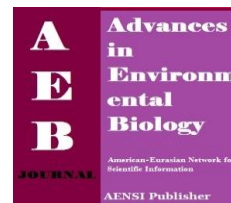




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## Consideration of the Relationship between Changes of Evaluation Rate of Hospitals with Performance Indicator in Kermanshah Hospitals over [during] a ten-year Period 2002-2012

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### ABSTRACT

Because of allocating the major part of health system budget and importance of continuing and permanent evaluation of hospitals, it is essential to evaluate [examine] their efficiency and profit using performance indicators. Accordingly, the aim of this study is to consider the relationship between performance indicators and change of evaluation rating of hospitals in the university hospitals in Kermanshah. This research is a descriptive-analytic study. Statistical population consists of all of the Kermanshah university hospitals including 17 hospitals that during 10 years 6 of them have had evaluation rating change. In this study, census method was used because statistical population was limited. The data gathering tool was documentations related to [consistent with] the performance indicators of hospitals and certification of evaluation rating of hospitals. Finally, version 21 of spss correlation Pearson software was used to determine correlations between variables. The study achievement shows that there are no meaningful relationship between any of performance indicators and evaluation rating, and only there is negative meaningful relationship between performance indicators BOR and evaluation rating. There is negative relationship among evaluation rating and average length of patient stay in hospital, mortality [death] rate, hospital-bed turnover, and positive relationship with hospital swing bed. The results show that previously evaluation system was inefficient, and classification [grading] of hospitals has not been a criterion for utility of services. There is a new service to evaluate [consider] the qualitative and quantitative performance and efficiency of hospitals and accreditation system.

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## INTRODUCTION

Evaluation of health services, legal and formal determination is the rate of effectiveness, efficiency, acceptability and adopting a planned program in doing certain goals. [1]. *Effectiveness* is the rate of achieving determined goals, and *efficiency* is the way of using resources in order to achieve results. Acceptability deals with the fact that if any act is socially and professionally suitable and satisfactory or not [2]. Evaluation is an integral part of every activity and implementation because in using measurable data the main goal which is improvement of operational activity is followed, and without suggesting additional resource that considers effectiveness, efficiency and desirable utilization [3-4]. According to the World Health Organization [WHO], the proportion of the running costs of government in the health sector is between 80-50 percent, while in

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developed countries the portion of hospital costs from the portion of health in public sector does not exceed 40 percent [5-6].

Statistics and indicators [indexes] of an organization is the Criterion by which performance success of an organization can be measured and the level of achieving targets [goals] of the organization can be determined. Since statistics and indicators [indexes] actually reflect level of efficiency and effectiveness of organizational units and prepare the situation to control and evaluate activities and performances, therefore, this issue is so important and fundamental about hospitals [7].

Hospital costs is used in the utilization of hospital facilities for patient care, planning, organizing and coordination of health care services in the geographical range, Economic utilization of hospital facilities in health program and health care network in the regional and national level, evaluation and Epidemiological situation of the population. Performance indicators of hospital consist of bed occupancy rate; mortality rate; average length of patient stay, hospital-bed turnover, hospital swing bed [8]. Arab says one of the criterion for measuring the success of organization performance and determining the level of achieving goals is its statistics and indicators [indexes] because hospital is saving human lives and restoring their health, and improvement of hospital indicators means hospital performance is efficient and effective, or in the other words, it shows proper performance of staffs and proper use of organizational resources [9].

In a separate study conducted in the years 1996-1997 in Atlanta, lack of relationship between evaluation rate presented to hospitals by JCAHO, and indicators [indexes] such as patient stay, hospital mortality rate, adverse events in hospitals, ability to finance the hospitals, Hospitals' ability to cope with the latest treatment methods and etc. were reported, while it was expected that hospital have a better assessment [evaluation] rate and also better performance [10, 6]. It is essential to pay full attention to hospital performance indicators [indexes] and Importance of the evaluation process and their impact on improving hospital performance. This study considers the relationship between the change of evaluation rate of hospitals with performance indicators [indexes] in hospitals in Kermanshah.

## 2. Study method:

This research is analytic-descriptive study and its statistical population was all of the university hospitals of Kermanshah that have had evaluation rating change during 10 years [6 hospitals from 17 hospital universities], and census method was used because statistical population was limited.

In this study, the data gathering tools were hospitals' standard forms of performance indicators [bed occupancy rate, average length of patient stay in hospital, mortality rate, hospital-bed turnover, and hospital swing bed] and certification of evaluation rating of hospitals. Finally, Descriptive and inferential statistics [Pearson correlation coefficient] with the help of version 21 of SPSS was used in order to determine the relationship between variables of the research.

## 3. Findings:

Among these hospitals in this study, 2 teaching hospital of *Imam Reza [AS] hospital* and *Doctor Mohamed Kermanshahi hospital* and 4 other hospitals of boroughs hospitals- *Hazrat Abolfazl [AS]*, *Qasr-e Shirin- Zahra*, *Gilangharb- Shohada*, *Harsin- Imam Khomeini*, *Songhor* that have had the change of evaluation rate. The results about the highest and the lowest performance indicators [indexes] of these hospitals, separating teaching hospitals from other hospitals, show that among performance indicators of hospitals the highest rate [amount] of mortality in 1385 was 3.07 *Imam Khomeini teaching hospital* with evaluating rate of 1, and the lowest rate [amount] of mortality in 1384, 1385, 1386 was respectively in health network hospitals of *Harsin [Shohada Hospital]*, *Gilangharb [Zahra Hospital]* and *Qasr-e Shirin [Hazrat Abolfazl]* with evaluation rate of 1,2,3. The highest rate of the performance indicator of hospital bed turnover in 1386 in *Imam Reza hospital* was 66.48 with evaluation rate of 1 the best and the lowest was in 1385 in *Hazrat Abolfazl hospital of Qasr-e Shirin* with evaluation rate of 2, and the highest rate of the performance rate of hospital swing bed was 42.71 in 1386 in *Hazrat Abolfazl hospital of Qasr-e Shirin* with evaluation rate of 1 and its lowest rate was in 1386 in *Imam Reza hospital* with evaluation rate of 1 the best, and the highest rate of performance indicator of bed occupancy rate was 82.21 in 1390 in *Doctor Kermanshahi teaching hospital* with evaluation rate of 1 and the lowest rate was in 1386 in *Hazrat Abolfazl hospital of Qasr-e Shirin* with evaluation rate of 2 and also the highest rate [amount] of average patient stay index [indicator] was in 1385 in *Imam Reza teaching hospital* with evaluation rate of 1 and its lowest rate [amount] was in *Shohada hospital in Harsin* in 1385 with evaluation rate of 2 [table 1].

Results show that there is not any statistical meaningful relationship among indicators [indexes] and evaluation rate of hospitals. There is only negative meaningful relationship about evaluation rate with bed occupancy rate. Results show that there are negative relationship among evaluation rate and average length of patient stay, mortality [death], hospital bed turn over, and direct relationship between evaluation degree and hospital bed swing [table 2].

**Table 1:** statistical indicators table 1.

hospital	year	Evaluation rate	Mortality [death] [person]	Bed turn over [time]	Hospital swing bed [day]	Bed occupancy rate [percent]	Average length of patient stay [day]
Imam Reza teaching hospital	2006	1	3.7	50.82	2.99	58.37	4.19
	2007	+1	2.41	66.48	1.92	64.99	3.57
Imam Khomeini , Songhor	2010	3	1.09	61.81	3.50	40.74	2.41
	2011	1	0.62	64.88	2.95	47.61	2.68
	2012	2	0.73	64.85	2.95	47.59	2.68
Shohada hospital, Harsin	2005	1	0.0	39.07	7.63	18.32	1.71
	2006	2	0.05	52.22	5.56	20.52	1.43
Alzahra hospital, Gilangharb	2006	1	0.06	62.96	3.21	44.62	2.59
	2007	2	0.0	64.16	2.84	50.01	2.84
Hazrat Abolfazl hospital, Qasre Shirin	2006	3	0.0	9.90	35.41	3.95	1.45
	2007	2	0.40	8.27	42.71	3.26	1.44
Doctor Kemanshahi teaching hospital	2003	2	1.45	28.32	10.06	21.95	2.83
	2004	3	0	25.16	8.59	24.92	2.85
	2011	1	0.52	50.17	4.23	82.21	3.05

**Table 2:** correlation of performance indicators [indexes] of hospital or evaluation rate of hospitals.

Performance Indicator [index]	The correlation coefficient	Pvalue
Bed occupancy rate	-0.5	<0.05
Average length of patient stay	-0.2	0.391
Death [mortality]	-0.9	0.07
Hospital bed turnover	-0.4	0.01
Hospital bed swing	-0.45	0.09

#### 4. Discussion and conclusion:

It is essential to evaluate effectiveness and efficiency of hospital services, and one of the most important tools in the area [field] is hospital indicators [indexes], providing proper analysis and collection it has important role in decision-making and duality improvement, and proper basis for judging hospital performance [11-12].

**Table 3:** Performance indicators of hospitals according to the Ministry of Health.

Indicator type	Total average	desirable	normal	undesirable	Total situation of indicator
Bed occupancy rate[percent]	37.79	More than [over] 70	60 to 70	Less than [below] 60	undesirable
Average length of patient stay[day]	2.55	Less than [below] 3.5	3.50 to 4	More than [over] 4	desirable
Death [mortality][percent]	0.74	Less than[below] 2	2 to 3	More than [over] 3	desirable
Hospital bed turnover [day]	46.36	More than [over] 24	17 to 24	Less than [below] 17	desirable
Hospital bed swing [day]	9.61	Less than [below] 2	2 to 3	More than [over] 3	undesirable

According to the desirable, normal and undesirable rate of Performance indicators announced by the Ministry of Health [13-14]. As you see in table [3], hospital bed swing indicators and Bed occupancy rate in hospitals has undesirable change of evaluation rate, and indicators of average length of patient stay, death [mortality], hospital bed turnover is desirable. It should not be forgotten that if there is no analytic model, using just indicator can lead to misleading conclusions about overall performance of hospital. For example, high bed occupancy rate can be because of high average length of patient stay due efficient performance and also existence of unnecessary hospitalizations and low efficiency, but only the first case can show good [proper] performance of hospital. Using analytic model of Pabon Lasso, by combining three indicators of bed occupancy rate, hospital bed turnover and average length of patient stay properly, can present [provide] rapid evaluation of hospital performance while preventing formation of these errors [15].

It should be noted that standard of average length of patient stay in hospital and in different parts varies according to the expertise and type of patients. It is a good index of care quality in comparative studies on, and it should be noted that factors like time, place and person affect mortality [process] and it cannot be judged solely on the number [16]. As the findings show there is no meaningful statistical relationship between evaluation rate of these hospitals and performance indicators. On the other hand, there is negative meaningful relationship between evaluation rate and bed occupancy rate. Also in the research [study] done by Arab [9], Baghbanian [17], Sadeghifar [18] and Karami [19], there is meaningful relationship between evaluation rate and bed occupancy rate; in this respect, the results of these three studies is consistent with this research. As the study done by Luvern [20] in Atlanta that said there is no meaningful relationship between indicators of average

length of patient stay and evaluation rate of hospitals and is consistent with this study. While Arab [6], in his study, shows that there is meaningful relationship between these two.

According to the results there is negative relationship between hospital bed turnover indicator and evaluation rate, and also its average utility hospitals is studied. Soleiman Zade [21] in a study entitled "Factors Affecting the Efficiency of Hospital from the View Point of Directors of Iran University of Medical Science" expressed the effect of performance indicators on evaluation rate in a way that the first priority is average length of stay, the second one is the cost of hospital bed and the number of days and percentage of hospital bed occupancy, the third priority is the rate of hospital bed turn over. The results show that performance indicators can be as the most important factors influencing evaluation rate of hospitals. To do this, by emphasizing on performance indicators such as [amongst] bed occupancy rate, average length of patient stay, hospital bed turnover, hospital bed swing and mortality rate, and considering type of hospital [activity], appropriate criteria should be used, its should be avoided to pay attention only to Structural indicators in the annual evaluation of hospital.

Finally, since the Ministry of Health and Medical Education is both service provider and evaluator, it cannot be expected that Evaluation is performed well and away from discrimination; need to be revision of assessment process and the involvement of hospital performance indicators are emphasized, therefor, according to this research the following cases can be suggested:

1. Allocating a percentage of the evaluation criteria to the performance indicators and also factors associated with [related to] hospital type [education, health, public, private, charity ....]
2. More attention to the quality values than quantity values.
3. The existence of independent or semi-independent from the ministries of health leads to [cause] a more realistic evaluation of therapeutic institutions.

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