

Performance Evaluation of Hospitals under Supervision of Kermanshah Medical Sciences using PabonLasoty Diagram of a Five-year Period (2008-2012)

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Abstract: Background: developing countries, health sectors devote about 50-80% of hospitals costs to them selves. In this paper we evaluate the performance of hospitals under supervision of Kermanshah University of Medical Sciences over a five year period 2008-12 using PabonLaso diagram. **Materials &Methods:** This study was conducted in 16 hospitals in Kermanshah province and indicators used to evaluate the performance were collected including the average patient stay, bed occupancy rate and bed turnover. Data Interval using forms approved by the Department of Health for each hospital, then using spss19 software for statistical analysis. **Results:** The results showed that in 2008, 43.75% of the hospitals were in the first area, 18.75 percent in the second, 25 percent in third, 12.5% in the fourth .In 2009, 37.5% were in the first, 6.25 in the second, 37.5 in the third region, 18.75% in the fourth .In 2010, 31.25 were in first district, 18.75 in the second strict, 31.25 in the third and 18.75 in the fourth district .In 2011, 37.5, were in the first, 12.5 in the second, 31.25 in the third, 18.75 entered the fourth. in 2012,31.25% were in first region, 18.75% in the second area, 31.25% in the third region, 18.75% in fourth area total five years, 36.75% were locate in the first, 15% in the second,31.25% in the third and 17.5 percent in the fourth area. **Conclusions:** The results show that during the five years, the highest percentages they were in the first region that means not optimal use of resources.

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1. Introduction

Health care is one of the basic human needs. Due to the fact that hospital beds allocate large capital resources, paying attention to their productivity is essential. (1)

Today, despite the extremely high demand, large amounts of hospital beds have been left unused due to lack of proper planning and management (2). Running costs of hospitals in the health sector is between 50 to 80% (3).

However, in developed countries the share of hospital costs in the health sector does not exceed 40% in the public sector and it is unfortunate that in developing countries, over 80 percent of these declining resources belong to the hospitals that their

efficiency does not exceed 50% of their capacity (4). A brief definition of efficiency is defined as the maximum utilization of resources for output. To determine the effectiveness or lack of effectiveness, index or indices for each firm is considered as the criterion for comparison. (5) The ratio of beds occupied bed is calculated as days occupied in a given time period. If this ratio is multiplied by 100, BOR is obtained. Mentioned index, as a general guide in terms of resource consumption in hospital wards, compared with other hospital performance indexes. Optimal level of bed occupancy in many hospitals is between 85 to 90 percent. The remaining 10 to 15 percent of the beds were being repaired, and the Preparation of bed for the next patient. (6) The

average length of stay for patients is obtained from the total occupied bed days at a given time and the number of patients discharged or dead in the same period.

Patient stay length reflects medical decisions about patient stay duration in the hospital. Social problems of patients, inappropriate professional services, lack of facilities, damage the device; diagnostic ... Can increase the patient's stay. More public hospitals that admit acute patients have average length of stay between 8 to 15 days. (7)

Bed Turnover Rate is the number of discharged and deceased persons in the same year to the average standby beds. (8) This amount indicates number of beds occupied and empty in a certain period (9) and indicates the average number of patients that use beds specified over a time span. percent of occupied beds in 2001 in Iran in a study conducted was assessed by 57.4 percent that there is a huge gap with the desirable standard of 75%. (10)

In Iran, the highest percentage of occupied hospital beds was in Fasa medical sciences (86 percent) and the lowest percentage of bed occupancy was in hospitals of Bushehr University of Medical Sciences (42.8 percent). (11) Hospital bed occupancy percent in 26 hospitals in England reached from 84% in 1991 to 1992 reached to 84.6% in 1997-2000 (12).

One of the most useful models for Pabon is comparing the performance of different hospitals or hospital wards in a hospital. The performance evaluation criteria specified above shall be determined which of the four regions the hospitals are. Besides in this graph, by hospital point coordinates to coordinates center and along the sides, the average length of stay is determined.

In addition, if patients in the hospital are in a good area, with the goals of the hospital, bed occupancy rate, turnover rate, has a good average length of hospital stay and good quality is services (13). The region information is shown in Table 1.

Table 1. The region information

<p>The third region (Beds occupancy percent and high turnover) unused beds work relatively well Efficiency (14) Hospitals also have good occupancy rate and bed turnover high, so it has good performance. (15)</p>	<p>The second region (low BOR bed and high turnover) centers with high bed turnover (short-term inpatient centers and Gynecology Hospital) as the number of hospital beds has little need to expand or build new hospitals, local hospitals (8) indicating acute care, obstetrics and gynecology is like. It can also indicate hospitalization is unnecessary (14) are hospitals which are the BOR is lower than average, but well above the average bed turnover are Usually, short-term inpatient hospital obstetrical centers are in this category (15)</p>
<p>Region 4 (high BOR and low bed turnover) high proportion of severe long-term hospitalization and unnecessary predominance of chronic disease (8) shows significant diseases and chronic or prolonged bed rest unnecessary (a) 15 percent occupancy up but turnover flat bottom that indicates whether admission of the long-term operation (less than the available facilities and costs are high. usually psychological medicine and geriatrics centers are in this group. (15)</p>	<p>The first region (BOR percent and low bed turnover) high number of hospital beds and the low demand for services has little need to develop a hospital or establishment of new hospitals in the area, mismanagement and lack of motivation of the staff, particularly doctors, no patient guidance or refer them to other centers (8) low efficiency could be due to the additional beds - reducing demand - diverting patients to other centers - stay high (which may be a shortage of demand.) (14) represents the percentage bed occupancy and turnover lower than the average performance is not acceptable, the hospital (15)</p>

Interpretation of the performance using this model is based on a rectangular plot that in length axis, there is bed occupancy percent and in transverse axis, there is ratio of bed rotation.

For this purpose, the average bed occupancy rate and bed occupancy rate calculated based on the two-out diagram divided into four parts, then each of the hospitals are located in a region of the diagram.

Research at the University of Medical Sciences in Kerman and Shiraz in 2007 with a sample size of 8 hospitals was done, the results indicate that 25 percent (4 hospitals) are in the second and 50 percent (8 hospitals) in the third and 25% (4 hospitals) remaining

in the fourth (17) Research was conducted in 2005 and 2006. The results showed that a total of 31 hospitals surveyed in 2005, 10 percent was in the first, 39% in the second, 45 percent in the third and 6% in the fourth part, in 2006, the 6% in the first, 45 percent in the second, 43 percent in third and 6 percent in the fourth area (18). Research in Medical Sciences in Ahvaz University in 2009 with a sample of 26 hospitals was performed. Results indicate that two hospitals in the first area, seven hospitals in second area, ten hospitals in the third area and seven hospitals in the fourth region (19) study conducted in 2009 showed that Yasooj total of 6 hospitals, two

hospitals were in third, three hospitals in the first area and one hospital in the fourth region (20). In a study at Kashan University of Medical Sciences in 2010 and 2011, the results indicate that a total of 6 hospitals in 2010, a hospital in the second area, three hospitals in the third area and one hospital in the fourth, one hospital in the first and in 2011 two hospitals in the first area, two hospitals in the second part and two hospitals in the third area (21), the results showed that the research was conducted in the Khozestan province of 12 hospitals in the study area, a total of 46 hospitals, eight hospitals in second area, 15 hospitals in third and 11 hospitals in the fourth region(22).

A study was conducted in 2010 at Lorestan University. Five hospitals were the third part; four hospitals located in the first district, three hospitals in the second and two were in the fourth area.

A study in 1984 was conducted by the Pabon Lasso IN Columbia hospitals showed that in 1977 AND 1980, 79 AND 74 Hospitals 35% and 33% respectively located in the first district (23).

In another study in Malawi in 2005 and 2006 showed that of the 40 hospitals studied, 19% located in the first region. This has been shown in Sri Lanka that most first level hospitals, more often in rural and small hospitals, provided outpatient and obstetric services and some second-level hospitals are located in the first area (25-26).

2. Methods

This study included 16 hospitals in the province of Kermanshah University of Medical Sciences and indexes used to assess the performance indicators including average patient stay, bed occupancy rate, bed turnover interval, using forms approved by the Department Health care for each hospital were collected and then analyzed using statistical software.

3. Results

Hospitals included in this study were Imam Reza (AS), Imam Ali (AS), Imam Khomeini (ra), Al-Farabi, Moatazedi, Taleghani, Sahne, Kangavar, Zahab, West Islam abad, Sanqer, Paveh, Gilangharb, Qasr-e Shirin, Harsin that the average of the three scores in the last five years is as follows.

Average 5 years	2008	2009	2010	2011	2012	year
						Average
51.39 19.99	50.96 19.81	49.69 19.49	51.03 21.21	53.14 22.01	52.10 19.9	BOR
82.38 38.84	69.95 39.73	70.65 45.84	81.22 38.60	83.48 41.50	87.98 41.91	Turnover
2.45 1.07	2.45 1.16	2.50 1.14	2.42 1.03	2.52 1.08	2.34 1.09	The average patient stay

The results showed that in 2008, 43.75% of the hospitals were in the first district, 18.75 percent in the second, 25 percent in the third, 12.5% in the fourth part and in 2009, 37.5% in the first, 6.25 in the second, 37.5 in the third region, 18.75% in the fourth and in 2010, 31.25 in first district, 18.75 in the second, 31.25 in the third and 18.75 in the fourth district, in 2011, 37.5 were in the first, 12.5 in the second, 31.25 the third, 18.75 entered the fourth, in 2012, 31.25% in first region I, 18.75% in the second area, 31.25% in the third region, 18.75% in fourth region and in the five years, 36.75% in the first, 15% in the second area, 31.25% in the third and 17 0.5 percent in the fourth part.

4. Discussion

In 2008, 43.75% of the hospitals were in the first area, and in 2009, 37.5% in the first region, in 2010, 31.25% in the first and in 2011, 37.5% in the first region, and in the whole five year process, 36.75 percent were located in the first district.

In 2005 in Isfahan, 10%, in 2006, 6% (18) and the study of Ahvaz in 2009, 7.6% (19), the study Yasooj in 2009, 50% (20), and the study of Kashan 16.6% in 2010, and In 2011, 33.3% (21) and the

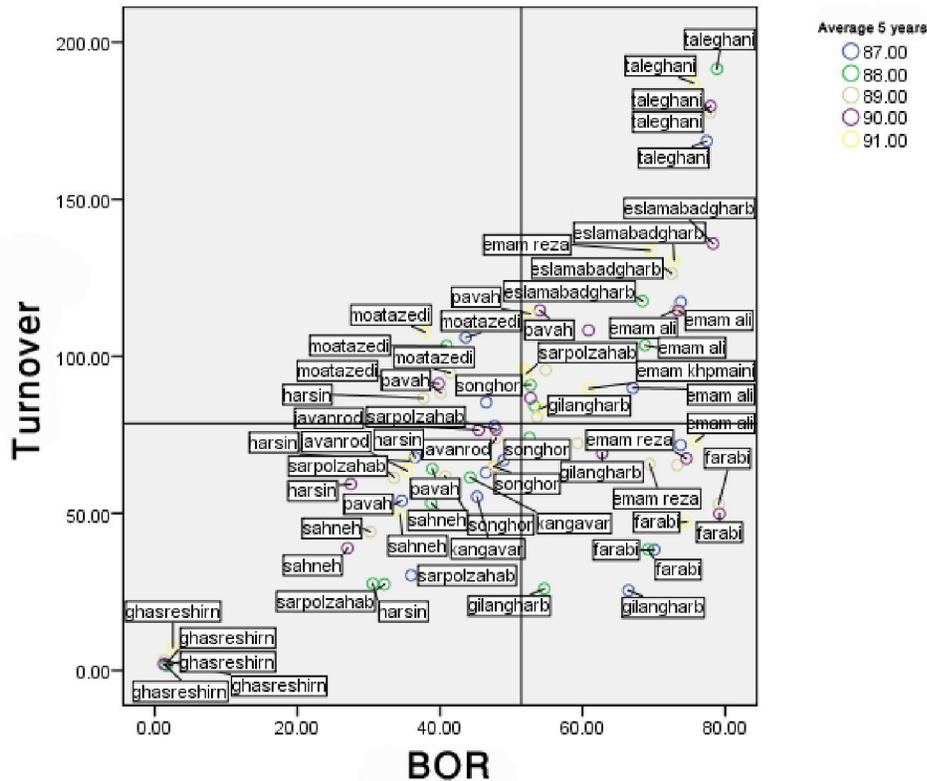
study of Khuzestan 28.08 percent (22), and the study of Lorestan in 2010, 28.5 percent (8) the study Pabon Lasso In 1977, 35 percent in 1980, 33% (23) and Malavi study In 2005, 19% (24) with the highest percentage of hospitals in the area were due to the high number of beds, the lower demand for services, hospitalization, needless to develop a hospital or establishment of new hospitals in the absence of Admissions Patients or their directing to other centers, mismanagement, lack of motivation among staff, especially physicians.

In 2008, 18.75 percent were in the second, in 2009, 6.25% in the area, in 2010, 18.75%, in 2011, 12.5%, in 2012, 18.75 percent, and 15 percent of the total five-year trend area, and the study of Kerman and Shiraz, 25% (17) and the study of Isfahan 1384.39 percent in 2006, 45% (18) and the study of Ahvaz in 2009, 26.9% (19) and the study of Kashan in 2010 and 2011 respectively. 16.6 and 33.3% (21) and in 17.3% of Khuzestan (22) and Lorestan in the 2010 study, 21.4% (8) and studied at Columbia in 1977 and 1980 respectively, 17 and 9% (23) and studies by Malavi 2005, 3% (24) which follows the reasons it can be as large as the number of hospital

beds or little need to develop or establish new hospitals.

In the third region, respectively, in 2008, 25%, in 2009, 37.5%, in 2010, 31.25 per cent, in 2011, 31.25 percent, in 2012, 31.25% of the total course of five years, 31.25%, and the study of Kerman 50% (19) in a study of 2005 and 2006, respectively 45 and 43% (18) in the study of Ahvaz in 2009, 38.4 percent (19) the study Yasooj in 2009, 33.3% (20) and the study of Kashan in 2010 and 2011 respectively 50 and 33.3% (21) and 32.6% in Khuzestan (22) and Lorestan in the 2010, 35.7% (8) in this area, Among the features of this region is that they work well and

for the fourth region in 2008, 12.5% , in 2009, 18.75 per cent, in 2010, 18.75%, and in 2011, 18.75 per cent, in 2012, 18.75% and of the five-year 17.5% of the area of study in Kerman, Shiraz and 25% (17) in the study of 2005 and 2006, respectively, 6% and 6%, and the study of Ahvaz in 2009, 26.9 percent of the study or Savage 2009, 16.6 percent 20101 Kashan in the study, 16.6 percent and 23.91 percent of Khuzestan and Lorestan in the 2010, 14.2 percent were in the area could be for the following reasons: a high proportion of severe illness, the predominance of chronic disease and too long and unnecessary hospitalization patients.



5. Proposed applications

Comparing hospitals monitored periodically using the graphical performance and identify the causes for the differences between the various periods and use of assessment results in planning and policy-making in order to optimize the allocation of hospital resources

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