

Does Transfer of Hospital Governance to Board of Trustees *per se* Lead to Improved Hospital Performance?

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Abstract

Background and Objectives: Evidence shows that transfer of hospital governance to board of trustees can positively influence hospital performance. Iran has initiated implementing such a transformation and a number of hospitals have been involved in this reform. This study aimed to explore the effectiveness of such a reform by examining performance profile of a sample hospital across the intervention time segment.

Methods: Data was collected in 2011 from a university hospital affiliated with the Ministry of Health and Medical Education. Bed Occupation Ratio, Average Patient Stay, and Real Hospital Income were selected as the target performance measures. Data was collected on a seasonal basis by reviewing hospital performance reports within the period of 3.5 years prior and 3.5 years after the intervention. The data were analyzed using the interrupted time series analysis. $P < 0.05$ was considered as statistical significance.

Findings: Transfer of hospital governance to the board of trustees *per se* does not lead to improved hospital performance.

Conclusions: Realizing the advantages of board-of-trustee-based hospital governance would be contingent on identifying and fulfilling prerequisite conditions. To this aim, further research at both government and organizational levels is required.

Keywords: Board of Trustees, Hospital, Bed Occupation Ratio, Average Patient Stay, Real Income

Background and Objectives

The health sector by establishing interaction between various specialties, industries and organizations, provide a comprehensive range of healthcare services to the community [1]. At the center of this sector stand the hospitals, which are responsible for direct delivery of healthcare services to the costumers. In most countries, hospital industry absorbs the majority of health expenses. According to comprehensive surveys of the World Bank and the World Health Organization (WHO), in the developing countries, hospitals consume up to 80% of total health sector resources [2, 3]. Hospitals are complex organizations where services production and delivery is a result of combined interaction of a many non-homogenous specialties and tasks in a hierarchical workflow and under constant stress [4]. This

challenge alongside high and ever increasing costs of health services, subject hospital success and survival to an effective management, capable of fulfilling customer satisfaction while maintaining expenditure optimized [5]. Studies show that hospital management and its mode of governance influence different aspects of hospital performance [6-8]. The implications from holistic thinking in management suggest the "Board of Trustees" (BT) as a promising style of hospital governance. Studies have indicated the positive impact of BT-based governance on different aspects of hospital performance, including financial fulfillments [9-11], financial stability [12, 13], quality of services [14, 15], problem solving [16], crisis management [17], and social contribution [18]. Presently, in many countries, including England, Canada, Australia, Spain, the USA, and China, hospitals are governed under supervision of the board of directors or trustees [19].

Cognizant of the necessity of reform in hospital governance, Iran's health policymakers have emphasized transfer of current hospital governance

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systems to the board of trustees, and developed and administered a plan to fulfill this goal [20]. However, despite a few years after the execution of the plan and involvement of a number of hospitals in such a transformation, little information exists about the effects of the new governance model on hospitals' performance. Without such a feedback, evaluating the effectiveness of this transformation and adjusting the policies with emerging requirements will not be possible [21]. Considering the need for such data, the present study aimed to investigate the change in performance indicators of a sample Iranian hospital that has experienced governance transfer to the board of trustees.

Methods

Study Design

A quasi-experimental study was carried out within the period of October to December 2011 using a retrospective design.

Setting and Data Collection

The target health facility was a general hospital affiliated with Isfahan University of Medical Sciences (number of bed = 173, number of employees > 650), situated in northern Isfahan, the capital of Isfahan Province, at the central Iran. Selection of the study site was based on ease of researcher appointment and data collection.

Performance indicator data were extracted from the hospital's statistical information resources. The criteria for selecting performance indicators included the following: (1) Indicators must be proprietary and related to the hospital's performance; (2) Access to the selected indicators must be possible; (3) Adequate time segment data must be available. Based upon these criteria, three indicators including Bed Occupation Ratio (BOR), Average Patient

Stay (APS), and Real Hospital Income (RHI) were selected as the measures of hospital performance. Due to the short time after governance transfer data were collected in the seasonal interval within the period of 3.5 years before and 3.5 years after the intervention (14 segments before, and 14 segments after).

Data Analysis

Quantitative Analysis

Segmented time series were analyzed using interrupted time-series analysis. The method enables measuring the impact of an intervention on a target outcome immediately after intervention and over time. In the absence of an independent control group, interrupted time-series analysis allows for considering the level and trend of the pre-intervention segment as control for post-intervention segment in a single time series [22, 23]. $P < 0.05$ was considered as the significance level. Stata Software Version 12 was used for data analysis.

Qualitative Analysis

To enable external validation of the statistical model and informed interpretation of the results, the research group conducted interviews with seven experts in the field. Participants were selected purposively and included three national policymakers, two local managers and two hospital administrators. The interviews were carried out face to face by one researcher (HS). Meeting time and place was arranged by mutual agreement. Before interview, each participant was explained about the purpose of the study and informed consent for participating in the study was obtained. All the interviews were audio-recorded and transcribed verbatim. The interview time averaged 31 minutes ranging from 12 and 59 minutes.

Table 1 Changes in hospital performance indicators after intervention

Performance Indicators	Change in level				Change in slope			
	Mean	LCI	UCI	P-value	Mean	LCI	UCI	P-value
Bed occupation ratio	2.25	-3.95	8.46	0.46	0.24	-0.65	1.14	0.58
Average patient stay	0.85	0.25	1.46	0.01	-0.002	-0.1	0.09	0.96
Total income	-5.83×10^8	-23.5×10^8	11.8×10^8	0.50	0.876×10^8	-1.63×10^8	3.39×10^8	0.48

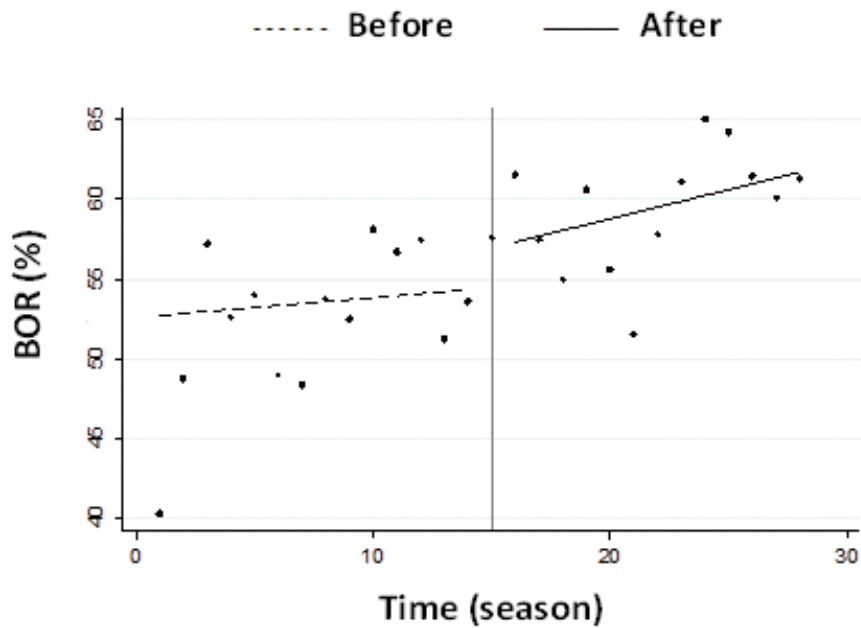


Figure 1 Bed Occupation Ratio before and after intervention

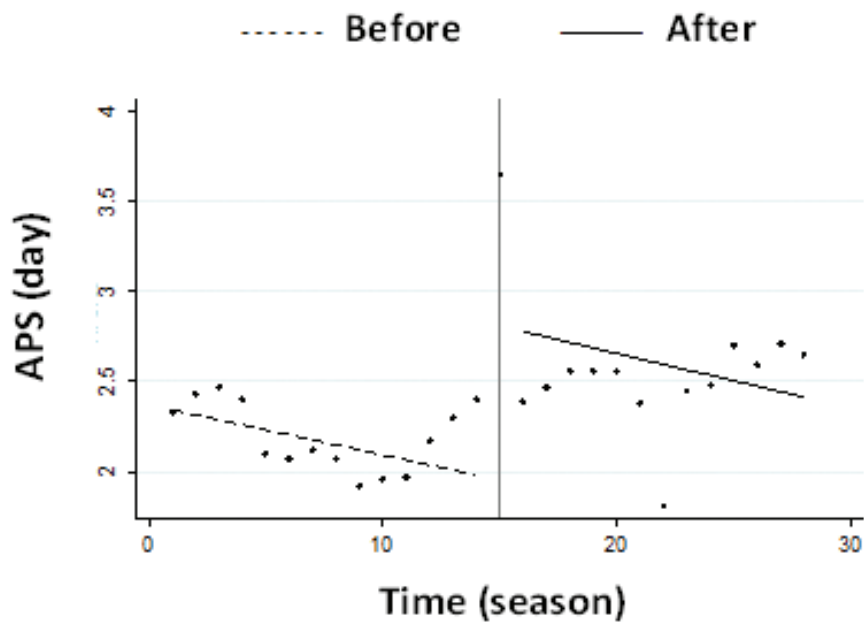


Figure 2 Average Patient Stay before and after intervention

Results

Bed Occupation Ratio (BOR): BOR was on an increasing trend before and after the intervention (Figure 1). No significant difference in BOR level was identified, immediately after the intervention. In addition, no significant difference between the slopes of the pre-intervention and post-intervention trends was detected (Table 1).

Average Patient Stay (APS): APS was on a declining trend prior and after the intervention (Figure 2). The intervention was associated with a significant increase in APS level, immediately after the intervention. However, no significant change was identified between the slopes of the pre-intervention and post-intervention trends (Table 1).

Real Hospital Income (RHI): RHI was on an increasing trend before and after the intervention

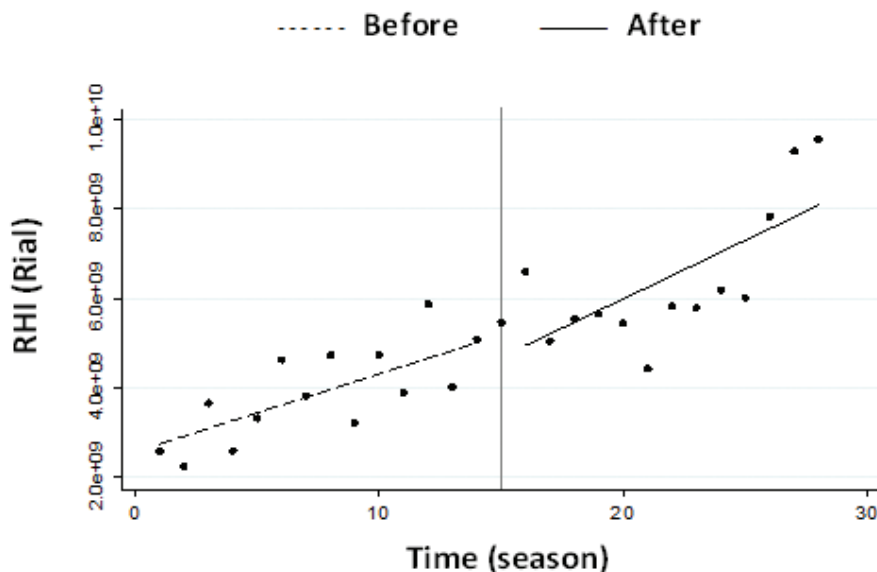


Figure 3 Real Hospital Income before and after intervention

(Figure 3). No significant difference in level of real income was observed, immediately after the intervention. In addition, no significant difference was identified between the slopes of pre-intervention and post-intervention trends (Table 1).

Discussion

The present study attempted to find evidence for effect of BT-based governance on hospital performance. The plan for governance transfer was developed and imparted by Iranian Ministry of Health and Medical Education (MOHME) at a time when the necessity of a shift towards BT-based hospital governance was sensed in order to achieve higher healthcare services quality. The plan assumed that such a transfer would result in higher hospital performance by enhancing measures such as bed occupation ratio and average patient stay [20]. Nonetheless, in contrast with experiences of other countries [14, 15], our results do not indicate such an effect. Evaluating the reasons behind this unexpected result was beyond the scope of the present study. However, based on the opinions of our expert interviewees, the ineffectiveness of the intervention should be sought in administrating issues rather than the structure of the plan itself. The experts identified a number of factors as important obstacles in administering the plan, including inappropriate selection of hospitals at preliminary stage of plan execution, lack of physicians' confidence in the survival of the new governance model, limited awareness of BT members about their authorities and responsibili-

ties, and incapability or non-intention of BT members in using their delegated authorities.

We also evaluated the consequence of governance transformation on hospital real income, which was as well among the target measures of MOHME's plan. Despite evidence on the positive influence of BT-based governance on hospital financial performance [9-11], our results did not show such an influence. Again, in the absence of research-based data, it is difficult to postulate the underlying reasons. However, based on interview data, factors such as lack of cooperation from insurance companies and limited governmental aid may be suspected as possible contributors.

Overall, our results imply that transfer of hospital governance to BT *per se* may not result in tangible improvement in hospital performance. It seems that realizing the advantages of such an intervention is contingent on the availability of certain grounds, meeting specific requirements, providing special supports, and perhaps administering complementary interventions. Gaining further insight into the nature of these requirements, calls for more comprehensive studies, both at organizational and governmental levels.

It is also worth mentioning that although the current study did not show a positive significant effect for the BT-based governance, a reverse effect was not observed either. This encourages the leadership in the current BT-governed hospitals to identify and eliminate barriers to effective implementation of this reform, thereby releasing its potential benefits.

Study Limitations

Results of the present study must be interpreted in the light of the study limitations. One important limitation was the short period after commencement of the new governance system, which made it impossible to collect sufficient data to ensure high validity of statistical model. As a rule of thumb, minimal time segments in a sufficiently valid modeling must include 24 segments before and 24 segments after the intervention [24]. Whilst we were only able to obtain 60% of the required data. Therefore, a smaller than required sample size may have resulted in statistical error type II.

In addition, this study enrolled only a single hospital. Performance variables often vary among hospitals of different type, size and ownership. Therefore, the study results cannot be generalized in the absence of more comprehensive data.

This study examined only few measures of hospital performance. The reason for this was the lack of homogenous data for other measures. Thus, the implications of this study do not apply to other indicators of hospital performance.

Conclusions

Our study showed that despite evidence on the positive influence of board-of-trustee-based governance on hospital performance, this advantage may not be realized in certain circumstances. Hence, before beginning to change the hospital governance system, the prerequisites to effectiveness of the intervention must be identified and addressed. Within its limitations, our study points towards increased awareness of BT members about their authorities, improved physicians' confidence in the new governance style, increased governmental support, and higher cooperation from insurance companies as the requirements of an effective BT-based hospital governance.

Abbreviations

(BT): Board of Trustees.

Competing Interests

The authors declare no competing interests.

Authors' Contributions

HS and MM jointly designed the study. MH contributed to data collection and analysis, interpretation of the results, and editing the draft manuscript. ST helped to revise and finalize the manuscript. All authors read and approved the final manuscript.

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