

Inpatient Service Efficiency Analysis Based on Inpatient Indicators (BOR, ALOS, TOI and BTO) (Study on Inpatient Indicators at Gondanglegi Islamic Hospital, Malang, Indonesia)

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Abstract

Statistics are a description of a condition poured down in numbers and can be taken from reports, research or medical record sources. Statistics can be used to calculate various indicators one of which is an inpatient indicator. These indicators are BOR (Bed Occupancy Rate), ALOS (Average Length Of Stay), TOI (Turn Over Interval) and BTO (Bed Turn Over). The inpatient indicator can be presented in a Barber-Johnson chart showing the point to be in an efficient area or outside. This research uses quantitative method with descriptive approach. Because this research describes and presents systematically data in Gondanglegi Islamic Hospital. Based on collecting data, the data will be applied in the Barber-Johnson formula and in the figure on the Barber-Johnson chart. The result of the calculation of the inpatient indicator at Gondanglegi Islam Hospital in January 2017 obtained BOR value of 38.46%; AL.OS of 2.55 days; TOI of 4.1 days and BTO of 4.7 times. Then in February 2017 obtained a BOR value of 43.29%; ALOS of 2.75 days; TOI of 3.6 days and BTO of 4.4 times. And in March 2017 obtained BOR value of 44.44%; AVLOS of 2.87%; TOI of 3.6 days and BTO of 4.8 times. the result of the calculation of the points or lines of the inpatient indicator on the Barber-Johnson chart are outside the efficient area. Based on Barber-Johnson's efficiency standards indicates that Gondanglegi Islamic Hospital has not met the predetermined efficiency standards because the Barber-Johnson chart shows that the indicator's points and lines are outside the efficient area.

Keywords: Efficiency, Indicators of Inpatient, Barber-Johnson.

1. Introduction

Health facilities, especially hospitals have the obligation to provide maximum health services and in accordance with its function. One of the goals that can support the quality of health services is the administration where that can help and maintain the medical record. Medical record has a broad understanding not only in the form of notes or documents but the medical record has a sense of a system organizers, from the process of receiving patients in the service until forwarded to the medical data recording activity. The Medical Record is a part of the system of conduct. One of the systems of medical records is the recording and reporting of hospital statistics. Medical record is an important tool in efforts to improve the quality of service in the Hospital.

Statistics are a set of ways and rules related to the collection, processing (analysis), drawing conclusions, on data in the form of numbers using certain assumptions. Hospital statistics are health statistics sourced from medical record data as health information used to obtain certainty for health practitioners, management and medical personnel in decision making. From these statistics, it is hoped that the numerical descriptions related to health problems can be solved. One of the statistical activities of the hospital is in calculating the efficiency level of bed use in the inpatient unit. Efficiency of the use of this bed should be of particular concern to hospital management because the bed as a place of patient care. Where the efficiency level of the use of this bed can be seen from the value of hospitalization indicator Hospital.

The value of hospital inpatient indicators such as BOR (Bed Occupancy Rate), ALOS (Average Length Of Stay), TOI (Turn Over Interval) and BTO (Bed Turn Over) can be calculated using statistics (Hatta, 2010). Calculate the value of the indicator can be done every month, quarter and also one year in accordance with the request Hospital. To calculate the indicator requires accurate and complete data so that the information produced is correct.

By using these four indicators can be known that the use of the bed provided has been efficiency or still less efficient. The results of these evaluations can be used to relocate beds by reducing low-use beds, transferred to high-use wards. The use of each of these indicators has different standards, then the calculation of this indicator is not easy. In addition, it can be used to know and analyze the level of utilization of service facilities, quality and efficiency of hospital management which can be seen in the service in the inpatient unit based on the inpatient indicator in accordance with DEPKES (Indonesia National standard) or according to Barber and Johnson standard.

The purpose of this research is to know the level of efficiency and calculation of efficiency level of Inpatient Service according to Barber-Johnson at Gondanglegi Islamic Hospital in January, February and March (Quarter I) in 2017

2. Methods

This research uses quantitative method with descriptive research type which is then used to search for problem solving that found in an implementation in activity which is not in accordance with specified rule. This research was conducted at Medical Record Unit of Gondanglegi Islamic Hospital, Malang, Indonesia in January - March 2017.

The data collection technique used is observation, because it is a complex process, a process composed of various biological and psychological processes. Furthermore, the collected data is analyzed using descriptive analysis by describing the actual data without having to make general conclusions or generalizations. After accepting data, the activity in analysis of data is the calculation of data based on indicators using formulas according to Barber-Johnson, after which it is grouped according to the inpatient efficiency indicators which are then analyzed and presented in Barber-Johnson graphics and charts.

3. Result

Calculation of Inpatient Indicators BOR, ALOS, TOI and BTO in January, February and March 2017 Gondanglegi Islamic Hospital based on the data obtained are:

Table 1 : Comparison of BOR, ALOS, TOI and BTO in January, February and March 2017 at Gondanglegi Islam Hospital, Malang, Indonesia

Indikator	Januari	Februari	Maret
BOR	38,46 %	43,29 %	44,44 %
AVLOS	2,55 days	2,75 days	2,87 days
TOI	4,1 days	3,6 days	3,6 days
BTO	4,7 times	4,4 times	4,8 times

Table 2: Indicator Standards for Inpatient Efficiency by Barber-Johnson

Indikator	Barber-Johnson Efficiency Standards
BOR	75 – 85 %
AVLOS	3 – 12 days
TOI	1 – 3 days
BTO	30 times 1 years

The results of the Inpatient Indicators of Gondanglegi Islamic Hospital in January, February and March 2017 for BOR were 38.46%; 43.29% and 44.44% respectively. BOR value is all still less efficient because it is still less than 75%.

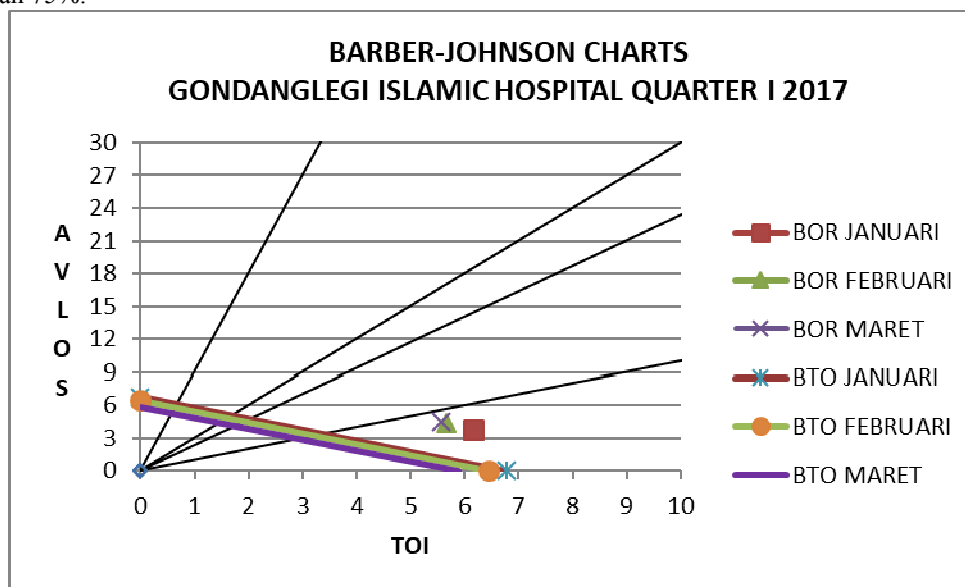


Figure 1 : Barber-Johnson Chart of Gondanglegi Islam Hospital The First Quarter (January, February and March) 2017

In the above calculation results can be made Barber-Johnson chart to determine whether on every month already in the area of efficient. Where from Barber-Johnson chart can be analyzed. In the Barber-Johnson graph below the researcher makes 1 chart where in January, February and March it can be seen from one graph so that the graph reader can know the change of point of inpatient indicator increase or even decrease.

4. Discussion

Based on the Barber-Johnson Chart and also the result of the Inpatient Indicator value calculation, each indicator can be analyzed as follows :

4.1. BOR (*Bed Occupancy Rate*)

Based on the Barber-Johnson Chart the value of inpatient indicators at Gondanglegi Islamic Hospital in the first quarter of January, February and March 2017 showed BOR value of 38.46%, 43.29% and 44.44%. Each month in the first quarter increased the BOR value but the BOR points were still out of efficiency and less than the Barber-Johnson standard of efficiency. If the lower the value of BOR then the use of beds to treat patients less. However BOR in the period of the first quarter of 2017 at the Islamic Hospital Gondanglegi the higher the bed is used to treat patients more. With the increase in the value of BOR then it can also increase the economic income for the hospital and it also increases the confidence of the patient. Hospitals must also maintain the BOR value and continue to improve until it reaches the efficient standards established by Barber-Johnson and Ministry of Health (Depkes). The advantage gained if the BOR is not too high then the attention to the patients who are treated the higher also because the workload of health workers is not too much and also does not occur nosocomial infection. where, nosocomial infections are hospital-acquired infections that one of the factors causing the infection is the hygiene factor. In addition, the occurrence of such infections may also be caused by a hospital system that makes the spread of the nosocomial infection from one patient to another.

4.2. ALOS (*Average Length Of Stay*)

The results of the ALOS Inpatient Indicator calculation in January, February and March (first quarter period) of 2017 were 2.55 days; 2.75 days and 2.87 days. These ALOS values have not met the specified efficiency standards which Barber-Johnson says are ideal 3-12 day efficiency standards. However, if the value of ALOS is smaller or less than 3 then it can indicate that the quality of the health worker performance is good because the patient can be treated more quickly or the patient quickly recovered. This should be maintained by the hospital because it can show to the patient or the community that the quality of the health officer's performance is very good which can increase the patient's trust in the hospital. However, from an economic point of view if the ALOS value is less than 3 then the income or income of the hospital decreases. Thus a balance between medical and economical standpoints is required, to be ideal for hospitals and patients (the public).

4.3. TOI (*Turn Over Interval*)

The calculation results of TOI Inpatient Indicators in January, February and March (first Quarter I) in 2017 were 4.1 days; 3.6 days and 3.6 days. Where the TOI values exceed the predetermined value of 1-3 days. TOI shows the average bed is not used. TOI values that exceed the ideal efficiency standard, then the use of beds in hospitals is increasingly rare because the longer unused beds are unused. This means that the bed is getting less productive. The condition is not economically beneficial for the hospital. This is better because the incidence of nosocomial infections is small and may not even occur. However, it would be better if the TOI score could be among the ideal efficiency standards.

4.4. BTO (*Bed Turn Over*)

On the Barber-Johnson chart the value of BTO in January, February and March (first quarter period) of 2017 is showing a value of 4.7 times; 4.4 times and 4.8 times. According to Barber-Johnson in 1 year BTO value efficiency standard is 30 times because expected 1 bed is used 30 patients. The smaller the value of BTO, the more available each bed is used less frequently by the patient. This is good because there are days that the bed is empty or unused. So the bed can be prepared and cleaned properly for reuse and can provide satisfaction to the patient because at the time the next patient to use the bed is in good condition and comfortable to use. However, in economic terms less profitable for the hospital. In March the beds were used more frequently than in the previous month (January and February) because in February the beds were used less frequently. So it can be seen from the research data that from February to March the use of beds has increased.

The efficiency level of inpatient services at Gondanglegi Islamic Hospital based on efficiency standards according to Barber Johnson is that all inpatient indicators are less efficient due to BOR, ALOS and BTO and in all small months of less than the predetermined efficiency standard while for TOI values more than defined efficiency standards. But the value of BOR and ALOS every month has increased quite well.

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