations is a major theme for hospitals, health professionals, and users of the health system. Since the objectives of the hospital are different, effectiveness has a multi-dimensional nature; consequently, the main objectives of the hospital must be identified and examined with a certain classification to be allowed to evaluate the effectiveness of different dimensions (11).

## 2. Objectives

In this regard, this study aimed to determine the association between board of trustees' management and its effectiveness.

## 3. Materials and Methods

This study cross-sectional and correlation study was conducted during the years 2011 to 2013 with the aim of determining the association between board of trustees' management and its effectiveness at hospitals in Tabriz City. The research was done in two gynecology hospitals in Tabriz City, Iran. Sampling method was purposive typical case sampling and we aimed to include hospitals of Tabriz University of Medical Sciences that were similar in structure, specialty, number of doctor, and variety of professionals, with the only difference between them being their managerial method. It means one of them had to be board of trustee's hospital. Hospitals without these features were excluded and only two gynecology hospitals were included. One of them was managed by the board of trustees and the other was managed by the chairman with centralized university management. The hospitals' services included diagnostic, therapeutic care such as special care during pregnancy under the supervision of experienced instructors and practitioners of parentology, and diagnosis and treatment of different kinds of women diseases. Services in the infant wards included natal or infantile equipped intensive care unit (ICU), trained experienced work force, services for preterm or premature infants, active infants' clinic, and training classes for breast milk and breastfeeding, which were common features of these two hospitals. The hospitals were selected purposefully according to the goals of the study so that hospitals with the board of trustees and without board of trustees, which were similar in other aspect, were included.

To evaluate the degree of the effectiveness of the hospitals, the indexes extracted from the studies by Lin and Lin (12) and Bar-Yam (13) were considered. The indexes include patients' satisfaction, employees' satisfaction, management of medical equipment, hospital safety, and quality management, which were announced to the elites and officials and were approved by them according to the conditions of the present study. The data was gathered since 2011 through 2013 for the study of the organizational effectiveness of the hospitals based on the information available in various hospitals, i.e., medical statistics and records, nursing office, hospital experts, and clinical governance officials.

For gathering the data, standard checklists of hospitals themselves were used based on the indexes about the hospitals' organizational effectiveness. The patients' satisfaction questionnaires about hospitalized patients and outpatients were available at the hospitals and this data was gathered from separate and different wards and sections. The data related to the employees' satisfaction was gathered in the form of the questionnaire used in

the hospital pathology model of the Ministry of Health, Therapy, and Medical Education. The data related to quality management was used through the data obtained from the university experts' assessment based on the available checklists of the clinical governance festival. Regarding hospital safety, checklists completed by patients for assessing safety-friendly hospitals were used, which were supervised by university's trained experts in the field of safety-friendly hospitals. Reported medical errors in hospitals were used as the instrument for data collection about medical errors, which were based on a common form developed and formulated by the University and completed voluntarily by the therapeutic staff at both hospitals. The effectiveness of the hospital with the board of trustees and the hospital with a chairperson were analyzed based on the variables selected by the available information through the last three years (2011-2013) through the review of medical records to determine organizational hospital effectiveness based on each of the indexes.

### 3.1. Statistical Analysis

All questionnaires were used for validation. The reliability by Cranach's alpha ranged from 85% to 93%, which indicated acceptable reliability. Variables related to hospital effectiveness were compared mutually and prioritized using the technique of hierarchical analysis. Chi square was used to compare categorical variables between hospitals and independent-sample t test were used for continuous variables.  $P < 0.05$  was considered as significant difference in this study.

### 3.2. Statistical Software

Each variable was weighted through the technique of hierarchical analysis and finally they were analyzed using SPSS 17 (SPSS Inc, Chicago, Illinois, the United States) and Expert Choice 11 (Expert Choice, Texas, Arlington, the United States). Analytic hierarchy process (AHP) or hierarchical analysis was done using Expert choice 11 and data analysis using SPSS 17.

## 4. Results

The findings of investigating the effectiveness of the selected hospitals during the years 2011- 2013 (Table 1) suggested a significant association between board of trustees' management and patients' satisfaction ( $P = 0.001$ ), employees' satisfaction ( $P = 0.001$ ), and quality management ( $P = 0.049$ ). The satisfaction of the patients in the hospital with the board of trustees' management was more than the satisfaction of the patients in the hospital without board of trustees, but the satisfaction of employees in the hospital with the board of trustees was less than the satisfaction of those in the government-budgeted hospital. It was also observed that quality management in the hospital without the board of trustees was better than the hospital with the board of trustees.

However, no significant association was found between the management of board of trustees and hospital safety or medical equipment management.

The experts were asked to prioritize effectiveness indexes using AHP or hierarchical analysis technique. Hospital safety received the maximum weight and medical equipment management received the lowest weight. The results of this analysis are shown in detail in Figure 1.

According to Table 2, studying the situation of the selected hospital regarding the aspects of hospital effectiveness and overall effectiveness based on the weights obtained by hierarchical analysis technique showed that there was a significant association between board of trustees' management and patients' satisfaction, employees' satisfaction, and quality management. However, no significant association was found between the management of board of trustees and hospital safety or medical equipment management.

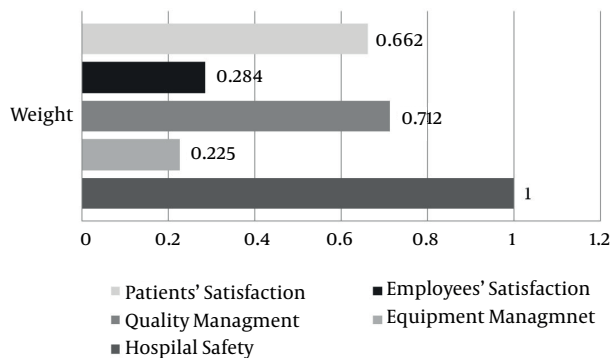
**Table 1.** The Situation of the Studied Hospitals Regarding the Aspects of Effectiveness During 2011 - 2013 <sup>a</sup>

Aspects of Effectiveness	Management Models		P Value
	Hospital With Board of Trustees	Government-Budgeted Hospital	
<b>Patients' satisfaction</b>			< 0.001 <sup>b</sup>
Hospitalized	70.12 ± 2.99	42.64 ± 12.26	
Outpatients and emergency cases	69.93 ± 11.70	39.18 ± 4.56	
<b>Employees' satisfaction</b>	20.12 ± 3.56	31.08 ± 17.43	< 0.001 <sup>b</sup>
<b>Hospital safety</b>	71.13	61.27	< 0.179 <sup>b</sup>
<b>Equipment management</b>	62.7	58.2	0.561 <sup>c</sup>
<b>Quality management</b>	39.52	53.99	0.049 <sup>c</sup>

<sup>a</sup> Values are presented as Mean ± SD or %.

<sup>b</sup> Independent-samples t-test.

<sup>c</sup> Chi Square Test.



**Figure 1.** Prioritizing and Weighting the Importance of Selected Variables on Hospital Effectiveness From the Viewpoints of Experts Using Analytic Hierarchy Process (AHP) Technique

**Table 2.** The Situation of the Studied Hospitals Regarding the Aspects of Effectiveness and Overall Effectiveness Based on the Weights Obtained From Analytic Hierarchy Process During 2011 - 2013

Dimensions of Effectiveness	Management Models <sup>a</sup>		Final Score		Weight
	Hospital With Board of Trustees	Government-Budgeted Hospital	Hospital With Board of Trustees	Government-Budgeted Hospital	
Patients' Satisfaction	69.93	39.18	46.29	25.94	0.662
Employees' Satisfaction	20.12	31.08	5.71	8.83	0.284
Quality Management	39.52	53.99	28.14	38.44	0.712
Medical Equipment Management	62.7	58.2	14.11	13.10	0.225
Hospital Safety	71.13	61.27	71.13	61.27	1
Hospital Overall Effectiveness	33.08	29.52			2.833

<sup>a</sup> Average (out of 100).

Finally, there was no significant association between board of trustees' management and the effectiveness of women's hospitals in Tabriz City.

## 5. Discussion

Regarding the recent attention of the government to make hospitals have board of trustees to improve their performance and effectiveness by improving and promoting quality and increasing beneficiaries' satisfaction, records of the success of board of trustees' management in achieving goals have not been provided yet. In the present study, it was attempted to identify variables determining hospital effectiveness and combine them with different weights in order to provide a consistent measure of the effectiveness of hospitals and to determine whether hospitals with board of trustees are more effective than hospitals without board of trustees by comparing the two hospitals that were structurally quite similar; their only major difference was that one had the board of trustees and the other did not. In the following section, first each of the hospitals are discussed separately based on each variable, then their ultimate effectiveness are compared.

### 5.1. Patients' Satisfaction

Regarding patients' satisfaction, the hospital with the board of trustees received higher score than the hospital without board of trustees, which indicated that the hospital with board of trustees was more successful regarding patients' satisfaction as one of the variables of hospital effectiveness. According to a study conducted by Kone Pefoyo et al. (14), measuring or assessing patients' satisfaction is essential in order to evaluate and improve the performance of hospitals, the quality of medical care, medical practices and measurements, and ultimately, achieving goals. It is essential to assess individual and organizational factors that influence patients' perception of care and services in order to direct and implement

improvement strategies (14). The results of another study suggest that patients' satisfaction is a very important and effective indicator of measuring the success of physician and organizational effectiveness (15).

### 5.2. Employees' Satisfaction

Although the hospital with the board of trustees has more points regarding the patients' satisfaction, it acquired less points regarding employees' satisfaction than the hospital with chairman management. According to the results of this research, the hospital with board of trustees was not very successful in this regard. Elshout et al. showed a significant association between leadership style and staff or employees' absenteeism and patients' satisfaction after merging (16). Based on the results of another study by Alikhani et al., poor, inappropriate, and negative institutional or organizational environment leads to employees' dissatisfaction with their careers and reduces employees' satisfaction and subsequently performance. Offering rewards and grants to employees and transferring or shifting the focus from self to others can benefit both the organization and employees (17).

### 5.3. Quality Management

The score of the hospital with the board of trustees was less than the hospital without board of trustees in this regard. With so much attention that has been paid to the goals and objectives of hospitals with board of trustees and many different studies that have been done, it is essential that these hospitals take more actions to improve their quality of services. According to a study conducted in 1982 by Hetherington, an effective organization from the perspective of problem solving theory is an organization that maintains a minimum performance in four main areas of achieving objectives, integration, adaptation, and stable pattern. In this regard, theoretically, quality assurance and quality management can promote organization effectiveness by improving administrative

responsibility (achievement of objectives), increasing doctors' incentive and motivation (integrity), limiting costs and attracting valuable resources (adaptation), and maintaining values (stability of conditions) (18).

On the other hand, a comparative study showed that improving quality improves hospital performance and leads to performance excellence, which subsequently leads to 1) placing value for patients and shareholders, 2) improving effectiveness and the general competence of an organization as a healthcare provider, and 3) improving individual and organizational education (19). In another comparative study by Wagner et al., three European countries, i.e. The Netherlands, Hungary, and Finland, were compared with the purpose of studying agreements and differences in the implementation of quality management. The study showed that the activities of quality management were influenced by giving motivation and feedback to employees and on the other hand they influenced organizational performance and achieving organizational goals; they concluded that great actions should be taken to implement these activities in the future in large number of hospitals (20).

#### 5.4. Medical Equipment Management

Another variable of effectiveness in hospitals as organizations providing healthcare services is medical equipment management. According to the findings of this study, the hospital with board of trustees was relatively more successful and scored more points than the hospital without board of trustees did, but this difference was not significant. The results of the study by Alikhani et al. (21) on medical equipment maintenance system indicates that all therapeutic and healthcare organizations need a large number of medical equipment in order to be effective and provide valuable services for their customers and patients. They also need good operators who can work with equipment, which helps the organization to be effective and successful in all aspects. Therapeutic and healthcare organizations must take proper medical equipment that suits their needs from valid organizations. They should also be careful about the expense and cost of installation of each equipment to obtain effective results (21).

Another study in India with the aim of identifying problems in different stages of medical equipment to assess financial complexities and their effects on providing services showed that having access to medical equipment and their optimum application are necessary for improving the quality of healthcare services. Since purchasing, maintaining, and repairing medical equipment require high expenses, poor management of the equipment leads to financial losses and public deprivation of their benefits. Management should apply accurate procedures in this regard (22).

#### 5.5. Hospital Safety and Risk Management

Another variable that is involved in hospital effective-

ness is safety and risk management. The hospital with board of trustees scored more points than the hospital without board of trustees in this regard. However, error reporting system in the government-budgeted hospital was more accurate and integrated than the hospital with the board of trustees. It can be said that each of the two hospitals has been more successful in one area of risk management. Many studies have been done about risk management and they highlight error reporting and creating a systematic approach at hospitals in order to prevent errors and promoting safety. A study done in Italy by La Pietra et al. showed that a systematic approach should be adopted for more accountability and responsibility of all members of the organization to patients' safety (23).

According to the results of a study by Wischet and Schusterschitz in Australia, developing and implementing strict standards for safety through regulatory mechanisms such as licensing and certification of accreditation may define minimum levels of performance to achieve expected objectives for therapeutic and healthcare organizations (24). According to another study conducted in 44 hospitals in Pennsylvania in 2005, it was shown that for improving and promoting patient safety, structural and organizational reforms are essential in the fields of improving staff and employee training, information management system, and improving the state of working environment and work place. These reforms can be successful when they are supported and well financed by management of the organization (25). The results of the study by Adibi et al. showed that it is necessary for all therapeutic and healthcare organizations to create a comprehensive system for identifying safety risks and dangers and improving hospital effectiveness (26). Finally, no significant difference in effectiveness was found between the hospitals with and without board of trustees. Results of Ferdosi et al. study showed that no significant change was found in the accountability of the board of trustees of hospitals in Isfahan City, Iran (27). Study of Gholipour et al. in Tabriz City, Iran, demonstrated that according to Pabonlasso model, hospital managed by the board of trustees had better performance in comparison to similar hospital without board of trustees (28). Study of Manavi et al. suggested that the board of trustees of the hospital alone is not the solution to all problems and other problems and challenges of the health system, including methods of financing and payment systems, should be considered (29).

Since no significant difference was found in the effectiveness between the hospital with and without board of trustees, decision makers must supervise the way instructions related to developing board of trustees in hospitals are implemented and make sure that they are successful in achieving predicted goals and objectives to improve decision making in similar fields and achieving better results. Therefore, performing more studies on hospital effectiveness and board of trustees' management in other areas and different hospitals in the country are recom-

mended to determine whether the main problem is with implementation and application of these instructions.

### 5.6. Research Limitations

Lack of participation of some employees at the studied hospitals and lack of some required data were among the limitations of this research.

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### Authors' Contributions

Study concept and design: Irvan Masoudi Asl; Acquisition of data: Shabnam Iezadi; Analysis and interpretation of data: Maryam Rahbari Bonab and Shabnam Iezadi; Drafting the manuscript: Shabnam Iezadi and Maryam Rahbari Bonab; Critical revision of the manuscript for important intellectual content: Irvan Masoudi Asl and Maryam Rahbari Bonab; Statistical analysis: Maryam Rahbari Bonab; Administrative, technical, and material support: Irvan Masoudi Asl and Maryam Rahbari Bonab; Study supervision: Irvan Masoudi Asl.

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### References

- Molinari C, Morlock L, Alexander J, Lyles CA. Hospital board effectiveness: relationships between governing board composition and hospital financial viability. *Health Serv Res.* 1993;28(3):358-77.
- Griffin D. *Hospitals: What they are and how they work.* Sudbury: Jones & Bartlett Learning; 2011.
- Ford-Eickhoff K, Plowman DA, McDaniel RJ. Hospital boards and hospital strategic focus: the impact of board involvement in strategic decision making. *Health Care Manage Rev.* 2011;36(2):145-54.
- Gabriel CS, Melo MR, Rocha FL, Bernardes A, Miguelaci T, Silva Mde L. Use of performance indicators in the Nursing Service of a public hospital. *Rev Lat Am Enfermagem.* 2011;19(5):1247-54.
- Jafari M, Rashidian A, Abolhasani F, Mohammad K, Yazdani S, Parkerton P, et al. Space or no space for managing public hospitals; a qualitative study of hospital autonomy in Iran. *Int J Health Plann Manage.* 2011;26(3):e121-37.
- Abdullah MT, Shaw J. A review of the experience of hospital autonomy in Pakistan. *Int J Health Plann Manage.* 2007;22(1):45-62.
- Tabrizi JS, Gholipour K, Alipour R, Farahbakhsh M, Asghari-Jafarabadi M, Haghahi M. Service Quality of maternity care from the perspective of pregnant women in Tabriz Health Centers and Health Posts-2010-2011. *Hospital.* 2014;12(4):9-18.
- WHO. *How can hospital performance be measured and monitored?* : WHO; 2003.
- Groene O, Klazinga N, Kazandjian V, Lombraill P, Bartels P. The World Health Organization Performance Assessment Tool for Quality Improvement in Hospitals (PATH): an analysis of the pilot implementation in 37 hospitals. *Int J Qual Health Care.* 2008;20(3):155-61.
- Goudarzi S, Kameli ME, Hatami H. Improvement in health indicators of Islamic republic of Iran in the years 2004 and 2008. *Iran Red Crescent Med J.* 2011;13(8):574-7.
- Moret L, Anthoine E, Paille C, Tricaud-Vialle S, Gerbaud L, Giraud-Roufast A, et al. Relationship between inpatient satisfaction and nurse absenteeism: an exploratory study using WHO-PATH performance indicators in France. *BMC Res Notes.* 2012;5:83.
- Lin YW, Lin YY. Health-promoting organization and organizational effectiveness of health promotion in hospitals: a national cross-sectional survey in Taiwan. *Health Promot Int.* 2011;26(3):362-75.
- Bar-Yam Y. Improving the effectiveness of health care and public health: a multiscale complex systems analysis. *Am J Public Health.* 2006;96(3):459-66.
- Kone Pefoyo AJ, Wodchis WP. Organizational performance impacting patient satisfaction in Ontario hospitals: a multilevel analysis. *BMC Res Notes.* 2013;6:509.
- Prakash B. Patient satisfaction. *J Cutan Aesthet Surg.* 2010;3(3):151-5.
- Elshout R, Scherp E, van der Feltz-Cornelis CM. Understanding the link between leadership style, employee satisfaction, and absenteeism: a mixed methods design study in a mental health care institution. *Neuropsychiatr Dis Treat.* 2013;9:823-37.
- Anik L, Aknin LB, Norton MI, Dunn EW, Quoidbach J. Prosocial bonuses increase employee satisfaction and team performance. *PLoS One.* 2013;8(9):e75509.
- Hetherington RW. Quality assurance and organizational effectiveness in hospitals. *Health Serv Res.* 1982;17(2):185-201.
- Heidari-Gorji AM, Farooque JA. A comparative study of total quality management of health care system in India and Iran. *BMC Res Notes.* 2011;4(1):566.
- Wagner C, Gulacsi L, Takacs E, Outinen M. The implementation of quality management systems in hospitals: a comparison between three countries. *BMC Health Serv Res.* 2006;6:50.
- Alikhani P, Vesal S, Kashefi P, Pour RE, Khorvash F, Askari G, et al. Application and Preventive Maintenance of Neurology Medical Equipment in Isfahan Alzahra Hospital. *Int J Prevent Med.* 2013;4(Suppl 2):S323.
- Pardeshi GS. Medical equipment in government health facilities: missed opportunities. *Indian J Med Sci.* 2005;59(1):13-9.
- La Pietra L, Calligaris L, Molendini L, Quattrin R, Brusaferrero S. Medical errors and clinical risk management: state of the art. *Acta Otorhinolaryngol Ital.* 2005;25(6):339-46.
- Wischet W, Schusterschitz C. Quality management and safety culture in medicine - Do standard quality reports provide insights into the human factor of patient safety? *Ger Med Sci.* 2009;7:Doc30.
- Anderson JG, Ramanujam R, Hensel D, Anderson MM, Sirio CA. The need for organizational change in patient safety initiatives. *Int J Med Inform.* 2006;75(12):809-17.
- Adibi H, Khalesi N, Ravaghi H, Jafari M, Jeddian AR. Development of an effective risk management system in a teaching hospital. *J Diabetes Metabol Disord.* 2012;11(1):15.
- Ferdosi M, Saberi Nia A, Mahmoudi Meymand F, Nezamdoust F, Shojaei L. The Responsiveness Of Board Of Trustees Hospitals According To The World Bank's Organizational Reform Model In Isfahan. *Payavard Salamat.* 2013;7(3):228-38.
- Gholipour K, Delgoshai B, Masudi-Asl I, Hajinabi K, Iezadi S. Comparing performance of Tabriz obstetrics and gynaecology hospitals managed as autonomous and budgetary units using Pabon Lasso method. *Australas Med J.* 2013;6(12):701-7.
- Manavi S, Babashahy S, Sari AA. The Extra Cost of Granting Autonomy to Public Hospitals. *J Isfahan Med School.* 2012;29(170).